World Health Organization

Interagency list of medical devices for essential interventions for reproductive, maternal, newborn and child health

WHO Library Cataloguing-in-Publication Data

Interagency list of medical devices for essential interventions for reproductive, maternal, newborn and child health.

1.Equipment and Supplies. 2.Reproductive Health. 3.Maternal Welfare. 4.Perinatal Care. 5.Child Welfare. 6.Biomedical Technology. I.World Health Organization.

ISBN 978 92 4 156502 8 (NLM classification: WA 310)

Printed in Switzerland.

Interagency list of medical devices for essential interventions for Reproductive, Maternal, Newborn and Child Health

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Acknowledgements

The *Interagency list of medical devices for essential interventions for reproductive, maternal, newborn and child health* was initiated in June 2012 through a joint collaboration between the United Nations Children's Fund (UNICEF), the United Nations Population Fund (UNFPA), and the World Health Organization (WHO) under the auspices of the H4 partnership to update and expand three previous publications:

- *Interagency list of essential medical devices for reproductive health, (*2008);
- *Packages of interventions for family planning, safe abortion care, maternal, newborn and child health* (2010);
- *Essential interventions, commodities and guidelines for reproductive, maternal, newborn and child health* (2011).

The current document was developed from June 2012 to January 2014 through the continuous collaboration of a core working group of professionals from the following organizations:

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The primary financial support was received from The Japanese Ministry of Health, Labour and Welfare through the WHO project " Towards knowing global needs of medical devices". Additional funds were provided by UNICEF through a grant from Foreign Affairs, Trade and Development Canada (DFATD) to the H4+ and by WHO through a grant from the United Nations Commission on Life Saving Commodities.

Design and layout of the document was done by Jillian Reichenbach Ott (Genève Design)

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Abbreviations

MDG	Millennium Development Goal
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Colour codes

- Family planning and reproductive health
- Pregnancy/maternal health
- Childbirth
- Post-Natal Mother
- Post-Natal Baby (Newborn)
- Infancy and childhood
- Clinical transfusion
- Laboratory
- Surgery and anesthesia
- Injection safety
- Health care facilities

Overview

This publication is composed of the following sections:

Section 1

Describes the background, objectives, methodology and related definitions in the context of the current document.

Section 2

Includes the list of essential interventions in reference with current WHO evidence-based guidelines for reproductive, maternal, newborn and child health.

Section 3

Includes the sources of medical devices for the development of each matrix of medical devices by level of health-care facility.

Section 4

Presents the matrix of medical devices per continuum of care, for clinical procedures for reproductive, maternal, newborn and child health, by level of health-care facility, from health post to health centre to district hospital. The information is presented in 16 tables. Specific medical devices have been grouped under one name to avoid having a complicated extensive list of devices by intervention. For further analysis, the groupings of these devices are explained in Section 3.2. For example, to find the medical devices for intervention for pregnant women in a district hospital, please see the table entitled “Medical devices for pregnancy at district hospital”.

Section 5

Lists medical devices and commodities for laboratory and blood bank. The laboratory supply is listed by 4 levels of health-care facility. The essential commodities for blood bank are listed by the steps of procedure for blood transfusion.

Section 6

Notes important guidance for providing safe surgery and anaesthesia and lists common surgical instruments by surgical procedure in the matrix of medical devices in Section 4.

Section 7

Describes key programs and technical information related to infection prevention and control in health-care facilities such as injection safety, sterilization and waste management.

Section 8

Guides technical point of view on medical devices regulation and health technology management including specifications and standards for quality of health products.

Section 9

Points out other health products required in health-care facilities to provide comprehensive services.

Definitions

Health technology

Health technology is the application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures and systems developed to solve a health problem and improve quality of life. The term is used interchangeably with "health-care technology" (1).

Medical device

In the current document, the definition of medical devices, including in vitro diagnostic medical devices, is based on that documented by the Global Harmonization Task Force, a voluntary group of representatives from medical device regulatory authorities and regulated industry (2):

"Medical device" means any instrument, apparatus, implement, machine, appliance, implant, reagent for in vitro use, software, material or other similar or related article, intended by the manufacturer to be used, alone or in combination, for human beings, for one or more of the specific medical purpose(s) of:

- diagnosis, prevention, monitoring, treatment or alleviation of disease;
- diagnosis, monitoring, treatment, alleviation of or compensation for an injury;
- investigation, replacement, modification, or support of the anatomy or of a physiological process;
- supporting or sustaining life;
- control of conception;
- disinfection of medical devices;
- providing information by means of in vitro examination of specimens derived from the human body;

and does not achieve its primary intended action by pharmacological, immunological or metabolic means, in or on the human body, but which may be assisted in its intended function by such means.

Products that may be considered to be medical devices in some jurisdictions but not in others include:

- disinfection substances;
- aids for people with disabilities;
- devices incorporating animal or human tissues;
- devices for in vitro fertilization or assisted reproduction technologies.

In vitro diagnostic medical devices are medical devices, whether used alone or in combination, intended by the manufacturer for the in vitro examination of specimens derived from the human body solely or principally to provide information for diagnostic, monitoring or compatibility purposes. In vitro diagnostic medical devices include reagents, calibrators, control materials, specimen receptacles, software, and related instruments, apparatus and other articles and are used for diagnosis, aiding diagnosis, screening, monitoring, predisposition and prognosis prediction, and determination of physiological status.

In some jurisdictions, certain in vitro diagnostic medical devices may be covered by other regulations (3).

References

1. WHO 60.29 Health Technologies Resolution (http://apps.who.int/iris/bitstream/10665/22609/1/A60_R29-en.pdf?ua=1)
2. Definition of the terms "medical device" and "in vitro diagnostic (IVD) medical device". GHTF/SG1/N071:2012. Tokyo: Global Harmonization Task Force; 2012 (http://www.imdrf.org/docs/ghtf/final/sg1/technical-docs/ghtf-sg1-n071-2012-definition-of-terms-120516.pdf, accessed 22 May 2014).
3. Medical devices: managing the mismatch – an outcome of the Priority Medical Devices project. Geneva: World Health Organization; 2010 (http://whqlibdoc.who.int/publications/2010/9789241564045_eng.pdf, accessed 22 May 2014).

1. Background and methodology

1.1 Introduction

At the present, the beginning of the twenty first century, many scientific, social, economic and technological advances have been made in health care. Yet every day, approximately 1000 women die from pregnancy-related complications and childbirth, most of them in sub-Saharan Africa and South Asia (1). For every maternal death, another 30 women suffer long-lasting injury or illness that can result in lifelong pain, disability and socioeconomic exclusion. And every day, about 10 000 babies aged 28 days or younger die (2).

This situation is unacceptable, as most of these deaths can be prevented. Millennium Development Goals (MDGs) 4 and 5 call for a reduction in child mortality and improvements in maternal health, respectively (3).

New strategies have to be implemented to support the lives of these children and mothers. Innovative coordinated efforts are needed to achieve the MDGs and provide a better life for mothers and children, especially in low-resource settings.

In July 2008, the heads of the United Nations Population Fund (UNFPA), the United Nations Children's Fund (UNICEF), the World Bank and the World Health Organization (WHO) endorsed a working document that aimed to harmonize the support provided by these agencies to accelerate progress towards achieving MDGs 4 and 5 and to improve reproductive health (4). Resulting from this joint agreement, the need to prioritize the 25 countries with the highest burden of maternal mortality, and then identify the needs and gaps in those countries and define the necessary actions, was recognized. This agreement for joint work between agencies was called the H4 Partnership.

One of the partnership's objectives was to update the Interagency list of medical devices for essential interventions for reproductive, maternal, newborn and child health. This work was done through a UNFPA, UNICEF and WHO collaboration.

Strengthening health systems, and supporting universal health coverage, educating the population, and finding innovative technologies will support the delivery of better health services to achieve the MDGs.

Health systems should also include adequate health infrastructure, available information, good policies, available human resources for health, and appropriate, affordable health technologies, including medical devices, medicines and vaccines.

Medical devices are indispensable tools for health care in prevention, diagnosis, treatment and rehabilitation, but their selection and appropriate use pose a significant challenge for essential reproductive, maternal, newborn and child health interventions.

1.2 Objective

The objective of this project was to list the medical devices required to provide the essential reproductive, maternal, newborn and child health interventions defined by existing WHO guidelines and publications, in order to improve access to these devices in low- and middle-income countries, support quality of care, and strengthen health-care system. The medical devices are allocated across the reproductive, maternal, newborn and child health continuum of care according to the level of health-care delivery.

1.3 Scope

In the context of this document, the scope was defined as:

- Health interventions are limited to reproductive, maternal, newborn and child health, based on WHO recommendations.
- The level of health-care delivery is defined by the publication "Essential interventions, commodities and guidelines for reproductive, maternal, newborn and child health" (5) and is detailed in the next section. This classification defines three levels of care: community level/health post, health centre and district hospital. It should be reviewed and adapted to the local context as needed.
- The lists represent the technological options currently available, by type of medical device and hospital furniture. These lists should be adapted and reviewed according to national policies and regulatory frameworks.
- The target audience of this document consists of health professionals in the areas of reproductive, maternal, newborn and child health policies, strategic planning, health technology assessment, resource allocation, procurement, biomedical engineering, regulation, facility assessment and reproductive health specialties.
- Given the importance of the intervention generated, and in order to facilitate the use of these tools, a parallel web-based medical devices database is being developed. This database will contain all the interventions, levels of care, medical devices and technical information, increasing the availability of the data and facilitating decision-making.

1.4 Background methodology, workshops and peer-review meetings

The current document was developed by a consensus of UNICEF, UNFPA and WHO to update and expand the existing publications to describe more specifically the medical devices required for essential clinical interventions in reproductive, maternal, newborn and child health (Box 1).

Box 1. Development process of the current document

JUNE 2012

UNFPA, UNICEF and WHO held the first consultation on the Interagency list of essential medical devices and medicines for reproductive, maternal, newborn and child health in Copenhagen, Denmark, to define the scope of the project and devise a workplan. The following WHO publications were reviewed to determine the scope of the project by defining the continuum of care, the level of health-care facilities, and the medical devices associated with clinical interventions:

Interagency list of essential medical devices for reproductive health, 2008 (hereafter, 'Interagency list, 2008') (6);

Packages of interventions for family planning, safe abortion care, maternal, newborn and child health, 2010 (hereafter, 'Packages of interventions') (7);

Essential interventions, commodities and guidelines for reproductive, maternal, newborn and child health, 2011 (hereafter, 'Essential interventions') (5).

Figure 1 Previous publications

AUGUST 2012

A second meeting was held in Geneva, Switzerland during which experts in specific clinical areas could complete and verify the available information. A larger working group was invited to collaborate in the development and review of the data. The specialists were from the areas of blood transfusion, injection safety, safe surgery, diagnostic and laboratory work, reproductive health, maternal health, neonatal health, waste management, sexually transmitted infections, infertility and cancer. These peer reviews led to the first draft of the list in accordance with the latest recommendations by WHO.

NOVEMBER 2012

A third meeting (Geneva) redefined the levels of care included in the first draft of the list, reflecting the importance of having an accurate list of medical devices to accommodate complex clinical areas. The referral level of care was split into district hospital and referral hospital.

FEBRUARY 2013

The objectives of a fourth meeting (Copenhagen) were to agree on the most appropriate classification of medical devices, reviewing the specialists' inputs, and investigating an appropriate way to present the information to end users.

MAY 2013

First draft was presented to the members of the Interagency Pharmaceutical Coordination group, which includes the World Bank, the Global Fund to Fight AIDS, Tuberculosis and Malaria, UNICEF, UNFPA and WHO. The group supported the development of this tool, considered it useful for planning purposes and suggested it be linked to lists for procurement.

NOVEMBER 2013

A workshop was held during the Second WHO Global Forum on Medical Devices (Geneva), during which comments regarding the use and implementation of the tool were received by approximately 40 participants from different countries.

JANUARY 2014

A fifth meeting was held (Copenhagen) to review and agree on the final version of the document, including the grouping of commodities.

Throughout the entire process, the core working group held regular teleconferences to define medical devices necessary for each intervention at each level of health-care facility related to existing WHO guidelines and publications.

1.5 Methodology

1.5.1 Identification of levels of care and health-care facilities

To develop the current document, the definitions of level of care and health-care facilities were derived from *Essential interventions* (5). The classifications for interventions and medical devices proposed for these facilities should be adapted to national regulations and the local context. To ensure relevance of the continuum of care in the local environment, results in a continuum of care for the patient.

According to the staff, capabilities, type of care and interventions required, three levels of delivery of care were defined (Table 1):

Table 1. Level of care and health-care facility

Level of care	Health-care facility
Community level	Health post
First level	Health centre
Referral level	District hospital or Referral hospital

COMMUNITY LEVEL

The health post level includes community health workers and outreach workers that deliver interventions related to safe motherhood, nutrition and simple prevention and treatment. The community level of care is context-specific depending on the availability and development of infrastructure, services and socioeconomic resources.

FIRST LEVEL

The health center level incudes trained health professionals. The interventions offered are related to maternity care (such as prenatal care, skilled birth attendance and family planning), childhood diseases (such as vaccine-preventable diseases, acute respiratory infections and diarrhoea), and prevention and treatment of major infectious diseases. These health facilities include outpatient services and observation areas for patients staying longer but do not generally include inpatient areas. They might have a labour room and outpatient surgery areas.

REFERRAL LEVEL

This level of delivery of interventions requires more complex facilities and equipment, such as hospitals where providers are professional practitioners. In the current document, only district hospitals are considered in the reference tables. District hospitals usually include outpatient and inpatient areas, emergency services, surgical areas, health professionals and infrastructure in at least the following four areas of specialization: internal medicine, surgery, paediatrics and obstetric care. Many district hospitals also include other special areas, depending on the settings, context and resources available.

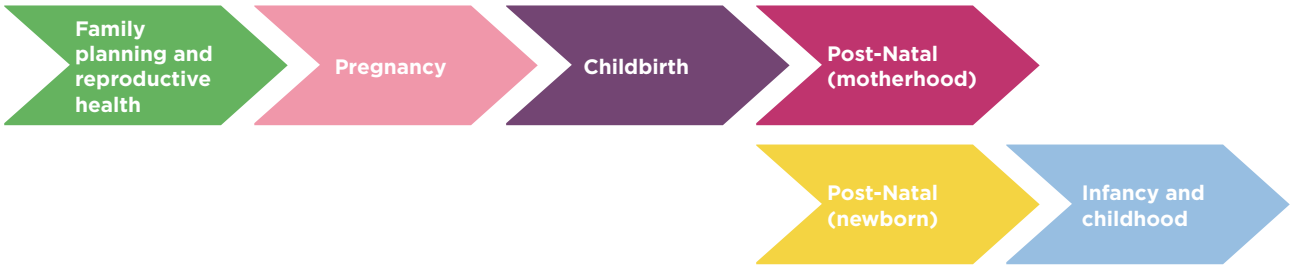
Medical devices for highly specialized hospitals and other specialized technologies such as intensive care are described in Annex 3.

1.5.2 Identification of essential interventions

With the objective of harmonizing an evidence-based set of essential interventions for reproductive, maternal, newborn and child health, two publications were used as the basis for the review and analysis for compiling the current document: *Essential interventions (5)* and *Packages of interventions (7).*

Following the same strategy as the two previous reports, the current document interventions were classified by level of care, across the reproductive, maternal, newborn and child health continuum of care stages (Figure 2):

Figure 2. Reproductive, maternal, newborn and child health continuum of health care



Source: Adapted from PMNCH fact sheet: RMNCH continuum of care. Geneva: World Health Organization; 2011 (http://www.who.int/pmnch/media/press_materials/fs/continuum_of_care/en/index.html, accessed 22 May 2014).

- family planning and reproductive health;
- pregnancy;
- childbirth;
- postnatal mother (up to six weeks after childbirth);
- postnatal baby (up to two months after birth);
- infancy and childhood (up to age five years).

Derived from this classification, research sought areas where updates were required in terms of interventions, commodities and facilities.

The continued review of interventions and sub-interventions was due to the fact that different medical devices are required by sub-interventions, for example the diagnosis and the treatment of anaemia.

Some clinical procedures for reproductive, maternal, newborn and child health and related medical devices are not presented in this publication because they do not impact on the scope of the project to reduce maternal and newborn mortality from a public health approach.

1.5.3 Systematic search for evidence and documentation

Essential interventions (5) responds to the need to deliver information on evidence-based interventions and categorize them into three groups (Table 2). Interventions with well-documented evidence and an agreed delivery strategy fall into category A. Category B includes interventions that do not have consensus on the delivery strategy. Category C includes interventions with no evidence or consensus on the delivery strategy. Further research on these interventions, mostly from category A, leads to the identification of the required commodities (medical devices and medicines) described or named in the clinical guidelines and reports.

Table 2. Classification of interventions

Category	Evidence for intervention categories	Delivery strategies	Action
A	Intervention evidence agreed	Delivery strategy agreed	Disseminate for rapid scale-up
B	Intervention evidence agreed	Delivery strategy no consensus	Collate evidence and define gaps in evidence for delivery strategies – seek consensus
C	Intervention evidence still questioned	Delivery strategy no consensus	Further research required

Source: Essential interventions, commodities and guidelines for reproductive, maternal, newborn and child health. Geneva: World Health Organization; 2011 (http://www.who.int/pmnch/topics/part_publications/essential_interventions_18_01_2012.pdf, accessed 22 May 2014).

Although evidence on the use of medicines is well documented, evidence is not widely available for medical devices, especially with regard to their performance in low-resource settings. In the literature review, case studies of medical devices used in high-income settings were found, but their applicability to low-resource settings is uncertain and not yet proven. Thus, a list of evidence-based guidelines and reports related to reproductive, maternal, newborn and child health was compiled, devices included in the current document were identified from clinical guidelines and later revised by the core working group and WHO specialists. This revision process was also applied to the interventions.

1.5.4 Identification of commodities

In the areas of reproductive, maternal, newborn and child health, the commodities listed in Essential interventions (5) considered the Interagency list, 2008 (6), Packages of interventions (7) and the recommendations from the UN Commission on Life-Saving Commodities (8), comprising 13 life-saving commodities such as female condoms, neonatal resuscitation equipment and injectable antibiotics.

The development of the medical devices section of the current document followed the methodology described in the Priority Medical Devices report from WHO (9): (1) identify the disease burden of the target population, (2) select the associated WHO evidence base clinical guidelines, (3) identify care pathways and protocols, (4) list medical devices according to the protocols and type of intervention (preventive, diagnostic, therapeutic or assistive), and (5) develop a list of medical devices needed to manage and treat the identified diseases.

The development of the medical devices list is based on the Interagency list, 2008 (6) and UNICEF's Supply Catalogue (10). Based on this methodology, the medical devices were identified according to the interventions for reproductive, maternal, newborn and child health.

The list of medical devices had to be organized into categories and sub-categories to facilitate grouping and to make the list more user-friendly. This process was challenging because no WHO global harmonized nomenclature system currently exists for medical devices. Many of the terms used in the current document are based on the UNICEF reference specifications for the devices included in the UNICEF standard product range (10). These terms were used because they are commonly used in low- and middle-income countries. The list does not represent the complete description of the medical devices, particularly complex devices; the list must therefore be used as a reference, and technical specifications for these devices must be reviewed and developed thoroughly for planning purposes.

The current document is not a restrictive list of priority medical devices: it covers only the minimum reference for the equipment of medical units to ensure that clinical interventions can be provided in a complete, safe and effective manner. Other devices can be added to match the specific infrastructure settings.

1.6 References

1. Trends in maternal mortality: 1990 to 2008. Geneva: World Health Organization, United Nations Children's Fund, United Nations Population Fund and World Bank; 2010 (http://www.who.int/reproductivehealth/publications/monitoring/9789241500265/en/, accessed 22 May 2014).
2. The state of the world's children 2009: maternal and newborn health. New York: United Nations Children's Fund; 2008 (http://www.unicef.org/cotedivoire/SOWC_2009_.pdf, accessed 22 May 2014).
3. Millennium Development Goals (MDGs). Geneva: World Health Organization; 2014 (http://www.who.int/topics/millennium_development_goals/en/, accessed 22 May 2014).
4. Accelerated implementation of maternal and newborn continuum of care as part of improving reproductive health: mapping of in-country activities – joint country support. Geneva: World Health Organization; 2010 (http://whqlibdoc.who.int/publications/2010/9789241599733_eng.pdf, accessed 22 May 2014).
5. Essential interventions, commodities and guidelines for reproductive, maternal, newborn and child health. Geneva: World Health Organization; 2011 (http://www.who.int/pmnch/topics/part_publications/essential_interventions_18_01_2012.pdf, accessed 22 May 2014).
6. Interagency list of essential medical devices for reproductive health. Geneva: World Health Organization, John Snow Inc., PATH, Population Action International, United Nations Population Fund and World Bank; 2008 (http://apps.who.int/medicinedocs/documents/s16440e/s16440e.pdf, accessed 22 May 2014).
7. Packages of interventions for family planning, safe abortion care, maternal, newborn and child health. Geneva: World Health Organization; 2010. (http://whqlibdoc.who.int/hq/2010/WHO_FCH_10.06_eng.pdf, accessed 22 May 2014).
8. Life-saving commodities. Washington, DC: United Nations Foundation; 2012 (http://www.everywomaneverychild.org/resources/un-commission-on-life-saving-commodities/life-saving-commodities, accessed 22 May 2014).
9. Medical devices: managing the mismatch – an outcome of the Priority Medical Devices project. Geneva: World Health Organization; 2010 (http://whqlibdoc.who.int/publications/2010/9789241564045_eng.pdf, accessed 22 May 2014).
10. UNICEF supply catalogue. New York: United Nations Children's Fund; 2014 (https://supply.unicef.org/unicef_b2c/app/displayApp/%28layout=7.0-12_1_66_67_115&carea=%24ROOT%29/.do?rf=y, accessed 22 May 2014).

2. Evidence-based guidelines, and essential interventions for reproductive, maternal, newborn and child health

This section includes the sources of information for the development of each table of medical devices by level of health-care facility.

2.1 Essential interventions for reproductive, maternal, newborn and child health

Based on Essential interventions (1), Table 3 contains the priority clinical interventions provided during the continuum of care for reproductive, maternal, newborn and child health, divided into six different stages:

- family planning and reproductive health;
- pregnancy;
- childbirth;
- postnatal mother;
- postnatal baby (newborn);
- infancy and childhood.

The column "Continuum of care" corresponds to the six stages of the continuum of care.

The column "General action" corresponds to the interventions listed chronologically for each of the stages, from the first assessment, through the diagnosis and treatment of infections and illness, and ending with surgery or, in some cases, emergency and pre-referral treatment.

The column "Conditions" corresponds to the specific conditions related to the interventions.

The column "Steps of specific procedures" corresponds to the steps or procedures applied to deliver each intervention; the steps are labelled (a), (b), (c) and (d) to clarify the chronological steps for some procedures.

In the table, each procedure shows the health-care facility (health post, health centre or district hospital) where it would be delivered according to the evidence-based guidelines presented in Tables 4–9. Note that sometimes the diagnosis can be done at a lower level than the assessment or treatment.

Table 3. Essential interventions for reproductive, maternal, newborn and child health

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	HEALTH POST	HEALTH CENTER	DISTRICT HOSPITAL
Family Planning and Reproductive Health	First assessment	Basic Medical Examination	a) Check-up vital signs / measuring weight and height / Anthropometry	X	X	X
			b) Pelvic examination	X	X	X
		Preventive Immunization	a) Vaccine for Hepatitis B	X	X	X
	Provision of contraceptives	Contraceptive method selection	a) Provision of oral contraceptives	X	X	X
			a) Provision of injectable contraceptives		X	X
			a) Insertion and removal of Intrauterine device (IUD)s		X	X
			a) Insertion and removal of contraceptive implants with local anaesthesia		X	X
			a) Provision of barriers methods	X	X	X
			a) Provision of emergency contraception	X	X	X
			a) Provision of vaginal rings and patches		X	X
			a) Vasectomy with local anaesthesia		X	X
			a) Tubal ligation			X
	Detection and management of Sexually Transmitted Infection (STI) and other infections	Syphilis	a) Screening / diagnosis of Syphilis by laboratory test	X	X	X
			b) Treatment for Syphilis		X	X
		Human Immunodeficiency Virus (HIV)	a) Screening of Human Immunodeficiency Virus (HIV)	X	X	X
			b) Treatment for Human Immunodeficiency Virus (HIV) (Antiretroviral Therapy (ART))	X	X	X
			c) Provide post exposure prophylaxis for Human Immunodeficiency Virus (HIV) discordant couple	X	X	X
		Gonorrhoea	a) Screening / diagnosis of Gonorrhoea		X	X
			b) Treatment for Gonorrhoea		X	X
		Chlamydia	a) Screening / diagnosis of Chlamydia		X	X
			b) Treatment for Chlamydia		X	X
		Malaria	a) Prophylactic antimalarial (Intermittent Preventive Treatment (IPT))	X	X	X
			b) Diagnosis of malaria	X	X	X
			c) Management of malaria	X	X	X
		Other infections	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis		X	X
			a) Diagnosis and treatment for bacterial vaginosis, trichomonas, candidiasis		X	X
	Screening and management of cancers of the reproductive system	Cervix cancer	a) Papanicolaou test		X	X
			b) Visual Inspection with Acetic Acid (VIA)/Magnified VIA (VIAM)		X	X
			c) Human Papilloma Virus (HPV) test		X	X
			d) Colposcopy			X
			e) Colposcopy and Biopsy / Pathology lab-test			X
			f) Treatment for precancerous lesion (cryotherapy)			X
		Breast cancer	a) Breast examination	X	X	X
			b) Diagnostic by image (mammography, ultrasound)			X
			c) Biopsy / Pathology lab-test			X
	Management of gender-based violence (GBV)	Post-rape care	a) Management of post-rape care	X	X	X

Table 3. Essential interventions for reproductive, maternal, newborn and child health

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	HEALTH POST	HEALTH CENTER	DISTRICT HOSPITAL
Pregnancy	First assessment	Basic Medical Examination	a) Check-up vital signs / measuring weight and height / Anthropometry/ Vaginal examination	X	X	X
		Preventive Immunization	a) Vaccine for Tetanus	X	X	X
	Emergency assessment	Emergency preparedness and referral	a) Emergency care and pre-referral treatment		X	X
	Detection and management of Sexually Transmitted Infection (STI) and other infections	Syphilis	a) Screening / diagnosis of Syphilis by laboratory test	X	X	X
			b) Treatment for Syphilis		X	X
		Human Immunodeficiency Virus (HIV)	a) Screening of Human Immunodeficiency Virus (HIV)	X	X	X
			b) Prevention Mother To Child Transmission (PMTCT)	X	X	X
			c) Treatment for Human Immunodeficiency Virus (HIV) (Antiretroviral Therapy (ART))	X	X	X
		Malaria	a) Prophylactic antimalarial (Intermittent Preventive Treatment (IPT))	X	X	X
			b) Diagnosis of malaria	X	X	X
			c) Management of malaria	X	X	X
		Rubella	a) Diagnosis and treatment for rubella		X	X
		Tuberculosis	a) Diagnosis and treatment for tuberculosis		X	X
		Other infections	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis		X	X
			a) Diagnosis and treatment of other Sexually Transmitted Infection (STI) /Reproductive Tract Infections (RTI): Candida vaginitis, gonorrhoea, chlamydia, bacterial vaginosis and trichomoniasis		X	X
	Detection and management of maternal chronic medical conditions	Iron Deficiency Anaemia	a) Diagnosis of Anaemia	X	X	X
			b) Iron and folic acid supplementation	X	X	X
			c) Anthelminthic (deworm)	X	X	X
			d) Management of severe Anaemia (considering blood transfusion)			X
		Hypertension and pre-eclampsia	a) Diagnosis of Preclampsia-Eclampsia		X	X
			b) Supplemment calcium		X	X
			c) Low-dose aspirin		X	X
			d) Antihypertensive drugs		X	X
			e) Magnesium sulfate		X	X
			f) Fetal monitoring			X
			g) Induction of labour			X
		Diabetes	a) Glucose testing for detection	X	X	X
			b) Treatment for insulin-dependent diabetic mother		X	X
	Management of prelabour rupture of the membranes (PRM)	Assessment of PRM	a) Diagnosis and laboratory test		X	X
			b) Fetal monitoring		X	X
		Preterm	a) Provision antibiotics if indicated		X	X
			b) Provision of tocolytics to prolong pregnancy if indicated			X
			c) Provision of corticosteroids for prevention of neonatal respiratory distress syndrome			X
			d) Provision of magnesium sulfate for neuroprotection of the newborn			X
		Term	a) Provision antibiotics if indicated			X
			b) Induction of labour			X
	Management of malpresentation at term	Malpresentation at term	a) Diagnosis of breech at term			X
			b) External Cephalic Version			X
			c) Monitoring progress of labour			X
	Management of female genital mutilation	Female genital mutilation	a) Perineal incision with local anaesthesia			X
			b) Identify the need of caesarean section			X

Table 3. Essential interventions for reproductive, maternal, newborn and child health

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	HEALTH POST	HEALTH CENTER	DISTRICT HOSPITAL
	Management of ectopic pregnancy	Ectopic pregnancy	a) Pregnancy test			X
			b) Ultrasound scan			X
			c) Laparotomy			X
			d) Blood transfusion			X
	Management of miscarriage and abortion	Miscarriage and abortion	a) Pregnancy test			X
			b) Ultrasound scan			X
		Miscarriage	a) Treatment of infections			X
			b) Management of bleeding (considering Vacuum Aspiration and blood transfusion)			X
			c) Management of major injuries (considering laparotomy)			X
		Safe abortion when indicated and legally permitted	a) Medical uterine evacuation for the first trimester			X
			b) Vacuum Aspiration for the first trimester			X
			c) Medical uterine evacuation beyond the first trimester			X
Childbirth	First assessment	Basic Medical Examination	a) Check-up vital signs / Vaginal examination		X	X
	Emergency assessment	Emergency preparedness and referral	a) Emergency care and pre-referral treatment		X	X
	Mother care	Childbirth	a) Monitoring progress of labour		X	X
			b) Active management of the third stage of labour (AMTSL): Prophylactic use of uterotonics		X	X
			c) Spontaneous delivery		X	X
			d) Assisted delivery (vacuum extraction) if needed		X	X
	Management of complications of labour and delivery	Assessment for complications	a) Diagnosis of complications		X	X
			b) Fetal monitoring		X	X
		Postpartum haemorrhage (PPH)	a) Use of uterotonics of choice for the treatment of PPH		X	X
			b) Manual removal of placenta (include use of antibiotics and uterotonics)			X
			c) Blood transfusion			X
			d) Use of balloon tamponade			X
			e) Use of artery embolization			X
			f) Hysterectomy			X
		Caesarean section due maternal/fetal indication	a) Use of prophylactic antibiotic			X
			b) Caesarean section			X
			c) Use of uterotonics			X
		Other surgical procedures depending on the complication	a) Episiotomy			X
			a) Repair of ruptured uterus			X
			a) Correct uterine inversion			X
			a) Laparotomy or other abdominal surgical interventions during childbirth			X
			a) Craniotomy and craniocentesis			X
		Human Immunodeficiency Virus (HIV) positive women	a) Screening of Human Immunodeficiency Virus (HIV)		X	X
			b) Prevention Mother To Child Transmission (PMTCT)		X	X

Table 3. Essential interventions for reproductive, maternal, newborn and child health

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	HEALTH POST	HEALTH CENTER	DISTRICT HOSPITAL
Post-Natal Mother	First assessment	Basic Medical Examination	a) Check-up vital signs	X	X	X
			b) Screening for cervix and breast cancer		X	X
		Support for breast feeding	a) Management of mastitis / breast abscess		X	X
	Emergency assessment	Emergency preparedness and referral	a) Emergency care and pre-referral treatment		X	X
	Prevention and management of post partum bleeding	Anaemia	a) Management of post partum bleeding		X	X
			b) Diagnosis of anaemia		X	X
			c) Iron supplementation		X	X
			d) Anthelminthic (deworm)		X	X
			e) Management of severe anaemia (considering blood transfusion)			X
	Detection and management of post partum infection	Human Immunodeficiency Virus (HIV)	a) Diagnosis and treatment for Human Immunodeficiency Virus (HIV) (Antiretroviral Therapy (ART))		X	X
		Malaria	a) Diagnosis and management of malaria		X	X
		Other infection	a) Diagnosis and management of postpartum endometritis and salpingitis		X	X
			a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis		X	X
	Postoperative care	Assessment of postoperative care	a) Postcaesarean care			X
			b) Diagnosis of pelvic abscess, peritonitis or other postoperative complication			X
		Surgical procedure	c) Surgical management of pelvic abscess, peritonitis or other postoperative complication with laparotomy			X
Post-Natal Baby (Newborn)	Childbirth: Essential newborn care	Immediate care at birth	a) Dry baby thoroughly on mother's chest skin to skin and cover		X	X
			b) Assess breathing		X	X
			c) Clamp and cut cord / Check cord vessels / Check for bleeding and signs of cord infection		X	X
			d) Prevent hypothermia when skin to skin is not possible		X	X
			e) Support breastfeeding within the first hour		X	X
		Emergency support	a) Basic neonatal resuscitation		X	X
			b) Management of brain injury and intracranial haemorrhage (ICH)			X
		Routine care	a) Full clinical examination / Check vital signs / measuring weight	X	X	X
			b) Thermal Care	X	X	X
			c) Breastfeeding support	X	X	X
			d) Vitamin K prophylaxis and Immunization	X	X	X
			e) Cord care	X	X	X
			f) Prophylaxis for eye infection		X	X
			g) Prophylactic antibiotics for neonates at risk of infection		X	X
	Detection and management of congenital infections	Congenital infections	a) Diagnosis of congenital syphilis		X	X
			b) Prophylactic treatment for congenital syphilis		X	X
			c) Screening of Human Immunodeficiency Virus (HIV) (Dried Blood Spot (DBS))		X	X
			d) Prophylactic treatment for Human Immunodeficiency Virus (HIV) (Antiretroviral Therapy (ART))		X	X

Table 3. Essential interventions for reproductive, maternal, newborn and child health

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	HEALTH POST	HEALTH CENTER	DISTRICT HOSPITAL
	Detection and management of common infections, illness and complications in the neonate and young infant	Cord infection	a) Detection and management of cord infection		X	X
		Jaundice	a) Diagnosis of jaundice			X
			b) Management of jaundice			X
		Anaemia	a) Diagnosis of anaemia			X
			b) Management of anaemia			X
			c) Pre-referral treatment for severe anaemia (blood transfusion)			X
		Pneumonia	a) Diagnosis of pneumonia		X	X
			b) Management of pneumonia and its complications			X
		Diarrhoea	a) Detection and management of diarrhoea		X	X
		Septicaemia and/or meningitis	a) Diagnosis of septicaemia and/or meningitis: Blood Culture, Lumbar Puncture, Urine Analysis			X
			b) Management of septicaemia and/or meningitis and its complications			X
	Specific interventions for small, low weight birth and pre-term babies	Apnoea	a) Prevention of Apnoea			X
		Respiratory Distress Syndrome (RDS)	a) Diagnosis of RDS and provision of prophylaxis surfactant			X
			b) Apply Continuous Positive Airway Pressure (CPAP) with nasal cannula or face mask			X
			c) Ventilatory support and oxygen therapy including mechanical ventilation and Continuous Positive Airway Pressure (CPAP)			X
		Necrotizing enterocolitis	a) Diagnosis of necrotizing enterocolitis			X
			b) Management of necrotizing enterocolitis			X
	Supportive care for all sick neonate and sick young infant	Supportive care	a) Monitor blood glucose and management of hypoglycaemia			X
			b) Monitor nutrition and provision of tube feeding support			X
			c) Provision of intravenous therapy			X
			d) Monitor temperature and management of hypothermia (Kangaroo mother care)			X
			e) Monitor oxygenation and management of hypoxia			X
		Triage, emergency preparedness and referral	a) Detection of emergency signs, emergency care and pre-referral treatment		X	X
			b) Advanced resuscitation			X
	Further assessment for all young infant	Clinical visit	a) Full clinical examination / check vital signs / measuring weight / check haemoglobin	X	X	X
			b) Provision of vaccines (Diphtheria Pertussis Tetanus (DPT) + Haemophilus Influenza type B (HIB), Oral Polio Vaccine (OPV), Hepatitis B)	X	X	X
			c) Breastfeeding support and replacement feeding if necessary	X	X	X
			d) Monitoring growth and development	X	X	X
		Optional interventions	a) Male circumcision			X

Table 3. Essential interventions for reproductive, maternal, newborn and child health

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	HEALTH POST	HEALTH CENTER	DISTRICT HOSPITAL
Infancy and childhood	Essential care for monitoring growth and early childhood development	Routine care	a) Full clinical examination / check vital signs / measuring weight	X	X	X
			b) Provision of vaccines	X	X	X
			c) Growth monitoring	X	X	X
			d) Early childhood development monitoring	X	X	X
			e) Breastfeeding support and replacement feeding if necessary	X	X	X
			f) Vitamin A supplementation	X	X	X
			g) Deworming (Mebendazole)	X	X	X
	Detection and management of common infections, illness and complications in infancy and childhood	Severe Acute Malnutrition (SAM)	a) Diagnosis of SAM	X	X	X
			b) Feeding support		X	X
			c) Pre-referral treatment for SAM		X	X
		Anaemia	a) Diagnosis of anaemia		X	X
			b) Management of anaemia		X	X
			c) Pre-referral treatment for severe anaemia (Blood transfusion)			X
		Pneumonia	a) Differential diagnosis for pneumonia	X	X	X
			b) Management of pneumonia and its complications	X	X	X
		Wheeze (Asthma, Bronchiolitis)	a) Diagnosis of condition with wheeze	X	X	X
			b) Management of condition with wheeze	X	X	X
		Tuberculosis	a) Diagnosis of tuberculosis		X	X
			b) Management of tuberculosis		X	X
		Diarrhoea	a) Differential diagnosis and management of diarrhoea and dysentery	X	X	X
		Septicaemia and/or meningitis	a) Diagnosis of septicaemia and/or meningitis : Blood Culture, Lumbar Puncture, Urine Analysis			X
		Septicaemia and/or meningitis	b) Management of septicaemia and/or meningitis and its complications			X
		Malaria	a) Diagnosis and management of malaria		X	X
		Dengue fever	a) Diagnosis and management of dengue fever		X	X
		Measles	a) Diagnosis and management of measles		X	X
		Human Immunodeficiency Virus (HIV)	a) Diagnosis of Human Immunodeficiency Virus (HIV)	X	X	X
			b) Treatment for Human Immunodeficiency Virus (HIV) (Antiretroviral Therapy (ART))	X	X	X
			c) Management of other opportunistic infections in Human Immunodeficiency Virus (HIV)	X	X	X
		Eye infection	a) Detection and management of eye infection / conjunctivitis	X	X	X
		Ear infection	a) Detection and management of ear infection	X	X	X
		Mouth infection	a) Detection and management of mouth infection / thrush	X	X	X
		Skin infection	a) Diagnosis and management of skin infections	X	X	X
		Chicken pox	a) Detection and management of chicken pox	X	X	X
	Supportive care for all sick infant and child	Supportive care	a) Management of hypoglycaemia			X
			b) Tube feeding support			X
			c) Intravenous therapy			X
			d) Management of hypothermia			X
			e) Management of hypoxia			X
			f) Pain control			X
		Triage, emergency preparedness and referral	a) Detection of emergency signs, emergency care and pre-referral treatment		X	X
			b) Advanced resuscitation			X
	Further assessment for all infant and child	Optional interventions	a) Male circumcision			X

2.2 Relevant evidence-based guidelines supporting essential interventions for reproductive, maternal, newborn and child health

This section contains the priority clinical interventions provided during the continuum of care for reproductive, maternal, newborn and child health presented in Tables 4–9 with respect to the relevant evidence-based guidelines published by WHO that support the procedures. Annex 1 lists more references to guide clinicians and other health workers in medical procedures.

Table 4. Evidence-based guidelines supporting essential interventions for family planning and reproductive health

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	Evidence based guidelines
Family Planning and Reproductive Health	First assessment	Basic Medical Examination	a) Check-up vital signs / measuring weight and height / Anthropometry	Family planning: a global handbook for providers (2)
			b) Pelvic examination	
		Preventive Immunization	a) Vaccine for Hepatitis B	
	Provision of contraceptives	Contraceptive method selection	a) Provision of oral contraceptives	
			b) Provision of injectable contraceptives	
			c) Insertion and removal of Intrauterine device (IUD)s	
			d) Insertion and removal of contraceptive implants with local anaesthesia	
			e) Provision of barriers methods	
			f) Provision of emergency contraception	
			g) Provision of vaginal rings and patches	
			h) Vasectomy with local anaesthesia	
			i) Tubal ligation	
	Detection and management of Sexually Transmitted Infection (STI) and other infections	Syphilis	a) Screening / diagnosis of Syphilis by laboratory test	
			b) Treatment for Syphilis	
		Human Immunodeficiency Virus (HIV)	a) Screening of Human Immunodeficiency Virus (HIV)	
			b) Treatment for Human Immunodeficiency Virus (HIV) (Antiretroviral Therapy (ART))	
			c) Provide post exposure prophylaxis for Human Immunodeficiency Virus (HIV) discordant couple	
		Gonorrhoea	a) Screening / diagnosis of Gonorrhoea	
			b) Treatment for Gonorrhoea	
		Chlamydia	a) Screening / diagnosis of Chlamydia	
			b) Treatment for Chlamydia	
		Malaria	a) Prophylactic antimalarial (Intermittent Preventive Treatment (IPT))	
			b) Diagnosis of malaria	
			c) Management of malaria	
		Other infections	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	

Evidence based guidelines			
Optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting (3)			
Medical eligibility criteria for contraceptive use (4)	Selected practice recommendations for contraceptive use (5)	A guide to family planning for community health workers and their clients (6)	Reproductive choices and family planning for people living with HIV - Counselling tool (7)
		WHO Guidelines for safe surgery (8)	
Reproductive choices and family planning for people living with HIV - Counselling tool (7)	WHO laboratory manual for the examination and processing of human semen (9)	Service delivery approaches to HIV testing and counselling (HTC): A strategic policy framework (10)	
Updated WHO Policy Recommendation: Intermittent Preventive Treatment of malaria in pregnancy using Sulfadoxine-Pyrimethamine (IPTp-SP) (11)			

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	Evidence based guidelines
			a) Diagnosis and treatment for bacterial vaginosis, trichomonas, candidiasis	
	Screening and management of cancers of the reproductive system	Cervix cancer	a) Papanicolaou test	
			b) Visual Inspection with Acetic Acid (VIA)/Magnified VIA (VIAM)	
			c) Human Papilloma Virus (HPV) test	
			d) Colposcopy	
			e) Colposcopy and Biopsy / Pathology lab-test	
			f) Treatment for precancerous lesion (cryotherapy)	
		Breast cancer	a) Breast examination	
			b) Diagnostic by image (mammography, ultrasound)	
			c) Biopsy / Pathology lab-test	
	Management of gender-based violence (GBV)	Post-rape care	a) Management of post-rape care	WHO guidelines: Use of cryotherapy for cervical intraepithelial neoplasia (12)

Evidence based guidelines
WHO guidelines: Use of cryotherapy for cervical intraepithelial neoplasia (12)
WHO laboratory manual for the examination and processing of human semen (9)

Table 5. Evidence-based guidelines supporting essential interventions for pregnancy

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	Evidence based guidelines
Pregnancy	First assessment	Basic Medical Examination	a) Check-up vital signs / measuring weight and height / Anthropometry/ Vaginal examination	Guidelines on maternal, newborn, child and adolescent health: Recommendations on maternal and perinatal health (11)
		Preventive Immunization	a) Vaccine for Tetanus	
	Emergency assessment	Emergency preparedness and referral	a) Emergency care and pre-referral treatment	
	Detection and management of Sexually Transmitted Infection (STI) and other infections	Syphilis	a) Screening / diagnosis of Syphilis by laboratory test	
			b) Treatment for Syphilis	
		Human Immunodeficiency Virus (HIV)	a) Screening of Human Immunodeficiency Virus (HIV)	
			b) Prevention Mother To Child Transmission (PMTCT)	
			c) Treatment for Human Immunodeficiency Virus (HIV) (Antiretroviral Therapy (ART))	
		Malaria	a) Prophylactic antimalarial (Intermittent Preventive Treatment (IPT))	
			b) Diagnosis of malaria	
			c) Management of malaria	
		Rubella	a) Diagnosis and treatment for rubella	
		Tuberculosis	a) Diagnosis and treatment for tuberculosis	
		Other infections	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	
			a) Diagnosis and treatment of other Sexually Transmitted Infection (STI) / Reproductive Tract Infections (RTI): Candida vaginitis, gonorrhoea, chlamydia, bacterial vaginosis and trichomoniasis	
	Detection and management of maternal chronic medical conditions	Iron Deficiency Anaemia	a) Diagnosis of anaemia	
			b) Iron and folic acid supplementation	
			c) Anthelminthic (deworm)	
			d) Management of severe anaemia (considering blood transfusion)	
		Hypertension and pre-eclampsia	a) Diagnosis of Pre-eclampsia-Eclampsia	
			b) Supplement calcium	
			c) Low-dose aspirin	
			d) Antihypertensive drugs	
			e) Magnesium sulfate	
			f) Fetal monitoring	
			g) Induction of labour	

Evidence based guidelines			
WHO recommended interventions for improving maternal and newborn health (14)	Optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting (3)	Counselling for maternal and newborn health care, a handbook for building skills (15)	Guideline: Vitamin A supplementation in pregnant women (16)
		Updated WHO Policy Recommendation: Intermittent Preventive Treatment of malaria in pregnancy using Sulfadoxine-Pyrimethamine (IPTp-SP) (11)	Guidelines for the treatment of Malaria (17)
		Weekly iron-folic acid supplementation in women of reproductive age: its role in promoting optimal maternal and child health (18)	Guideline: Daily iron and folic acid supplementation in pregnant women (19)
		Prevention and treatment of pre-eclampsia and eclampsia (20)	WHO recommendations for induction of labour (21)

Table 5. Evidence-based guidelines supporting essential interventions for pregnancy

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	Evidence based guidelines
		Diabetes	a) Glucose testing for detection	Guidelines on maternal, newborn, child and adolescent health: Recommendations on maternal and perinatal health
			b) Treatment for insulin-dependent diabetic mother	
	Management of prelabour rupture of the membranes (PRM)	Assessment of PRM	a) Diagnosis and laboratory test	
			b) Fetal monitoring	
		Preterm	a) Provision antibiotics if indicated	
			b) Provision of tocolytics to prolong pregnancy if indicated	
			c) Provision of corticosteroids for prevention of neonatal respiratory distress syndrome	
			d) Provision of magnesium sulfate for neuroprotection of the newborn	
		Term	a) Provision antibiotics if indicated	
			b) Induction of labour	
	Management of malpresentation at term	Malpresentation at term	a) Diagnosis of breech at term	
			b) External Cephalic Version	
			c) Monitoring progress of labour	
	Management of female genital mutilation	Female genital mutilation	a) Perineal incision with local anaesthesia	
			b) Identify the need of caesarean section	
	Management of ectopic pregnancy	Ectopic pregnancy	a) Pregnancy test	
			b) Ultrasound scan	
			c) Laparotomy	
			d) Blood transfusion	
	Management of miscarriage and abortion	Miscarriage and abortion	a) Pregnancy test	
			b) Ultrasound scan	
		Miscarriage	a) Treatment of infections	
			b) Management of bleeding (considering Vacuum Aspiration and blood transfusion)	
			c) Management of major injuries (considering laparotomy)	
		Safe abortion when indicated and legally permitted	a) Medical uterine evacuation for the first trimester	
			b) Vacuum Aspiration for the first trimester	
			c) Medical uterine evacuation beyond the first trimester	

Evidence based guidelines			
		Managing complications in pregnancy and childbirth: A guide for midwives and doctors (22)	WHO recommendations for induction of labour (21)
		Managing complications in pregnancy and childbirth: A guide for midwives and doctors (22)	Safe abortion: technical and policy guidance for health systems (23)

Table 6. Evidence-based guidelines supporting essential interventions for childbirth

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	Evidence based guidelines
Childbirth	First assessment	Basic Medical Examination	a) Check-up vital signs / Vaginal examination	WHO recommended interventions for improving maternal and newborn health (14)
	Emergency assessment	Emergency preparedness and referral	a) Emergency care and pre-referral treatment	
	Mother care	Childbirth	a) Monitoring progress of labour	
			b) Active management of the third stage of labour (AMTSL): Prophylactic use of uterotonics	
			c) Spontaneous delivery	
			d) Assisted delivery (vacuum extraction) if needed	
	Management of complications of labour and delivery	Assessment for complications	a) Diagnosis of complications	
			b) Fetal monitoring	
		Postpartum haemorrhage (PPH)	a) Use of uterotonics of choice for the treatment of PPH	
			b) Manual removal of placenta (include use of antibiotics and uterotonics)	
			c) Blood transfusion	
			d) Use of balloon tamponade	
			e) Use of artery embolization	
			f) Hysterectomy	
		Caesarean section due maternal/fetal indication	a) Use of prophylactic antibiotic	
			b) Caesarean section	
			c) Use of uterotonics	
		Other surgical procedures depending on the complication	a) Episiotomy	
			a) Repair of ruptured uterus	
			a) Correct uterine inversion	
			a) Laparotomy or other abdominal surgical interventions during childbirth	
			a) Craniotomy and craniocentesis	
		Human Immunodeficiency Virus (HIV) positive women	a) Screening of Human Immunodeficiency Virus (HIV)	
			b) Prevention Mother To Child Transmission (PMTCT)	

Evidence based guidelines		
Optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting (3)	Managing complications in pregnancy and childbirth: A guide for midwives and doctors (22)	WHO Guidelines for safe surgery (8)

Table 7. Evidence-based guidelines supporting essential interventions for the postnatal mother

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	Evidence based guidelines
Post-Natal Mother	First assessment	Basic Medical Examination	a) Check-up vital signs	WHO recommended interventions for improving maternal and newborn health (14)
			b) Screening for cervix and breast cancer	
		Support for breast feeding	a) Management of mastitis / breast abscess	
	Emergency assessment	Emergency preparedness and referral	a) Emergency care and pre-referral treatment	
	Prevention and management of post partum bleeding	Anaemia	a) Management of post partum bleeding	
			b) Diagnosis of anaemia	
			c) Iron supplementation	
			d) Anthelminthic (deworm)	
			e) Management of severe anaemia (considering blood transfusion)	
	Detection and management of post partum infection	Human Immunodeficiency Virus (HIV)	a) Diagnosis and treatment for Human Immunodeficiency Virus (HIV) (Antiretroviral Therapy (ART))	
		Malaria	a) Diagnosis and management of malaria	
		Other infection	a) Diagnosis and management of postpartum endometritis and salpingitis	
			a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	
	Postoperative care	Assessment of postoperative care	a) Postcaesarean care	
			b) Diagnosis of pelvic abscess, peritonitis or other postoperative complication	
		Surgical procedure	c) Surgical management of pelvic abscess, peritonitis or other postoperative complication with laparotomy	

Evidence based guidelines		
Optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting (3)	WHO guidelines: Use of cryotherapy for cervical intraepithelial neoplasia (12)	
	WHO recommendations for the prevention and treatment of postpartum haemorrhage (24)	
	Updated WHO Policy Recommendation: Intermittent Preventive Treatment of malaria in pregnancy using Sulfadoxine-Pyrimethamine (IPTp-SP) (11)	Guidelines for the treatment of Malaria (17)
	Managing complications in pregnancy and childbirth: A guide for midwives and doctors (22)	

Table 8. Evidence-based guidelines supporting essential interventions for the postnatal baby

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	Evidence based guidelines
Post-Natal Baby (Newborn)	Childbirth: Essential newborn care	Immediate care at birth	a) Dry baby thoroughly on mother's chest skin to skin and cover	Guidelines on maternal, newborn, child and adolescent health: Recommendations on newborn health (25)
			b) Assess breathing	
			c) Clamp and cut cord / Check cord vessels / Check for bleeding and signs of cord infection	
			d) Prevent hypothermia when skin to skin is not possible	
			e) Support breastfeeding within the first hour	
		Emergency support	a) Basic neonatal resuscitation	
			b) Management of brain injury and intracranial haemorrhage (ICH)	
		Routine care	a) Full clinical examination / Check vital signs / measuring weight	
			b) Thermal Care	
			c) Breastfeeding support	
			d) Vitamin K prophylaxis and Immunization	
			e) Cord care	
			f) Prophylaxis for eye infection	
			g) Prophylactic antibiotics for neonates at risk of infection	
	Detection and management of congenital infections	Congenital infections	a) Diagnosis of congenital syphilis	
			b) Prophylactic treatment for congenital syphilis	
			c) Screening of Human Immunodeficiency Virus (HIV) (Dried Blood Spot (DBS))	
			d) Prophylactic treatment for Human Immunodeficiency Virus (HIV) (Antiretroviral Therapy (ART))	
	Detection and management of common infections, illness and complications in the neonate and young infant	Cord infection	a) Detection and management of cord infection	
		Jaundice	a) Diagnosis of jaundice	
			b) Management of jaundice	

Evidence based guidelines				
Pocket book of hospital care for children: guidelines for the management of common illnesses (26)	Integrated management of childhood illness (IMCI): Caring for Newborns and Children in the Community. Caring for the Sick Child, Chart Booklet (27)	Recommendations for management of common childhood conditions (28)	Baby-Friendly Hospital Initiative(BFHI), Breastfeeding promotion and support in a baby-friendly hospital: a 20-hour course for maternity staff (30)	
			Guidelines on basic newborn resuscitation (31)	
			Baby-Friendly Hospital Initiative(BFHI), Breastfeeding promotion and support in a baby-friendly hospital: a 20-hour course for maternity staff (30)	
		Integrated management of childhood illness(IMCI) for high HIV settings, chart booklet (31)	Antiretroviral therapy for HIV infection in infants and children: towards universal access, recommendations for a public health approach (32)	WHO recommendations on the diagnosis of HIV infection in infants and children (33)
		Recommendations for management of common childhood conditions (28)		

Table 8. Evidence-based guidelines supporting essential interventions for the postnatal baby

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	Evidence based guidelines
Post-Natal Baby (Newborn)		Anaemia	a) Diagnosis of anaemia	Guidelines on maternal, newborn, child and adolescent health: Recommendations on newborn health (25)
			b) Management of anaemia	
			c) Pre-referral treatment for severe anaemia (blood transfusion)	
		Pneumonia	a) Diagnosis of pneumonia	
			b) Management of pneumonia and its complications	
		Diarrhoea	a) Detection and management of diarrhoea	
		Septicaemia and/or meningitis	a) Diagnosis of septicaemia and/ or meningitis: Blood Culture, Lumbar Puncture, Urine Analysis	
			b) Management of septicaemia and/or meningitis and its complications	
	Specific interventions for small, low weight birth and pre-term babies	Apnoea	a) Prevention of Apnoea	
		Respiratory Distress Syndrome (RDS)	a) Diagnosis of RDS and provision of prophylaxis surfactant	
			b) Apply Continuous Positive Airway Pressure (CPAP) with nasal cannula or face mask	
			c) Ventilatory support and oxygen therapy including mechanical ventilation and Continuous Positive Airway Pressure (CPAP)	
		Necrotizing enterocolitis	a) Diagnosis of necrotizing enterocolitis	
			b) Management of necrotizing enterocolitis	
	Supportive care for all sick neonate and sick young infant	Supportive care	a) Monitor blood glucose and management of hypoglycaemia	
			b) Monitor nutrition and provision of tube feeding support	
			c) Provision of intravenous therapy	
			d) Monitor temperature and management of hypothermia (Kangaroo mother care)	
			e) Monitor oxygenation and management of hypoxia	
		Triage, emergency preparedness and referral	a) Detection of emergency signs, emergency care and pre-referral treatment	
			b) Advanced resuscitation	
	Further assessment for all young infant	Clinical visit	a) Full clinical examination / check vital signs / measuring weight / check haemoglobin	
			b) Provision of vaccines (Diphtheria Pertussis Tetanus (DPT) + Haemophilus Influenza type B (HIB), Oral Polio Vaccine (OPV), Hepatitis B)	
			c) Breastfeeding support and replacement feeding if necessary	
			d) Monitoring growth and development	
		Optional interventions	a) Male circumcision	

Evidence based guidelines			
Pocket book of hospital care for children: guidelines for the management of common illnesses (26)	Integrated management of childhood illness (IMCI): Caring for Newborns and Children in the Community. Caring for the Sick Child, Chart Booklet (27)	Optimal feeding of low birthweight infants in low- and middle-income countries (34)	
		Manual for the health care of children in humanitarian emergencies (35)	
		Manual for early infant male circumcision under local anaesthesia (36)	

Table 9. Evidence-based guidelines supporting essential interventions for infancy and childhood

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	Evidence based guidelines
Infancy and childhood	Essential care for monitoring growth and early childhood development	Routine care	a) Full clinical examination / check vital signs / measuring weight	Guidelines on maternal, newborn, child and adolescent health: Recommendations on child health (37)
			b) Provision of vaccines	
			c) Growth monitoring	
			d) Early childhood development monitoring	
			e) Breastfeeding support and replacement feeding if necessary	
			f) Vitamin A supplementation	
			g) Deworming (Mebendazole)	
	Detection and management of common infections, illness and complications in infancy and childhood	Severe Acute Malnutrition (SAM)	a) Diagnosis of SAM	
			b) Feeding support	
			c) Pre-referral treatment for SAM	
		Anaemia	a) Diagnosis of anaemia	
			b) Management of anaemia	
			c) Pre-referral treatment for severe anaemia (Blood transfusion)	
		Pneumonia	a) Differential diagnosis for pneumonia	
			b) Management of pneumonia and its complications	
		Wheeze (Asthma, Bronchiolitis)	a) Diagnosis of condition with wheeze	
			b) Management of condition with wheeze	
		Tuberculosis	a) Diagnosis of tuberculosis	
			b) Management of tuberculosis	
		Diarrhoea	a) Differential diagnosis and management of diarrhoea and dysentery	
		Septicaemia and/ or meningitis	a) Diagnosis of septicaemia and/or meningitis : Blood Culture, Lumbar Puncture, Urine Analysis	
		Septicaemia and/ or meningitis	b) Management of septicaemia and/or meningitis and its complications	
		Malaria	a) Diagnosis and management of malaria	
		Dengue fever	a) Diagnosis and management of dengue fever	
		Measles	a) Diagnosis and management of measles	

Evidence based guidelines				
Pocket book of hospital care for children: guidelines for the management of common illnesses (26)	Integrated management of childhood illness(IMCI): Caring for Newborns and Children in the Community. Caring for the Sick Child, Chart Booklet (27)	Integrated management of childhood illness (IMCI): Chart Booklet, standard (38)	Recommendations for management of common childhood conditions (28)	Baby-Friendly Hospital Initiative(BFHI), Breastfeeding promotion and support in a baby-friendly hospital: a 20-hour course for maternity staff (29) Optimal feeding of low birthweight infants in low- and middle- income countries (34)

Table 9. Evidence-based guidelines supporting essential interventions for infancy and childhood

Continuum of Care	General Action by chronologically: First assessment / Infections / Illness / Surgery / Emergency and Pre-referral Treatment	Conditions	Steps of specific procedures	Evidence based guidelines
Infancy and childhood		Human Immunodeficiency Virus (HIV)	a) Diagnosis of Human Immunodeficiency Virus (HIV)	Guidelines on maternal, newborn, child and adolescent health: Recommendations on child health (37)
			b) Treatment for Human Immunodeficiency Virus (HIV) (Antiretroviral Therapy (ART))	
			c) Management of other opportunistic infections in Human Immunodeficiency Virus (HIV)	
		Eye infection	a) Detection and management of eye infection / conjunctivitis	
		Ear infection	a) Detection and management of ear infection	
		Mouth infection	a) Detection and management of mouth infection / thrush	
		Skin infection	a) Diagnosis and management of skin infections	
		Chicken pox	a) Detection and management of chicken pox	
	Supportive care for all sick infant and child	Supportive care	a) Management of hypoglycaemia	
			b) Tube feeding support	
			c) Intravenous therapy	
			d) Management of hypothermia	
			e) Management of hypoxia	
			f) Pain control	
		Triage, emergency preparedness and referral	a) Detection of emergency signs, emergency care and pre-referral treatment	
			b) Advanced resuscitation	
	Further assessment for all infant and child	Optional interventions	a) Male circumsicion	

Evidence based guidelines					
Pocket book of hospital care for children: guidelines for the management of common illnesses (26)	Integrated management of childhood illness(IMCI): Caring for Newborns and Children in the Community. Caring for the Sick Child, Chart Booklet (27)	Integrated management of childhood illness (IMCI): Chart Booklet, standard (38)	Integrated management of childhood illness(IMCI) for high HIV settings, chart booklet (31)	Antiretroviral therapy for HIV infection in infants and children: towards universal access, recommendations for a public health approach (32)	WHO recommendations on the diagnosis of HIV infection in infants and children (33)
			Recommendations for management of common childhood conditions (28)		
			Optimal feeding of low birthweight infants in low- and middle- income countries (34)		
			Manual for the health care of children in humanitarian emergencies (35)		
			Manual for early infant male circumcision under local anaesthesia (36)		

Table 10. References

Subject	Title	Year	Link
REPRODUCTIVE HEALTH	Monitoring national cervical cancer prevention and control programmes: quality control and quality assurance for visual inspection with acetic acid (VIA)-based programmes	2013	http://apps.who.int/iris/bitstream/10665/79316/1/9789241505260_eng.pdf
	A guide to family planning for community health workers and their clients (6)	2012	http://www.who.int/reproductivehealth/publications/family_planning/9789241503754/en/index.html
	Optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting (3)	2012	http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/978924504843/en/
	Cryosurgical equipment for the treatment of precancerous cervical lesions and prevention of cervical cancer	2012	http://apps.who.int/iris/bitstream/10665/75853/1/9789241504560_eng.pdf
	Female Condom: generic specification, prequalification and guidelines for procurement	2012	http://www.unfpa.org/webdav/site/global/shared/procurement/08_QA/Female%20Condom%20Generic%20Specification%20EN.pdf
	Family planning: a global handbook for providers (2)	2011	http://www.who.int/reproductivehealth/publications/family_planning/9780978856304/en/
	WHO guidelines: Use of cryotherapy for cervical intraepithelial neoplasia (12)	2011	http://whqlibdoc.who.int/publications/2011/9789241502856_eng.pdf
	Male Latex Condom: Specification, Prequalification and Guidelines for Procurement	2011	http://www.who.int/reproductivehealth/publications/family_planning/9789241599900/en/
	WHO laboratory manual for the examination and processing of human semen (9)	2010	http://www.who.int/reproductivehealth/publications/infertility/9789241547789/en/
	The TCu380A Intrauterine Contraceptive Device (IUD): Specification, Prequalification and Guidelines for Procurement	2010	http://www.who.int/reproductivehealth/publications/family_planning/9789241500999/en/
	Medical eligibility criteria for contraceptive use (4)	2009	http://whqlibdoc.who.int/publications/2010/9789241563888_eng.pdf
	Selected practice recommendations for contraceptive use (5)	2008	http://www.who.int/reproductivehealth/publications/family_planning/9241562846index/en/ http://whqlibdoc.who.int/hq/2008/WHO_RHR_08.17_eng.pdf
	Reproductive choices and family planning for people living with HIV - Counselling tool (7)	2007	http://www.who.int/reproductivehealth/publications/family_planning/9241595132/en/index.html
	Comprehensive cervical cancer control, a guide to essential practice	2006	http://whqlibdoc.who.int/publications/2006/9241547006_eng.pdf
	Decision making tool for family planning clients and providers	2005	http://www.who.int/reproductivehealth/publications/family_planning/9241593229/en/index.html
	Clinical management of rape survivors: Developing protocols for use with refugees and internally displaced persons	2004	http://whqlibdoc.who.int/publications/2004/924159263X.pdf
	Guidelines for medico-legal care for victims of sexual violence	2003	http://whqlibdoc.who.int/publications/2004/924154628X.pdf
MATERNAL HEALTH	Guidelines on maternal, newborn, child and adolescent health: Recommendations on maternal and perinatal health (13)	2013	http://www.who.int/maternal_child_adolescent/documents/guidelines-recommendations-maternal-health.pdf
	Guideline: Daily iron and folic acid supplementation in pregnant women (19)	2012	http://apps.who.int/iris/bitstream/10665/77770/1/9789241501996_eng.pdf
	Safe abortion: technical and policy guidance for health systems (23)	2012	http://apps.who.int/iris/bitstream/10665/70914/1/9789241548434_eng.pdf
	Updated WHO Policy Recommendation: Intermittent preventive treatment of malaria in pregnancy using Sulfadoxine-Pyrimethamine (IPTp-SP) (11)	2012	http://www.who.int/malaria/iptp_sp_updated_policy_recommendation_en_102012.pdf
	WHO recommendations for the prevention and treatment of postpartum haemorrhage (24)	2012	http://apps.who.int/iris/bitstream/10665/75411/1/9789241548502_eng.pdf
	Guideline: Vitamin A supplementation in pregnant women (16)	2011	http://www.who.int/nutrition/publications/micronutrients/guidelines/vas_pregnant/en/
	Prevention and treatment of pre-eclampsia and eclampsia (20)	2011	http://whqlibdoc.who.int/publications/2011/9789241548335_eng.pdf
	WHO recommendations for induction of labour (21)	2011	http://whqlibdoc.who.int/publications/2011/9789241501156_eng.pdf
	Guidelines for the treatment of Malaria (17)	2010	http://whqlibdoc.who.int/publications/2010/9789241547925_eng.pdf
	Weekly iron-folic acid supplementation in women of reproductive age: its role in promoting optimal maternal and child health (18)	2009	http://www.who.int/nutrition/publications/micronutrients/weekly_iron_folicacid.pdf
	Counselling for maternal and newborn health care, a handbook for building skills (15)	2009	http://www.who.int/maternal_child_adolescent/documents/9789241547628/en/

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Subject	Title	Year	Link
	Managing complications in pregnancy and childbirth: A guide for midwives and doctors (22)	2007	http://whqlibdoc.who.int/publications/2007/9241545879_eng.pdf
	WHO recommended interventions for improving maternal and newborn health (14)	2007	http://www.who.int/maternal_child_adolescent/documents/who_mps_0705/en/index.html
CHILD HEALTH	Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection, recommendations for a public health approach	2013	http://www.who.int/hiv/pub/guidelines/arv2013/download/en/
	Guidelines on maternal, newborn, child and adolescent health: Recommendations on child health (37)	2013	http://www.who.int/maternal_child_adolescent/documents/guidelines-recommendations-child-health.pdf
	Guidelines on maternal, newborn, child and adolescent health: Recommendations on newborn health (25)	2013	http://www.who.int/maternal_child_adolescent/documents/guidelines-recommendations-newborn-health.pdf
	Pocket book of hospital care for children: guidelines for the management of common illnesses (26)	2013	http://www.who.int/maternal_child_adolescent/documents/child_hospital_care/en/index.html
	Born too soon: The global action report on preterm birth	2012	http://www.who.int/pmnch/media/news/2012/preterm_birth_report/en/
	Caring for the newborn at home: A training course for community health workers	2012	http://www.who.int/maternal_child_adolescent/documents/caring_for_newborn/en/index.html
	Guidelines on basic newborn resuscitation (30)	2012	http://www.who.int/maternal_child_adolescent/documents/basic_newborn_resuscitation/en/
	Recommendations for management of common childhood conditions (28)	2012	http://www.who.int/maternal_child_adolescent/documents/management_childhood_conditions/en/index.html
	Integrated management of childhood illness(IMCI): Caring for Newborns and Children in the Community. Caring for the Sick Child, Chart Booklet (27)	2011	http://whqlibdoc.who.int/publications/2011/9789241548045_Chart_Booklet_eng.pdf
	Manual for early infant male circumcision under local anaesthesia (36)	2011	http://www.who.int/hiv/pub/malecircumcision/manual_infant/en/index.html
	Optimal feeding of low birthweight infants in low-and middle-income countries (34)	2011	http://www.who.int/maternal_child_adolescent/documents/9789241548366.pdf
	Antiretroviral therapy for HIV infection in infants and children: towards universal access, recommendations for a public health approach (32)	2010	http://whqlibdoc.who.int/publications/2010/9789241599801_eng.pdf
	WHO recommendations on the diagnosis of HIV infection in infants and children (33)	2010	http://whqlibdoc.who.int/publications/2010/9789241599085_eng.pdf
	Baby-Friendly Hospital Initiative(BFHI), Breastfeeding promotion and support in a baby-friendly hospital: a 20-hour course for maternity staff (29)	2009	http://whqlibdoc.who.int/publications/2009/9789241594981_eng.pdf
	Home visits for the newborn child: a strategy to improve survival	2009	http://whqlibdoc.who.int/hq/2009/WHO_FCH_CAH_09.02_eng.pdf
	Integrated management of childhood illness(IMCI) for high HIV settings, chart booklet (31)	2008	http://whqlibdoc.who.int/publications/2008/9789241597388_eng.pdf
	Integrated management of childhood illness(IMCI): Chart Booklet, standard (38)	2008	http://whqlibdoc.who.int/publications/2008/9789241597289_eng.pdf
	Manual for the health care of children in humanitarian emergencies (35)	2008	http://whqlibdoc.who.int/publications/2008/9789241596879_eng.pdf
	Emergency Triage Assessment and Treatment(ETAT), Manual for participants	2005	http://www.who.int/maternal_child_adolescent/documents/9241546875/en/index.html
	Kangaroo mother care, a practical guide	2003	http://whqlibdoc.who.int/publications/2003/9241590351.pdf
	Managing newborn problems: a guide for doctors, nurses, and midwives	2003	http://whqlibdoc.who.int/publications/2003/9241546220.pdf
CLINICAL TRANSFUSION	Screening Donated Blood for Transfusion Transmissible Infections - Recommendations	2010	http://www.who.int/bloodsafety/ScreeningDonatedBloodforTransfusion.pdf
	Screening Donated Blood for Transfusion Transmissible Infections - Recommendations	2009	http://whqlibdoc.who.int/publications/2009/9789241547888_eng.pdf
	Safe Blood and Blood Products: Module 1 - Safe Blood Donation	2009	http://www.who.int/entity/bloodsafety/transfusion_services/Module1.pdf
	Safe Blood and Blood Products: Module 3 - Blood Group Serology	2009	http://www.who.int/entity/bloodsafety/transfusion_services/Module3.pdf
	Safe Blood and Blood Products: Manual on the management, maintenance and use of blood cold chain equipment	2005	http://www.who.int/entity/bloodsafety/Manual_on_Management,Maintenance_and_Use_of_Blood_Cold_Chain_Equipment.pdf
	External Quality Assessment of Transfusion Laboratory Practice - Guidelines on Establishing an EQA Scheme in Blood Group Serology	2004	http://www.who.int/entity/bloodsafety/EQA_in_Blood_Group_Serology.pdf
	The Blood Cold Chain - Guide to the selection and procurement of equipment and accessories	2002	http://www.who.int/entity/bloodsafety/testing_processing/components/en/BloodColdChain.pdf

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Subject	Title	Year	Link
	The Clinical Use of Blood - Handbook	2002	http://www.who.int/entity/bloodsafety/clinical_use/en/Handbook_EN.pdf
	The Clinical Use of Blood in General Medicine, Obstetrics, Paediatrics, Surgery & Anaesthesia, Trauma & Burns	2001	http://www.who.int/entity/bloodsafety/clinical_use/en/Manual_EN.pdf
LABORATORY	Service delivery approaches to HIV testing and counselling (HTC): A strategic policy framework	2012	http://www.who.int/hiv/pub/vct/htc_framework/en/
	WHO expert meeting report on short, medium, and longer term product development priorities in HIV-related diagnostics (10)	2012	http://apps.who.int/iris/bitstream/10665/75971/1/9789241504522_eng.pdf
	Development of National Health Laboratory Policy and Plan	2011	http://www.wpro.who.int/health_technology/documents/docs/Nationalhealthlab2_0F38.pdf
	WHO Global Malaria Programme - Good practices for selecting and procuring rapid diagnostic tests for malaria	2011	http://whqlibdoc.who.int/publications/2011/9789241501125_eng.pdf
	Laboratory quality management system training toolkit	2009	http://www.who.int/ihr/training/laboratory_quality/en/index.html
	Malaria Microscopy Quality Assurance Manual	2009	http://www.who.int/malaria/publications/malaria_microscopy_QA_manual.pdf
	Parasitological confirmation of malaria diagnosis, Report of a WHO technical consultation	2009	http://whqlibdoc.who.int/publications/2010/9789241599412_eng.pdf
	Manual for Laboratory Equipmentm Maintenance	2008	http://whqlibdoc.who.int/publications/2008/9789241596350_eng_low.pdf
	Guidelines for assuring the accuracy and reliability of HIV rapid testing: Applying a quality system approach	2005	http://whqlibdoc.who.int/publications/2005/9241593563_eng.pdf
	HIV rapid test training package	2005	http://www.who.int/diagnostics_laboratory/documents/guidance/hivrttraining_overview/en/index.html
	Laboratory biosafety manual	2004	http://whqlibdoc.who.int/publications/2004/9241546506.pdf
	Basic Laboratory Procedure in Clinical Bacteriology	2003	http://whqlibdoc.who.int/publications/2003/9241545453.pdf
	Manual of Basic Techniques for a Health Laboratory	2003	http://whqlibdoc.who.int/publications/2003/9241545305.pdf
	Guidelines for Appropriate Evaluations of HIV Testing Technologies in Africa	2002	http://whqlibdoc.who.int/afro/2002/a82959_eng.pdf
SURGERY AND ANESTHESIA	WHO Emergency and essential surgical care	2013	http://www.who.int/surgery/en/ http://www.who.int/surgery/activities/en/
	WHO Integrated management for emergency and essential surgical care (IMEESC) toolkit	2009	http://www.who.int/surgery/publications/imeesc/en/index.html http://apps.who.int/bookorders/anglais/detart1.jsp?codlan=1&codcol=99&codcch=42
	WHO Guidelines for safe surgery (8)	2009	http://whqlibdoc.who.int/publications/2009/9789241598552_eng.pdf
	WHO Aide memoire on surgical and emergency obstetrical care at first referral level	2003	http://www.who.int/surgery/publications/en/Aide-Memoire_surgery.pdf
INJECTION SAFETY	Department of Vaccines and Biologicals: Safety of mass immunization campaigns, aide-memoire and check list	2013	http://www.who.int/entity/injection_safety/toolbox/en/AM_SafetyCampaigns.pdf
	Safe management of wastes from health-care activities	2013	http://www.healthcarewaste.org/fileadmin/user_upload/resources/Safe-Management-of-Wastes-from-Health-Care-Activities-2.pdf
	Safe Injection Global Network. Advocacy Booklet	2011	http://www.who.int/injection_safety/sign/sign_advocacy_booklet.pdf
	WHO Best practices for injections and related procedures	2010	http://whqlibdoc.who.int/publications/2010/9789241599252_eng.pdf
	A guide for the Quality Assurance of Single Use Injection Equipment	2003	http://www.who.int/entity/injection_safety/toolbox/docs/en/InjEquQualityGuiden.pdf
	WHO Guiding principles to ensure injection device security. Document No. WHO/BCT/03	2003	http://www.who.int/entity/injection_safety/toolbox/docs/en/Guiding_Principle_Inj.pdf
	WHO Aide memoire on injection safety	1999	http://www.who.int/injection_safety/about/country/en/AMENG.pdf
	WHOÐUNICEFÐUNFPA Joint statement on the use of autoÐdisable syringes in immunization services. Document No. WHO/V&B/99.25	1999	http://www.who.int/entity/injection_safety/toolbox/en/Bundling.pdf

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Subject	Title	Year	Link
HEALTH CARE FACILITIES	Mercury and health. Fact sheet No. 361	2013	http://www.who.int/mediacentre/factsheets/fs361/en/
	Safe management of wastes from health-care activities	2013	http://www.healthcarewaste.org/fileadmin/user_upload/resources/Safe-Management-of-Wastes-from-Health-Care-Activities-2.pdf
	Replacement of mercury thermometers and sphygmomanometers in health care: Technical guidance	2011	http://whqlibdoc.who.int/publications/2011/9789241548182_eng.pdf
	Natural Ventilation for Infection Control in Health-Care Settings	2009	http://whqlibdoc.who.int/publications/2009/9789241547857_eng.pdf
	Sterilization manual for health centres	2009	http://www2.paho.org/hq/dmdocuments/2009/sterilization_manual_2009.pdf
	WHO guidelines on Hand Hygiene in healthcare	2009	http://whqlibdoc.who.int/publications/2009/9789241597906_eng.pdf
	Standard precautions in healthcare	2007	http://www.who.int/csr/resources/publications/EPR_AM2_E7.pdf
	Mercury in health care, Policy paper	2005	http://www.who.int/water_sanitation_health/medicalwaste/mercurypolpap230506.pdf
	Infection control	2004	http://www.who.int/injection_safety/AM_InfectionControl_Final.pdf
	Safe health-care waste management, policy paper	2004	http://www.who.int/water_sanitation_health/medicalwaste/en/hcwmpolicye.pdf
	Healthcare worker safety, aide-memoire	2003	http://www.who.int/injection_safety/toolbox/docs/en/AM_HCW_Safety.pdf
	Safe health-care waste management, aide-memoire	2000	http://www.who.int/water_sanitation_health/medicalwaste/aidemem.pdf
	Useful site for Healthcare Waste Management	n/a	http://www.healthcarewaste.org/ http://www.healthcarewaste.org/resources/technologies/

2.3 References

1. Essential interventions, commodities and guidelines for reproductive, maternal, newborn and child health. Geneva: World Health Organization; 2011 (http://www.who.int/pmnch/topics/part_publications/essential_interventions_18_01_2012.pdf, accessed 22 May 2014).
2. Family planning: a global handbook for providers. Geneva: World Health Organization;2011. (http://www.who.int/reproductivehealth/publications/family_planning/9780978856304/en/, accessed 22 May 2014).
3. Optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting. Geneva: World Health Organization;2012. (http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/978924504843/en/, accessed 22 May 2014).
4. Medical eligibility criteria for contraceptive use. Geneva: World Health Organization;2009. (http://whqlibdoc.who.int/publications/2010/9789241563888_eng.pdf, accessed 22 May 2014).
5. Selected practice recommendations for contraceptive use. Geneva: World Health Organization;2008. (http://www.who.int/reproductivehealth/publications/family_planning/9241562846index/en/ http://whqlibdoc.who.int/hq/2008/WHO_RHR_08.17_eng.pdf, accessed 22 May 2014)."
6. A guide to family planning for community health workers and their clients. Geneva: World Health Organization;2012. (http://www.who.int/reproductivehealth/publications/family_planning/9789241503754/en/index.html, accessed 22 May 2014).
7. Reproductive choices and family planning for people living with HIV - Counselling tool. Geneva: World Health Organization;2007. (http://www.who.int/reproductivehealth/publications/family_planning/9241595132/en/index.html, accessed 22 May 2014).
8. WHO Guidelines for safe surgery. Geneva: World Health Organization;2009. (http://whqlibdoc.who.int/publications/2009/9789241598552_eng.pdf, accessed 22 May 2014).
9. WHO laboratory manual for the examination and processing of human semen. Geneva: World Health Organization;2010. (http://www.who.int/reproductivehealth/publications/infertility/9789241547789/en/, accessed 22 May 2014).
10. Service delivery approaches to HIV testing and counselling (HTC): A strategic policy framework . Geneva: World Health Organization;2012. (http://www.who.int/hiv/pub/vct/htc_framework/en/, accessed 22 May 2014).
11. Updated WHO Policy Recommendation: Intermittent preventive treatment of malaria in pregnancy using Sulfadoxine-Pyrimethamine (IPTp-SP). Geneva: World Health Organization;2012. (http://www.who.int/malaria/iptp_sp_updated_policy_recommendation_en_102012.pdf, accessed 22 May 2014).
12. WHO guidelines: Use of cryotherapy for cervical intraepithelial neoplasia. Geneva: World Health Organization;2011. (http://whqlibdoc.who.int/publications/2011/9789241502856_eng.pdf, accessed 22 May 2014).
13. Guidelines on maternal, newborn, child and adolescent health: Recommendations on maternal and perinatal health. Geneva: World Health Organization;2013. (http://www.who.int/maternal_child_adolescent/documents/guidelines-recommendations-maternal-health.pdf, accessed 22 May 2014).
14. WHO recommended interventions for improving maternal and newborn health. Geneva: World Health Organization;2007. (http://www.who.int/maternal_child_adolescent/documents/who_mps_0705/en/index.html, accessed 22 May 2014).
15. Counselling for maternal and newborn health care, a handbook for building skills. Geneva: World Health Organization;2009. (http://www.who.int/maternal_child_adolescent/documents/9789241547628/en/, accessed 22 May 2014).

16. Guideline: Vitamin A supplementation in pregnant women. Geneva: World Health Organization;2011. (http://www.who.int/nutrition/publications/micronutrients/guidelines/vas_pregnant/en/, accessed 22 May 2014).
17. Guidelines for the treatment of Malaria. Geneva: World Health Organization;2010. (http://whqlibdoc.who.int/publications/2010/9789241547925_eng.pdf, accessed 22 May 2014).
18. Weekly iron-folic acid supplementation in women of reproductive age: its role in promoting optimal maternal and child health. Geneva: World Health Organization;2009. (http://www.who.int/nutrition/publications/micronutrients/weekly_iron_folicacid.pdf, accessed 22 May 2014).
19. Guideline: Daily iron and folic acid supplementation in pregnant women. Geneva: World Health Organization;2012. (http://apps.who.int/iris/bitstream/10665/77770/1/9789241501996_eng.pdf, accessed 22 May 2014).
20. Prevention and treatment of pre-eclampsia and eclampsia. Geneva: World Health Organization;2011. (http://whqlibdoc.who.int/publications/2011/9789241548335_eng.pdf, accessed 22 May 2014).
21. WHO recommendations for induction of labour. Geneva: World Health Organization;2011. (http://whqlibdoc.who.int/publications/2011/9789241501156_eng.pdf, accessed 22 May 2014).
22. Managing complications in pregnancy and childbirth: A guide for midwives and doctors (21). Geneva: World Health Organization;2007. (http://whqlibdoc.who.int/publications/2007/9241545879_eng.pdf, accessed 22 May 2014).
23. Safe abortion: technical and policy guidance for health systems. Geneva: World Health Organization;2012. (http://apps.who.int/iris/bitstream/10665/70914/1/9789241548434_eng.pdf, accessed 22 May 2014).
24. WHO recommendations for the prevention and treatment of postpartum haemorrhage. Geneva: World Health Organization;2012. (http://apps.who.int/iris/bitstream/10665/75411/1/9789241548502_eng.pdf, accessed 22 May 2014).
25. Guidelines on maternal, newborn, child and adolescent health: Recommendations on newborn health. Geneva: World Health Organization;2013. (http://www.who.int/maternal_child_adolescent/documents/guidelines-recommendations-newborn-health.pdf, accessed 22 May 2014).
26. Pocket book of hospital care for children: guidelines for the management of common illnesses. Geneva: World Health Organization;2013. (http://www.who.int/maternal_child_adolescent/documents/child_hospital_care/en/index.html, accessed 22 May 2014).
27. Integrated management of childhood illness(IMCI): Caring for Newborns and Children in the Community. Caring for the Sick Child, Chart Booklet. Geneva: World Health Organization;2011. (http://whqlibdoc.who.int/publications/2011/9789241548045_Chart_Booklet_eng.pdf, accessed 22 May 2014).
28. Recommendations for management of common childhood conditions. Geneva: World Health Organization;2012. (http://www.who.int/maternal_child_adolescent/documents/management_childhood_conditions/en/index.html, accessed 22 May 2014).
29. Baby-Friendly Hospital Initiative(BFHI), Breastfeeding promotion and support in a baby-friendly hospital: a 20-hour course for maternity staff. Geneva: World Health Organization;2009. (http://whqlibdoc.who.int/publications/2009/9789241594981_eng.pdf, accessed 22 May 2014).
30. Guidelines on basic newborn resuscitation. Geneva: World Health Organization;2012. (http://www.who.int/maternal_child_adolescent/documents/basic_newborn_resuscitation/en/, accessed 22 May 2014).
31. Integrated management of childhood illness(IMCI) for high HIV settings, chart booklet. Geneva: World Health Organization;2008. (http://whqlibdoc.who.int/publications/2008/9789241597388_eng.pdf, accessed 22 May 2014).
32. Antiretroviral therapy for HIV infection in infants and children: towards universal access, recommendations for a public health approach. Geneva: World Health Organization;2010. (http://whqlibdoc.who.int/publications/2010/9789241599801_eng.pdf, accessed 22 May 2014).
33. WHO recommendations on the diagnosis of HIV infection in infants and children. Geneva: World Health Organization;2010. (http://whqlibdoc.who.int/publications/2010/9789241599085_eng.pdf, accessed 22 May 2014).
34. Optimal feeding of low birthweight infants in low-and middle-income countries . Geneva: World Health Organization;2011. (http://www.who.int/maternal_child_adolescent/documents/9789241548366.pdf, accessed 22 May 2014).
35. Manual for the health care of children in humanitarian emergencies. Geneva: World Health Organization;2008. (http://whqlibdoc.who.int/publications/2008/9789241596879_eng.pdf, accessed 22 May 2014).
36. Manual for early infant male circumcision under local anaesthesia. Geneva: World Health Organization;2011. (http://www.who.int/hiv/pub/malecircumcision/manual_infant/en/index.html, accessed 22 May 2014).
37. Guidelines on maternal, newborn, child and adolescent health: Recommendations on child health. Geneva: World Health Organization;2013. (http://www.who.int/maternal_child_adolescent/documents/guidelines-recommendations-child-health.pdf, accessed 22 May 2014).
38. Integrated management of childhood illness(IMCI): Chart Booklet, standard. Geneva: World Health Organization;2008. (http://whqlibdoc.who.int/publications/2008/9789241597289_eng.pdf, accessed 22 May 2014).

3. Medical devices for different health-care facilities

3.1 Medical devices for different health-care facilities

Table 11 contains the complete list of medical devices needed for the application of the clinical interventions described in Table 3. To identify the location of the medical devices, the UNICEF classification of product groups was followed (first column), with each of the six major categories divided into sub-groups (second column). All products from this list are identified with a short general description. The technical specifications, accessories and disposables related to such products are mostly based on UNICEF's Supply Catalogue (1). There are also two separate lists for the medical devices needed in the laboratory and the blood bank to complete the implementation of reproductive, maternal, newborn and child health interventions.

Table 11. Medical devices for different health-care facilities

Colour coding used below

X	Disposable Generic item line - see Table 19 (Medical device consumables by size and capacity) with related items covered by each Generic line
X	Equipment grouping - see Table 12-18 (Medical equipment groups)

Grouping	General type	Specific area / type	Name of devices	Health post	Health center	District hospital
	Blood Bank devices	Blood Transfusion devices	Anti-A blood group reagent, monoclonal			X
	Blood Bank devices	Blood Transfusion devices	Anti-B blood group reagent, monoclonal			X
	Blood Bank devices	Blood Transfusion devices	Anti-D blood group reagent (Saline/monoclonal)			X
	Blood Bank devices	Blood Transfusion devices	Blood administration set, sterile			X
	Blood Bank devices	Blood Transfusion devices	Glass slides, 25x75mm			X
	Blood Bank devices	Blood Transfusion devices	Markers, fine point, permanent black, for glassware			X
	Blood Bank devices	Blood Transfusion devices	Pasteur pipettes with integral bulb, disposable, plastic non-sterile, 3 ml			X
	Blood Bank devices	Blood Transfusion devices	Wooden or plastic applicator sticks			X
	Clinical laboratory devices	Clinical laboratory devices - Disposable	Container, sample, 50 ml		X	X
X	Clinical laboratory devices	Clinical laboratory devices - Disposable	Lancet, blood, safety, sterile (Sizes*)	X	X	X
	Clinical laboratory devices	Clinical laboratory devices - Disposable	Needle holder, vacuum tubes			X
X	Clinical laboratory devices	Clinical laboratory devices - Disposable	Needle, vacuum tube, sterile (Size*)			X
	Clinical laboratory devices	Clinical laboratory devices - Disposable	Paper, dry blood spot,			X
	Clinical laboratory devices	Clinical laboratory devices - Disposable	Swab, cotton-tip, tube, sterile	X	X	X
	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, blood collection, newborn cord blood, sterile			X
	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, capillary, Ethylene Diamine Tetra-acetic Acid (EDTA)			X
	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, capillary, heparin			X
X	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, vacuum, Ethylene Diamine Tetra-acetic Acid (EDTA), sterile (Capacity*)			X
X	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, vacuum, plain/dry, sterile (Capacity*)			X

Grouping	General type	Specific area / type	Name of devices	Health post	Health center	District hospital
	Clinical laboratory devices	Clinical laboratory devices - Equipment	Analyzer, blood gas			X
	Clinical laboratory devices	Clinical laboratory devices - Equipment	Blood glucometer, with accessories	X	X	X
	Clinical laboratory devices	Clinical laboratory devices - Equipment	Hemoglobinometer, with accessories	X	X	X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Cytology stain, kit		X	X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Enzyme Immuno Assay (EIA), gonorrhea Ag, kit			X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Enzyme Immuno Assay (EIA), Human Immunodeficiency Virus (HIV), kit			X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Enzyme Immuno Assay (EIA), Rubella, kit			X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Haemoglobin colour scale (refill kit)	X	X	
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Haemoglobin colour scale (starter kit)	X	X	
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Nucleic Acid Test (NAT), chlamydia, kit			X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Nucleic Acid Test (NAT), gonorrhea, kit			X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Nucleic Acid Test (NAT), Human Papilloma Virus (HPV), kit		X	X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit	X	X	X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Rapid Diagnostic Test (RDT), malaria, kit	X	X	X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Rapid Diagnostic Test (RDT), Treponemal, syphilis, kit	X	X	X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Rapid Plasma Reagin (RPR), syphilis, kit		X	X
	Clinical laboratory devices	Clinical laboratory devices - Test kits	Treponema Pallidum Haemagglutination Assay (TPHA), syphilis, kit			X
	Clinical laboratory devices	Clinical laboratory devices - Test strips	Test strip, pregnancy	X	X	X
	Clinical laboratory devices	Clinical laboratory devices - Test strips	Test strip, urinalysis (10 parameter)	X	X	X
	Clinical laboratory devices	Clinical laboratory devices - Test strips	Test strip, vaginal infection, pH		X	X
	Family planning devices	Family planning devices - Disposable	Cervical cap			X
	Family planning devices	Family planning devices - Disposable	Diaphragm			X
	Family planning devices	Family planning devices - Disposable	Female condoms	X	X	X
	Family planning devices	Family planning devices - Disposable	Intra-Uterine Devices (only prequalified copper IUDs)		X	X
	Family planning devices	Family planning devices - Disposable	Levonorgestrel Intra-Uterine Device (IUD)			X
	Family planning devices	Family planning devices - Disposable	Lubricants	X	X	X
	Family planning devices	Family planning devices - Disposable	Male condoms	X	X	X
	Family planning devices	Family planning devices - Disposable	Sub-dermal implants (included the insertion device)			X

Grouping	General type	Specific area / type	Name of devices	Health post	Health center	District hospital
	Medical devices - Disposable	Dressing devices	Bandage, elastic, 7.5cmx5m, roll	X	X	X
	Medical devices - Disposable	Dressing devices	Blanket, survival, 220x140cm, non-sterile	X	X	X
X	Medical devices - Disposable	Dressing devices	Bracelet, identification (Sizes*)		X	X
X	Medical devices - Disposable	Dressing devices	Compress, gauze,sterile & non-sterile, single use	X	X	X
	Medical devices - Disposable	Dressing devices	Cotton wool, 500g, roll, non-sterile	X	X	X
X	Medical devices - Disposable	Dressing devices	Tape, medical, roll (Sizes*)	X	X	X
	Medical devices - Disposable	Dressing devices	Umbilical clamp, sterile,single use		X	X
	Medical devices - Disposable	Dressing devices	Umbilical tape, 3mmx50m, roll, non-sterile		X	X
X	Medical devices - Disposable	Injection devices	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)		X	X
	Medical devices - Disposable	Injection devices	Catheter, Intra Venous (IV) umbilical vein, sterile, single use			X
	Medical devices - Disposable	Injection devices	Infusion giving set, burette 100-150ml, sterile, single use		X	X
	Medical devices - Disposable	Injection devices	Infusion giving set, sterile, single use		X	X
X	Medical devices - Disposable	Injection devices	Needles, luer, sterile, single use (Sizes G*)	X	X	X
X	Medical devices - Disposable	Injection devices	Needles, scalp vein, sterile, single use (Sizes G*)		X	X
X	Medical devices - Disposable	Injection devices	Needles, spinal, sterile, single use (Sizes*)			X
	Medical devices - Disposable	Injection devices	Safety box, for used syringes/needles	X	X	X
	Medical devices - Disposable	Injection devices	Stopcock, 3-way, sterile, single use		X	X
X	Medical devices - Disposable	Injection devices	Syringes, auto-disable (AD), (Capacities ml*)	X	X	X
	Medical devices - Disposable	Injection devices	Syringe for insulin, sterile, single use		X	X
	Medical devices - Disposable	Injection devices	Syringe for tuberculin, sterile, single use			X
X	Medical devices - Disposable	Injection devices	Syringes, luer, sterile, single use (Capacities ml*)	X	X	X
X	Medical devices - Disposable	Injection devices	Syringes, reuse prevention (RUP), (Capacities ml*)	X	X	X
X	Medical devices - Disposable	Tube/catheter/drain	Airway, Guedel, translucent (Sizes*)			X
	Medical devices - Disposable	Tube/catheter/drain	Bag, urine, collecting, 2000ml		X	X
	Medical devices - Disposable	Tube/catheter/drain	Catheter, balloon tamponade, post partum hemorrhage			X
X	Medical devices - Disposable	Tube/catheter/drain	Catheter, Foley, sterile, single use (Sizes CH*)		X	X
X	Medical devices - Disposable	Tube/catheter/drain	Catheter, urethral, sterile, single use (Sizes CH*)		X	X
	Medical devices - Disposable	Tube/catheter/drain	Collector, urine, adhesive, 10-100ml			X
X	Medical devices - Disposable	Tube/catheter/drain	Prongs, nasal, oxygen, non sterile, single use (Sizes *)		X	X
	Medical devices - Disposable	Tube/catheter/drain	Syringe, feeding, catheter tip, 50ml, sterile, single use			X
	Medical devices - Disposable	Tube/catheter/drain	Syringe, feeding, luer tip, 50ml, sterile, single use			X
X	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, without cuff, sterile, single use (Sizes ID*)			X
X	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, with cuff, sterile, single use (Sizes ID*)			X
X	Medical devices - Disposable	Tube/catheter/drain	Tube, feeding/aspirating, L120cm,catheter tip, sterile, single use (Sizes CH*)			X

Grouping	General type	Specific area / type	Name of devices	Health post	Health center	District hospital
X	Medical devices - Disposable	Tube/catheter/drain	Tube, feeding, L40cm, luer tip, sterile, single use (Sizes CH*)			X
X	Medical devices - Disposable	Tube/catheter/drain	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)			X
X	Medical devices - Disposable	Gloves	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X	X
X	Medical devices - Disposable	Gloves	Gloves, gynaecological, sterile, single use, pair (Sizes*)		X	X
X	Medical devices - Disposable	Gloves	Gloves, surgical, sterile, single use, pair (Sizes*)		X	X
X	Medical devices - Disposable	Surgical sutures	Suture, synthetic, absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use		X	X
X	Medical devices - Disposable	Surgical sutures	Suture, synthetic, non-absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use		X	X
	Medical devices - Equipment	Miscellaneous equipment	Apnoea monitor			X
	Medical devices - Equipment	Miscellaneous equipment	Auditory, function screening devices, newborn			X
	Medical devices - Equipment	Miscellaneous equipment	Bilirubinometer			X
	Medical devices - Equipment	Miscellaneous equipment	Breast biopsy system			X
	Medical devices - Equipment	Miscellaneous equipment	Breastpump, manual, with accessories		X	X
	Medical devices - Equipment	Miscellaneous equipment	Cardiotocograph (CTG), with accessories		X	X
	Medical devices - Equipment	Miscellaneous equipment	Colposcope with biopsy set			X
	Medical devices - Equipment	Miscellaneous equipment	Cryosurgical unit with tank and accesories			X
	Medical devices - Equipment	Miscellaneous equipment	Doppler, foetal heart rate (FHR) detector, with accessories		X	X
	Medical devices - Equipment	Miscellaneous equipment	Magnifying lens for Visual Inspection with Acetic Acid		X	X
	Medical devices - Equipment	Miscellaneous equipment	Mammograph with printer and accesories			X
	Medical devices - Equipment	Miscellaneous equipment	Non-Pneumatic Anti-Shock Garment (NASG)		X	X
	Medical devices - Equipment	Miscellaneous equipment	Phototherapy light, mobile, with accessories			X
X	Medical devices - Equipment Grouping	Medical Equipment Group	Commodities for medical examination & diagnosis (see table 12)	X	X	X
X	Medical devices - Equipment Grouping	Medical Equipment Group	Commodities for emergency preparedness and referral (see table 13)	X	X	X
X	Medical devices - Equipment Grouping	Medical Equipment Group	Commodities for labour, delivery & recovery (see table 14)		X	X
X	Medical devices - Equipment Grouping	Medical Equipment Group	Commodities for surgery & anesthesia (see table 15)		X	X
X	Medical devices - Equipment Grouping	Medical Equipment Group	Commodities for inpatient mother and newborn		X	X
X	Medical devices - Equipment Grouping	Medical Equipment Group	Commodities for inpatient child		X	X
X	Medical devices - Equipment Grouping	Medical Equipment Group	Commodities for intensive care of mother			X
X	Medical devices - Equipment Grouping	Medical Equipment Group	Commodities for intensive care of child			X
X	Medical devices - Equipment Grouping	Medical Equipment Group	Commodities for intensive care of newborn			X
	Counselling material	Counselling material	Counselling material	X	X	X

3.2 Groups of medical devices

The majority of medical devices, including equipment and surgical instruments sets, are required for multiple interventions across the continuum of care. To simplify the main matrix, many of these devices were grouped together. Many consumable devices are available in various sizes, and these were also grouped together.

It is important to apply judgement and knowledge of the local context to interpret the groupings, particularly when used in supply planning, as each facility and system is different.

3.2.1 Grouping of common medical equipment by clinical area in health-care facility

The equipment commodities were grouped according to the clinical area of a health-care facility in which they would most commonly be found, such as an examination room or intensive care unit (Table 12-18). These medical device equipment groupings were then allocated to interventions across the continuum.

The groupings also correspond, to a certain extent, to the types of intervention performed in particular clinical areas. For example, basic medical examinations typically happen in an examination area or room, while ventilation typically occurs within an intensive care setting.

Table 12. Medical equipment for medical examination and diagnosis

General type	Specific area / type	Name of devices for medical examination and diagnosis	Health post	Health center	District hospital
Medical devices - Equipment	Medical furniture	Bedscreen, hospital, on castors	X	X	X
		Cabinet, instruments, double door		X	X
		Cabinet, medicine, double door	X	X	X
		Footstool, two steps	X	X	X
		Stand, infusion, double hook, on castors		X	X
		Stool, adjustable, on castors		X	X
		Stretcher, foldable	X	X	X
		Stretcher, patient, with side rails		X	X
		Table, examination	X	X	X
		Table, gynaecology, delivery, with accessories		X	X
		Table, instruments, Mayo type, stainless steel, on castors		X	X
		Trolley, dressing, stainless steel, 2 trays	X	X	X
		Trolley, soiled linen	X	X	X
	Medical utensils	Basin, kidney, polypropylene	X	X	X
		Basin, kidney, stainless steel	X	X	X
		Bedpan, polypropylene		X	X
		Bowl, polypropylene	X	X	X
		Brush, hand, scrubbing, plastic	X	X	X
		Jar, forceps, polypropylene	X	X	X
		Jar, thermometer, polypropylene	X	X	X
		Receptacle, waste, stainless steel, pedal action	X	X	X
		Tray, dressing, stainless steel ,approx. 300x200x30mm	X	X	X
Medical devices - Renewable	Clothing medical and accessories	Cap, surgical, non-woven		X	X
		Coat, medical, woven, white - # sizes	X	X	X
		Drape, surgical woven - # sizes	X	X	X
		Drawsheet, plastic, approx. 90x180cm	X	X	X
		Gown, patient, woven		X	X

Table 12. Medical equipment for medical examination and diagnosis

General type	Specific area / type	Name of devices for medical examination and diagnosis	Health post	Health center	District hospital
Medical devices - Equipment	Anthropometric equipment	Measuring board, portable infant/child length/height	X	X	X
		Mid Upper Arm Circumference (MUAC) measuring tape, infant/ newborn		X	X
		Scale, electronic, mother/child, 150kgx100g	X	X	X
		Scale, electronic, infant,10kgx5g			X
		Scale, beamtype, infant,16kgx10g	X	X	X
		Scale,beamtype, adult, 6-180kg x100g	X	X	X
		Scale, springtype,infant,25kg x 100g with set of weighing trousers	X	X	X
	Hospital equipment	Light, examination, mobile, with accessories	X	X	X
	Medical diagnostic equipment	Electrocardiogram (ECG) recorder, portable, with accessories			X
		Ophtalmoscope, set	X	X	X
		Otoscope, set	X	X	X
		Scanner, ultrasound, mobile, with accessories		X	X
		Sphygmomanometer, adult, aneroid	X	X	X
		Sphygmomanometer, child, aneroid		X	X
		Stethoscope, adult, binaural	X	X	X
		Stethoscope, foetal, monaural		X	X
		Stethoscope, pediatric, binaural		X	X
		Thermometer, clinical, digital 32-43 °C	X	X	X
		Timer, respiration, for Acute Respiratory Infection (ARI)	X	X	X
		Tourniquet, rubber, approx. 50cm		X	X
		Tongue depressor,wooden,single use	X	X	X
		X-ray system, fixed, with accessories and infrastructure			X
		X-ray system, mobile, with accessories			X
		X-ray, viewer (negatoscope), 1 to 3 bodies		X	X
	Resuscitation/ Anaesthesia equipment	Pulse oximeter, portable, with accessories		X	X
		Pulse oximeter, spotcheck, with accessories		X	X
Medical devices - Surgical instruments	Surgical instrument	Forceps, dressing, Cheron, 250mm	X	X	X
		Speculum, vaginal, Graves, 75x20mm		X	X
		Speculum, vaginal, Graves, 95x35mm		X	X
		Speculum, vaginal, Graves, 115x35mm		X	X
	Surgical instruments set	Surgical instruments, dressing set (see table 41)	X	X	X

Table 13. Medical equipment for emergency preparedness and referral

General type	Specific area / type	Name of devices for emergency preparedness and referral	Health post	Health center	District hospital
Medical devices - Equipment	Medical furniture	Bedscreen, hospital, on castors	X	X	X
		Bucket, kick, stainless steel, on castors		X	X
		Cabinet, instruments, double door		X	X
		Cabinet, medicine, double door	X	X	X
		Footstool, two steps	X	X	X
		Stand, infusion, double hook, on castors		X	X
		Stool, adjustable, on castors		X	X
		Stretcher, foldable	X	X	X
		Stretcher, patient, with side rails		X	X
		Table, examination	X	X	X
		Table, instruments, Mayo type, stainless steel, on castors		X	X
		Table, instruments, stainless steel, on castors		X	X
		Trolley, dressing, stainless steel, 2 trays	X	X	X
		Trolley, emergency, with drawers		X	X
		Trolley, soiled linen	X	X	X
		Wheel chair, adult		X	X
		Wheel chair, child		X	X
	Medical utensils	Basin, kidney, polypropylene	X	X	X
		Basin, kidney, stainless steel	X	X	X
		Bedpan, polypropylene		X	X
		Bowl, polypropylene	X	X	X
		Bowl, round, stainless steel, approx. 4L		X	X
		Bowl, stainless steel, approx. 180ml		X	X
		Bowl, stainless steel, approx. 600ml		X	X
		Brush, hand, scrubbing, plastic	X	X	X
		Jar, forceps, polypropylene	X	X	X
		Jar, thermometer, polypropylene	X	X	X
		Receptacle, waste, stainless steel, pedal action	X	X	X
		Tray, dressing, stainless steel ,approx. 300x200x30mm	X	X	X
Medical devices - Renewable	Clothing medical and accessories	Apron, protection, plastic		X	X
		Cap, surgical, non-woven		X	X
		Clogs, plastic - # sizes		X	X
		Coat, medical, woven, white - # sizes	X	X	X
		Drape, surgical woven - # sizes	X	X	X
		Drawsheet, plastic, approx. 90x180cm	X	X	X
		Glasses, safety, regular size		X	X
		Gown, patient, woven		X	X
		Gown, surgical, woven - # sizes		X	X
		Mask, surgical, non-woven,		X	X
		Trousers, surgical, woven - # sizes		X	X
		Tunic, surgical, woven - # sizes		X	X

Table 13. Medical equipment for emergency preparedness and referral

General type	Specific area / type	Name of devices for emergency preparedness and referral	Health post	Health center	District hospital
Medical devices - Equipment	Anthropometric equipment	Measuring board, portable infant/child length/height	X	X	X
		Scale, electronic, mother/child, 150kgx100g	X	X	X
		Scale, electronic, infant,10kgx5g			X
		Scale, beamtype, infant,16kgx10g	X	X	X
		Scale,beamtype, adult, 6-180kg x100g	X	X	X
		Scale, springtype,infant,25kg x 100g with set of weighing trousers	X	X	X
	Hospital equipment	Light, examination, mobile, with accessories	X	X	X
		Pump, suction, electrical, 1 bottle, with accessories		X	X
		Pump, suction, electrical, 2 bottles, with accessories		X	X
	Medical diagnostic equipment	Electrocardiogram (ECG) recorder, portable, with accessories			X
		Ophtalmoscope, set	X	X	X
		Otoscope, set	X	X	X
		Sphygmomanometer, adult, aneroid	X	X	X
		Sphygmomanometer, child, aneroid		X	X
		Stethoscope, adult, binaural	X	X	X
		Stethoscope, foetal, monaural		X	X
		Stethoscope, pediatric, binaural		X	X
		Thermometer, clinical, digital 32-43 °C	X	X	X
		Timer, respiration, for Acute Respiratory Infection (ARI)	X	X	X
		Tourniquet, rubber, approx. 50cm		X	X
		Tongue depressor,wooden,single use	X	X	X
		X-ray system, fixed, with accessories and infrastructure			X
		X-ray system, mobile, with accessories			X
		X-ray, viewer (negatoscope), 1 to 3 bodies			X
	Resuscitation/ Anaesthesia equipment	Continuous Positive Airway Pressure (CPAP) system, with accessories			X
		Defibrillator, basic, with accessories		X	X
		Forceps, Magill, adult			X
		Forceps, Magill, child			X
		Incubator, newborn, transport, with accessories			X
		Infusion pump, with accessories			X
		Laryngoscope, adult/child, set			X
		Laryngoscope, newborn, set			X
		Monitor, patient, portable, with accessories			X
		Nebulizer, with accessories		X	X
		Oxygen concentrator, with accessories		X	X
		Pulse oximeter, portable, with accessories		X	X
		Pulse oximeter, spotcheck, with accessories		X	X
		Pump, suction, foot-operated		X	X
		Pump, suction, newborn resuscitation			X
		Resuscitator, hand-operated, adult, set		X	X
		Resuscitator, hand-operated, child, set		X	X
		Resuscitator, hand-operated, newborn, set		X	X
		Suction, bulb		X	X

Table 13. Medical equipment for emergency preparedness and referral

General type	Specific area / type	Name of devices for emergency preparedness and referral	Health post	Health center	District hospital
		Syringe pump, with accessories			X
		Table, resuscitation, newborn, with accessories			X
		Ventilator medical, adult, with accessories			X
		Ventilator medical, adult, transport, with accessories			X
		Ventilator medical, child/newborn, with Continuous Positive Airway Pressure (CPAP) and accessories			X
		Ventilator medical, child/newborn, transport, with accessories			X
		Warmer, heating pad, newborn, with accessories		X	X
		Warmer, sleeping bag, newborn, with accessories		X	X
		Warmer, radiant heater, freestanding, with accessories			X
Medical devices - Surgical instruments	Surgical instrument	Forceps, dressing, Cheron, 250mm	X	X	X
		Scalpel blade, no.22, sterile, single use (for Scalpel Handle n0.4)		X	X
		Scalpel blade, no.10, sterile, single use (for Scalpel Handle n0.3)		X	X
		Speculum, vaginal, Graves, 75x20mm		X	X
		Speculum, vaginal, Graves, 95x35mm		X	X
		Speculum, vaginal, Graves, 115x35mm		X	X
	Surgical instruments set	Surgical instruments, dressing set (see table 41)	X	X	X
		Surgical instruments, suture set (see table 41)		X	X

Table 14. Medical equipment for labour, delivery and recovery

General type	Specific area / type	Name of devices for labour, delivery and recovery	Health post	Health center	District hospital
Medical devices - Equipment	Medical furniture	Bed, labour/delivery, with mattress & accessories		X	X
		Bucket, kick, stainless steel, on castors		X	X
		Cabinet, instruments, double door		X	X
		Cabinet, medicine, double door		X	X
		Footstool, two steps		X	X
		Stand, infusion, double hook, on castors		X	X
		Stand, single bowl, on castors		X	X
		Stool, adjustable, on castors		X	X
		Stretcher, patient, with side rails		X	X
		Table, baby dressing		X	X
		Table, gynaecology, delivery, with accessories		X	X
		Table, instruments, Mayo type, stainless steel, on castors		X	X
		Trolley, dressing, stainless steel, 2 trays		X	X
		Trolley, emergency, with drawers		X	X
		Trolley, soiled linen		X	X
	Medical utensils	Basin, kidney, polypropylene		X	X
		Basin, kidney, stainless steel		X	X
		Bedpan, polypropylene		X	X
		Bowl, polypropylene		X	X
		Bowl, round, stainless steel, approx. 4L		X	X
		Bowl, stainless steel, approx. 180ml		X	X
		Bowl, stainless steel, approx. 600ml		X	X
		Brush, hand, scrubbing, plastic		X	X
		Jar, forceps, polypropylene		X	X
		Jar, thermometer, polypropylene		X	X
		Receptacle, waste, stainless steel, pedal action		X	X
		Tray, dressing, stainless steel ,approx. 300x200x30mm		X	X
Medical devices - Renewable	Clothing medical and accessories	Apron, protection, plastic		X	X
		Cap, surgical, non-woven		X	X
		Clogs, plastic - # sizes		X	X
		Drape, surgical woven - # sizes		X	X
		Drawsheet, plastic, approx. 90x180cm		X	X
		Glasses, safety, regular size		X	X
		Gown, patient, woven		X	X
		Gown, surgical, woven - # sizes		X	X
		Mask, surgical, non-woven,		X	X
		Trousers, surgical, woven - # sizes		X	X
		Tunic, surgical, woven - # sizes		X	X
Medical devices - Equipment	Anthropometric equipment	Scale, electronic, infant,10kgx5g			X
		Scale, beamtype, infant,16kgx10g		X	X
	Hospital equipment	Light, examination, mobile, with accessories		X	X
		Pump, suction, electrical, 1 bottle, with accessories		X	X
		Vacuum extractor, Bird, manual, complete set		X	X

Table 14. Medical equipment for labour, delivery and recovery

General type	Specific area / type	Name of devices for labour, delivery and recovery	Health post	Health center	District hospital
	Medical diagnostic equipment	Partograph		X	X
		Scanner, ultrasound, mobile, with accessories		X	X
		Sphygmomanometer, adult, aneroid		X	X
		Stethoscope, adult, binaural		X	X
		Stethoscope, foetal, monaural		X	X
		Thermometer, clinical, digital 32-43 °C		X	X
		Tourniquet, rubber, approx. 50cm		X	X
	Resuscitation/ Anaesthesia equipment	Oxygen concentrator, with accessories		X	X
		Pulse oximeter, portable, with accessories		X	X
		Pulse oximeter, spotcheck, with accessories		X	X
		Pump, suction, foot-operated		X	X
		Pump, suction, newborn resuscitation			X
		Resuscitator, hand-operated, adult, set	X	X	X
		Resuscitator, hand-operated, newborn, set		X	X
		Suction, bulb		X	X
		Table, resuscitation, newborn, with accessories			X
Medical devices - Surgical instruments	Surgical instrument	Forceps, dressing, Cheron, 250mm		X	X
		Scalpel blade, no.22, sterile, single use (for Scalpel Handle n0.4)		X	X
		Speculum, vaginal, Graves, 75x20mm		X	X
		Speculum, vaginal, Graves, 95x35mm		X	X
		Speculum, vaginal, Graves, 115x35mm		X	X
	Surgical instruments set	Surgical instruments, delivery set		X	X
		Surgical instruments, dressing set		X	X
		Surgical instruments, suture set		X	X

Table 15. Medical equipment for surgery and anaesthesia

General type	Specific area / type	Name of devices for surgery and anaesthesia	Health post	Health center	District hospital
Medical devices - Equipment	Medical furniture	Bucket, kick, stainless steel, on castors		X	X
		Cabinet, instruments, double door		X	X
		Cabinet, medicine, double door		X	X
		Footstool, two steps		X	X
		Stand, infusion, double hook, on castors		X	X
		Stand, single bowl, on castors		X	X
		Stool, adjustable, on castors		X	X
		Stretcher, patient, with side rails		X	X
		Table, baby dressing		X	X
		Table, instruments, Mayo type, stainless steel, on castors		X	X
		Table, instruments, stainless steel, on castors		X	X
		Trolley, dressing, stainless steel, 2 trays		X	X
		Trolley, emergency, with drawers		X	X
		Trolley, soiled linen		X	X
	Medical utensils	Basin, kidney, polypropylene		X	X
		Basin, kidney, stainless steel		X	X
		Bedpan, polypropylene		X	X
		Bowl, polypropylene		X	X
		Bowl, round, stainless steel, approx. 4L		X	X
		Bowl, stainless steel, approx. 180ml		X	X
		Bowl, stainless steel, approx. 600ml		X	X
		Brush, hand, scrubbing, plastic		X	X
		Jar, forceps, polypropylene		X	X
		Jar, thermometer, polypropylene		X	X
		Receptacle, waste, stainless steel, pedal action		X	X
		Tray, dressing, stainless steel ,approx. 300x200x30mm		X	X
Medical devices - Renewable	Clothing medical and accessories	Apron, protection, plastic		X	X
		Cap, surgical, non-woven		X	X
		Clogs, plastic - # sizes		X	X
		Drape, surgical woven - # sizes		X	X
		Drawsheet, plastic, approx. 90x180cm		X	X
		Glasses, safety, regular size		X	X
		Gown, patient, woven		X	X
		Gown, surgical, woven - # sizes		X	X
		Mask, surgical, non-woven,		X	X
		Trousers, surgical, woven - # sizes		X	X
		Tunic, surgical, woven - # sizes		X	X
Medical devices - Equipment	Hospital equipment	Electrosurgical unit, with accessories			X
		Table, operating theater, with accessories			X
		Light, operating theatre, ceiling, with accessories			X
		Light, operating theatre, mobile, with accessories			X
		Electrical vacuum aspiration (EVA), complete set			X
		Manual vacuum aspiration (MVA), complete set			X
		Pump, suction, electrical, 1 bottle, with accessories			X
		Pump, suction, electrical, 2 bottles, with accessories			X

Table 15. Medical equipment for surgery and anaesthesia

General type	Specific area / type	Name of devices for surgery and anaesthesia	Health post	Health center	District hospital
	Medical diagnostic equipment	Sphygmomanometer, adult, aneroid		X	X
		Stethoscope, adult, binaural		X	X
		Tourniquet, rubber, approx. 50cm		X	X
		X-ray system, mobile, with accessories		X	X
		X-ray, viewer (negatoscope), 1 to 3 bodies			X
	Resuscitation/ Anaesthesia equipment	Anaesthesia system, basic, free-standing, with accessories			X
		Anaesthesia unit, with ventilator and accessories			X
		Defibrillator, basic, with accessories			X
		Forceps, Magill, adult			X
		Laryngoscope, adult/child, set			X
		Monitor, patient, portable, with accessories			X
		Oxygen concentrator, with accessories		X	X
		Pulse oximeter, portable, with accessories		X	X
		Pulse oximeter, spotcheck, with accessories		X	X
		Pump, suction, foot-operated			X
		Pump, suction, newborn resuscitation			X
		Resuscitator, hand-operated, adult, set			X
		Resuscitator, hand-operated, newborn, set			X
		Suction, bulb			X
		Table, resuscitation, newborn, with accessories			X
Medical devices - Surgical instruments	Surgical instrument	Forceps, dressing, Cheron, 250mm			X
		Scalpel blade, no.22, sterile, single use (for Scalpel Handle n0.4)			X
		Speculum, vaginal, Graves, 75x20mm			X
		Speculum, vaginal, Graves, 95x35mm			X
		Speculum, vaginal, Graves, 115x35mm			X
	Surgical instruments set (see table 41)	Surgical instruments, basic surgery set			X
		Surgical instruments, delivery set			X
		Surgical instruments, dilatation/evacuation (D&E) set			X
		Surgical instruments, dressing set		X	X
		Surgical instruments, early infant male circumcision, set			X
		Surgical instruments, embryotomy set			X
		Surgical instruments, examination/suturing, vaginal/cervical, set			X
		Surgical instruments, intra uterin device (IUD) insertion/removal, set		X	X
		Surgical instruments, laparotomy (Gyn/Obs) set			X
		Surgical instruments, suture set		X	X
		Surgical instruments, vacuum aspiration set			X
		Surgical instruments, vasectomy set		X	X
		Surgical instruments, vasectomy non-scalpel set		X	X

Table 16. Medical equipment for inpatient care - mother and newborn

General type	Specific area / type	Name of devices for inpatient mother and newborn	Health center	District hospital
Medical devices - Equipment	Medical furniture	Bed, hospital, standard,adult,with mattress	X	X
		Bedscreen, hospital, on castors	X	X
		Cabinet, bedside, standard	X	X
		Cabinet, medicine, double door	X	X
		Cot, baby, hospital, with bassinet, on castors	X	X
		Stand, infusion, double hook, on castors	X	X
		Stretcher, patient, with side rails	X	X
		Table, baby dressing	X	X
		Table, instruments, Mayo type, stainless steel, on castors	X	X
		Trolley, dressing, stainless steel, 2 trays	X	X
		Trolley, soiled linen	X	X
		Wheel chair, adult	X	X
	Medical utensils	Basin, kidney, polypropylene	X	X
		Basin, kidney, stainless steel	X	X
		Bedpan, polypropylene	X	X
		Bowl, polypropylene	X	X
		Brush, hand, scrubbing, plastic	X	X
		Jar, forceps, polypropylene	X	X
		Jar, thermometer, polypropylene	X	X
		Receptacle, waste, stainless steel, pedal action	X	X
		Tray, dressing, stainless steel ,approx. 300x200x30mm	X	X
Medical devices - Renewable	Clothing medical and accessories	Coat, medical, woven, white - # sizes	X	X
		Drape, surgical woven - # sizes	X	X
		Drawsheet, plastic, approx. 90x180cm	X	X
		Gown, patient, woven	X	X
Medical devices - Equipment	Anthropometric equipment	Scale, electronic, mother/child, 150kgx100g	X	X
		Scale, electronic, infant,10kgx5g		X
		Scale, beamtype, infant,16kgx10g	X	X
	Hospital equipment	Light, examination, mobile, with accessories	X	X
	Medical diagnostic equipment	Sphygmomanometer, adult, aneroid	X	X
		Stethoscope, adult, binaural	X	X
		Thermometer, clinical, digital 32-43 °C	X	X
		Timer, respiration, for Acute Respiratory Infection (ARI)	X	X
		Tourniquet, rubber, approx. 50cm	X	X
		Tongue depressor,wooden,single use	X	X
		X-ray system, mobile, with accessories		X
		X-ray, viewer (negatoscope), 1 to 3 bodies		X
	Resuscitation/ Anaesthesia equipment	Infusion pump, with accessories		X
		Nebulizer, with accessories	X	X
		Oxygen concentrator, flowsplitter for newborn/child		X
		Oxygen concentrator, with accessories	X	X
		Pulse oximeter, portable, with accessories	X	X
		Pulse oximeter, spotcheck, with accessories	X	X
		Syringe pump, with accessories		X
		Warmer, heating pad, newborn, with accessories	X	X
		Warmer, sleeping bag, newborn, with accessories	X	X
		Warmer, radiant heater, freestanding, with accessories		X
Medical devices - Surgical instruments	Surgical instrument	Forceps, dressing, Cheron, 250mm	X	X
	Surgical instruments set	Surgical instruments, dressing set	X	X

Table 17. Medical equipment for inpatient care – child

General type	Specific area / type	Name of devices for inpatient child	Health center	District hospital
Medical devices - Equipment	Medical furniture	Bed, hospital, standard, child, with mattress	X	X
		Bedscreen, hospital, on castors	X	X
		Cabinet, bedside, standard	X	X
		Cabinet, medicine, double door	X	X
		Stand, infusion, double hook, on castors	X	X
		Stretcher, patient, with side rails	X	X
		Table, baby dressing	X	X
		Trolley, dressing, stainless steel, 2 trays	X	X
		Trolley, soiled linen	X	X
		Wheel chair, adult	X	X
		Wheel chair, child	X	X
	Medical utensils	Basin, kidney, polypropylene	X	X
		Basin, kidney, stainless steel	X	X
		Bedpan, polypropylene	X	X
		Bowl, polypropylene	X	X
		Brush, hand, scrubbing, plastic	X	X
		Jar, forceps, polypropylene	X	X
		Jar, thermometer, polypropylene	X	X
		Receptacle, waste, stainless steel, pedal action	X	X
		Tray, dressing, stainless steel ,approx. 300x200x30mm	X	X
Medical devices - Renewable	Clothing medical and accessories	Coat, medical, woven, white - # sizes	X	X
		Drape, surgical woven - # sizes	X	X
		Drawsheet, plastic, approx. 90x180cm	X	X
Medical devices - Equipment	Anthropometric equipment	Scale, electronic, mother/child, 150kgx100g	X	X
		Scale, electronic, infant,10kgx5g		X
		Scale, beamtype, infant,16kgx10g	X	X
		Scale, springtype,infant,25kg x 100g with set of weighing trousers	X	X
	Hospital equipment	Light, examination, mobile, with accessories	X	X
	Medical diagnostic equipment	Sphygmomanometer, child, aneroid	X	X
		Stethoscope, pediatric, binaural	X	X
		Thermometer, clinical, digital 32-43 °C	X	X
		Timer, respiration, for Acute Respiratory Infection (ARI)	X	X
		Tourniquet, rubber, approx. 50cm	X	X
		Tongue depressor,wooden,single use	X	X
		X-ray system, mobile, with accessories		X
		X-ray, viewer (negatoscope), 1 to 3 bodies		X
	Resuscitation/ Anaesthesia equipment	Infusion pump, with accessories		X
		Nebulizer, with accessories	X	X
		Oxygen concentrator, flowsplitter for newborn/child		X
		Oxygen concentrator, with accessories	X	X
		Pulse oximeter, portable, with accessories	X	X
		Pulse oximeter, spotcheck, with accessories	X	X
		Syringe pump, with accessories		X
		Warmer, heating pad, newborn, with accessories	X	X
		Warmer, sleeping bag, newborn, with accessories	X	X
Medical devices - Surgical instruments	Surgical instrument	Forceps, dressing, Cheron, 250mm	X	X
	Surgical instruments set	Surgical instruments, dressing set	X	X

Table 18. Medical equipment for intensive care (in district hospital or higher level)

General type	Specific area / type	Name of devices for intensive care (in district hospital)	Intensive care of:		
			Mother	Newborn	Child
Medical devices - Equipment	Medical furniture	Bed, hospital, Intensive Care Unit (ICU), with mattress	X		
		Bed, hospital, standard, child, with mattress			X
		Bedscreen, hospital, on castors	X		
		Cabinet, bedside, standard	X	X	X
		Cabinet, instruments, double door	X	X	X
		Cabinet, medicine, double door	X	X	X
		Cot, baby, hospital, with bassinet, on castors		X	
		Stand, infusion, double hook, on castors	X	X	X
		Stretcher, patient, with side rails	X	X	X
		Table, baby dressing		X	X
		Table, instruments, Mayo type, stainless steel, on castors	X	X	X
		Trolley, dressing, stainless steel, 2 trays	X	X	X
		Trolley, emergency, with drawers	X	X	X
		Trolley, soiled linen	X	X	X
	Medical utensils	Basin, kidney, polypropylene	X	X	X
		Basin, kidney, stainless steel	X	X	X
		Bedpan, polypropylene	X		
		Bowl, polypropylene	X	X	X
		Bowl, round, stainless steel, approx. 4L	X	X	X
		Bowl, stainless steel, approx. 180ml	X	X	X
		Bowl, stainless steel, approx. 600ml	X	X	X
		Brush, hand, scrubbing, plastic	X	X	X
		Jar, forceps, polypropylene	X	X	X
		Jar, thermometer, polypropylene	X	X	X
		Receptacle, waste, stainless steel, pedal action	X	X	X
		Tray, dressing, stainless steel ,approx. 300x200x30mm	X	X	X
Medical devices - Renewable	Clothing medical and accessories	Cap, surgical, non-woven	X	X	X
		Clogs, plastic - # sizes	X	X	X
		Drape, surgical woven - # sizes	X	X	X
		Drawsheet, plastic, approx. 90x180cm	X	X	X
		Gown, patient, woven	X		X
		Gown, surgical, woven - # sizes	X	X	X
		Mask, surgical, non-woven,	X	X	X
		Trousers, surgical, woven - # sizes	X	X	X
		Tunic, surgical, woven - # sizes	X	X	X
Medical devices - Equipment	Anthropometric equipment	Mid Upper Arm Circumference (MUAC) measuring tape, infant/ newborn		X	X
		Scale, electronic, infant,10kgx5g		X	X
		Scale, beamtype, infant,16kgx10g		X	X
		Scale, springtype,infant,25kg x 100g with set of weighing trousers		X	X
	Hospital equipment	Light, examination, mobile, with accessories	X		
		Pump, suction, electrical, 1 bottle, with accessories	X	X	X

Table 18. Medical equipment for intensive care (in district hospital or higher level)

General type	Specific area / type	Name of devices for intensive care (in district hospital)	Intensive care of:		
			Mother	Newborn	Child
	Medical diagnostic equipment	Electrocardiogram (ECG) recorder, portable, with accessories	X	X	X
		Sphygmomanometer, adult, aneroid	X		
		Sphygmomanometer, child, aneroid			X
		Stethoscope, adult, binaural	X		
		Stethoscope, pediatric, binaural		X	X
		Thermometer, clinical, digital 32-43 °C	X	X	X
		Timer, respiration, for Acute Respiratory Infection (ARI)	X	X	X
		Tourniquet, rubber, approx. 50cm	X	X	X
		Tongue depressor,wooden,single use	X	X	X
		X-ray system, mobile, with accessories	X	X	X
		X-ray, viewer (negatoscope), 1 to 3 bodies	X	X	X
	Resuscitation/ Anaesthesia equipment	Continuous Positive Airway Pressure (CPAP) system, with accessories		X	X
		Defibrillator, basic, with accessories	X		X
		Forceps, Magill, adult	X		
		Forceps, Magill, child			X
		Incubator, newborn, automatic, basic, with accessories		X	
		Infusion pump, with accessories	X	X	X
		Laryngoscope, adult/child, set	X		X
		Laryngoscope, newborn, set		X	
		Monitor, patient, portable, with accessories	X	X	X
		Oxygen concentrator, flowsplitter for newborn/child		X	X
		Oxygen concentrator, with accessories	X	X	X
		Pulse oximeter, portable, with accessories	X	X	X
		Pulse oximeter, spotcheck, with accessories	X	X	X
		Pump, suction, foot-operated	X	X	X
		Pump, suction, newborn resuscitation		X	
		Resuscitator, hand-operated, adult, set	X		
		Resuscitator, hand-operated, child, set			X
		Resuscitator, hand-operated, newborn, set		X	
		Suction, bulb		X	X
		Syringe pump, with accessories	X	X	X
		Ventilator medical, adult, with accessories	X		
		Ventilator medical, child/newborn, with Continuous Positive Airway Pressure (CPAP) and accessories		X	X
		Warmer, heating pad, newborn, with accessories		X	
		Warmer, sleeping bag, newborn, with accessories		X	
		Warmer, radiant heater, freestanding, with accessories		X	
Medical devices - Surgical instruments	Surgical instrument	Forceps, dressing, Cheron, 250mm	X	X	X
	Surgical instruments set	Surgical instruments, dressing set (see table 41)	X	X	X

3.2.2 Grouping of medical device consumables by size and capacity

The majority of medical device consumables are required for multiple interventions across the continuum of care, and in many cases the same product types are required in different sizes and capacities. To simplify the main matrix, one generic item line reflecting one product type is allocated to interventions across the continuum, and product ranges related to each generic item line are listed in the master list (Table 19).

Table 19. Medical device consumables by size and capacity

Colour coding used below

X	Disposable Generic item line (see Table 11 Medical devices for different health-care facilities)
x	Related items covered by the Generic line (note: sizes listed from smaller to bigger)

	General type	Specific area / type	Name of devices	Health post	Health center	District hospital
X	Clinical laboratory devices	Clinical laboratory devices - Disposable	Lancet, blood, safety, sterile (Sizes*)	X	X	X
x	Clinical laboratory devices	Clinical laboratory devices - Disposable	Lancet, safety, 2.0 mm, sterile			
x	Clinical laboratory devices	Clinical laboratory devices - Disposable	Lancet, safety, 2.4 mm, sterile			
X	Clinical laboratory devices	Clinical laboratory devices - Disposable	Needle, vacuum tube, sterile (Size*)			X
x	Clinical laboratory devices	Clinical laboratory devices - Disposable	Needle, vacuum tube, 20 G, sterile			
x	Clinical laboratory devices	Clinical laboratory devices - Disposable	Needle, vacuum tube, 22 G, sterile			
X	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, vacuum, Ethylene Diamine Tetra-acetic Acid (EDTA), sterile (Capacity*)			X
x	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, vacuum, Ethylene Diamine Tetra-acetic Acid (EDTA), 2 ml, sterile			
x	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, vacuum, Ethylene Diamine Tetra-acetic Acid (EDTA), 4 ml, sterile			
X	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, vacuum, plain/dry, sterile (Capacity*)			X
x	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, vacuum, plain/dry, 4 ml, sterile			
x	Clinical laboratory devices	Clinical laboratory devices - Disposable	Tube, vacuum, plain/dry, 6 ml, sterile			
X	Medical devices - Disposable	Dressing devices	Bracelet, identification (Sizes*)		X	X
x	Medical devices - Disposable	Dressing devices	Bracelet, identification newborn			
x	Medical devices - Disposable	Dressing devices	Bracelet, identification infant			
x	Medical devices - Disposable	Dressing devices	Bracelet, identification adult			
X	Medical devices - Disposable	Dressing devices	Compress, gauze,sterile & non-sterile, single use	X	X	X
x	Medical devices - Disposable	Dressing devices	Compress, gauze, 10x10cm, non-sterile			
x	Medical devices - Disposable	Dressing devices	Compress, gauze, 10x10cm, sterile, single use			
x	Medical devices - Disposable	Dressing devices	Compress, gauze, paraffin, 10 x 10cm, sterile, single use			
X	Medical devices - Disposable	Dressing devices	Tape, medical, roll (Sizes*)	X	X	X
x	Medical devices - Disposable	Dressing devices	Tape, medical, 2.5cmx5m,roll			
x	Medical devices - Disposable	Dressing devices	Tape, medical, 10cmx5m, roll			
X	Medical devices - Disposable	Injection devices	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)		X	X
x	Medical devices - Disposable	Injection devices	Cannula, IV short, 24G, sterile, single use			

Table 19. Medical device consumables by size and capacity

	General type	Specific area / type	Name of devices	Health post	Health center	District hospital
x	Medical devices - Disposable	Injection devices	Cannula, IV short, 22G, sterile, single use			
x	Medical devices - Disposable	Injection devices	Cannula, IV short, 20G, sterile, single use			
x	Medical devices - Disposable	Injection devices	Cannula, IV short, 18G, sterile, single use			
x	Medical devices - Disposable	Injection devices	Cannula, IV short, 16G, sterile, single use			
X	Medical devices - Disposable	Injection devices	Needles, luer, sterile, single use (Sizes G*)	X	X	X
x	Medical devices - Disposable	Injection devices	Needle, luer, 25G(0.5x16mm), sterile, single use			
x	Medical devices - Disposable	Injection devices	Needle, luer, 23G(0.6x25mm), sterile, single use			
x	Medical devices - Disposable	Injection devices	Needle, luer, 21G(0.8x40mm), sterile, single use			
x	Medical devices - Disposable	Injection devices	Needle, luer, 19G(1.1x40mm), sterile, single use			
X	Medical devices - Disposable	Injection devices	Needles, scalp vein, sterile, single use (Sizes G*)		X	X
x	Medical devices - Disposable	Injection devices	Needle, scalp vein, 25G, sterile, single use			
x	Medical devices - Disposable	Injection devices	Needle, scalp vein, 21G, sterile, single use			
X	Medical devices - Disposable	Injection devices	Needles, spinal,sterile, single use (Sizes*)			X
x	Medical devices - Disposable	Injection devices	Needle, spinal, 22G (0.7x40mm),sterile, single use			
x	Medical devices - Disposable	Injection devices	Needle, spinal, 25G(0.5x90mm), sterile, single use			
X	Medical devices - Disposable	Injection devices	Syringes, auto-disable (AD), (Capacities ml*)	X	X	X
x	Medical devices - Disposable	Injection devices	Syringe, auto-disable, 0.05 ml			
x	Medical devices - Disposable	Injection devices	Syringe, auto-disable, 0.5 ml			
X	Medical devices - Disposable	Injection devices	Syringes, luer, sterile, single use (Capacities ml*)	X	X	X
x	Medical devices - Disposable	Injection devices	Syringe, luer, 1ml, sterile, single use			
x	Medical devices - Disposable	Injection devices	Syringe, luer, 2ml, sterile, single use			
x	Medical devices - Disposable	Injection devices	Syringe, luer, 5ml, sterile, single use			
x	Medical devices - Disposable	Injection devices	Syringe, luer, 10ml, sterile, single use			
x	Medical devices - Disposable	Injection devices	Syringe, luer, 20ml, sterile, single use			
X	Medical devices - Disposable	Injection devices	Syringes, reuse prevention (RUP), (Capacities ml*)	X	X	X
x	Medical devices - Disposable	Injection devices	Syringe, reuse prevention(RUP), 1ml			
x	Medical devices - Disposable	Injection devices	Syringe, reuse prevention(RUP), 2ml			
x	Medical devices - Disposable	Injection devices	Syringe, reuse prevention(RUP), 5ml			
x	Medical devices - Disposable	Injection devices	Syringe, reuse prevention(RUP), 10ml			
x	Medical devices - Disposable	Injection devices	Syringe, reuse prevention(RUP), 20ml			
X	Medical devices - Disposable	Tube/catheter/drain	Airway, Guedel, translucent (Sizes*)			X
x	Medical devices - Disposable	Tube/catheter/drain	Airway, Guedel, translucent, size 000			
x	Medical devices - Disposable	Tube/catheter/drain	Airway, Guedel, translucent, size 00			
x	Medical devices - Disposable	Tube/catheter/drain	Airway, Guedel, translucent, size 0			
x	Medical devices - Disposable	Tube/catheter/drain	Airway, Guedel, translucent, size 1			
x	Medical devices - Disposable	Tube/catheter/drain	Airway, Guedel, translucent, size 2			
x	Medical devices - Disposable	Tube/catheter/drain	Airway, Guedel, translucent, size 3			
x	Medical devices - Disposable	Tube/catheter/drain	Airway, Guedel, translucent, size 4			
X	Medical devices - Disposable	Tube/catheter/drain	Catheter, Foley, sterile, single use (Sizes CH*)		X	X
x	Medical devices - Disposable	Tube/catheter/drain	Catheter, Foley, CH08, sterile, single use			

Table 19. Medical device consumables by size and capacity

	General type	Specific area / type	Name of devices	Health post	Health center	District hospital
x	Medical devices - Disposable	Tube/catheter/drain	Catheter, Foley, CH10, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Catheter, Foley, CH12, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Catheter, Foley, CH14, sterile, single use			
X	Medical devices - Disposable	Tube/catheter/drain	Catheter, urethral, sterile, single use (Sizes CH*)		X	X
x	Medical devices - Disposable	Tube/catheter/drain	Catheter, urethral, CH12, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Catheter, urethral, CH14, sterile, single use			
X	Medical devices - Disposable	Tube/catheter/drain	Prongs, nasal, oxygen, non sterile, single use (Sizes *)		X	X
x	Medical devices - Disposable	Tube/catheter/drain	Prongs, nasal, oxygen, neonate, non sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Prongs, nasal, oxygen, infant, non sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Prongs, nasal, oxygen, adult, non sterile, single use			
X	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, without cuff, sterile, single use (Sizes ID*)			X
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 2.5, without cuff, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 3, without cuff, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 3.5, without cuff, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 4, without cuff, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 4.5, without cuff, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 5, without cuff, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 5.5, without cuff, sterile, single use			
X	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, with cuff, sterile, single use (Sizes ID*)			X
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 6.5, with cuff, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 7, with cuff, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 7.5, with cuff, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, endotracheal, 8, with cuff, sterile, single use			
X	Medical devices - Disposable	Tube/catheter/drain	Tube, feeding/aspirating, L120cm,catheter tip, sterile, single use (Sizes CH*)			X
x	Medical devices - Disposable	Tube/catheter/drain	Tube, aspirating/feeding, CH06, L120cm, catheter tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, aspirating/feeding, CH08, L120cm, catheter tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, aspirating/feeding, CH10, L120cm, catheter tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, aspirating/feeding, CH12, L120cm, catheter tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, aspirating/feeding, CH16, L120cm, catheter tip, sterile, single use			
X	Medical devices - Disposable	Tube/catheter/drain	Tube, feeding, L40cm, luer tip, sterile, single use (Sizes CH*)			X

Table 19. Medical device consumables by size and capacity

	General type	Specific area / type	Name of devices	Health post	Health center	District hospital
x	Medical devices - Disposable	Tube/catheter/drain	Tube, feeding, CH05, L40cm, luer tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, feeding, CH08, L40cm, luer tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, feeding, CH10, L40cm, luer tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, feeding, CH12, L40cm, luer tip, sterile, single use			
X	Medical devices - Disposable	Tube/catheter/drain	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)			X
x	Medical devices - Disposable	Tube/catheter/drain	Tube, suction, CH06, L50cm, catheter tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, suction, CH08, L50cm, catheter tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, suction, CH10, L50cm, catheter tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, suction, CH12, L50cm, catheter tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, suction, CH14, L50cm, catheter tip, sterile, single use			
x	Medical devices - Disposable	Tube/catheter/drain	Tube, suction, CH16, L50cm, catheter tip, sterile, single use			
X	Medical devices - Disposable	Gloves	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X	X
x	Medical devices - Disposable	Gloves	Gloves, examination, latex,small, non-sterile,single use			
x	Medical devices - Disposable	Gloves	Gloves, examination, latex, medium, non-sterile, single use			
x	Medical devices - Disposable	Gloves	Gloves, examination, latex, large, non-sterile, single use			
X	Medical devices - Disposable	Gloves	Gloves, gynaecological, sterile, single use, pair (Sizes*)		X	X
x	Medical devices - Disposable	Gloves	Gloves, gynaecological, small, sterile, single use, pair			
x	Medical devices - Disposable	Gloves	Gloves, gynaecological, medium, sterile, single use, pair			
x	Medical devices - Disposable	Gloves	Gloves, gynaecological, large, sterile, single use, pair			
X	Medical devices - Disposable	Gloves	Gloves, surgical, sterile, single use, pair (Sizes*)		X	X
x	Medical devices - Disposable	Gloves	Gloves, surgical, 6.5, sterile, single use, pair			
x	Medical devices - Disposable	Gloves	Gloves, surgical, 7, sterile, single use, pair			
x	Medical devices - Disposable	Gloves	Gloves, surgical, 7.5, sterile, single use, pair			
x	Medical devices - Disposable	Gloves	Gloves, surgical, 8, sterile, single use, pair			
x	Medical devices - Disposable	Gloves	Gloves, surgical, 8.5, sterile, single use, pair			
X	Medical devices - Disposable	Surgical sutures	Suture, synthetic, absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use		X	X
x	Medical devices - Disposable	Surgical sutures	Suture,synthetic,absorbable,DEC2(USP3/0),needle 3/8 18mm,round,ster,s.u.			
x	Medical devices - Disposable	Surgical sutures	Suture,synthetic,absorbable,DEC2(USP3/0),needle 3/8,26mm,triangular, sterile, single use			
x	Medical devices - Disposable	Surgical sutures	Suture,synthetic,absorbable,DEC3(USP2/0),needle 1/2 30mm,round, sterile, single use			

Table 19. Medical device consumables by size and capacity

	General type	Specific area / type	Name of devices	Health post	Health center	District hospital
x	Medical devices - Disposable	Surgical sutures	Suture,synthetic,absorbable,DEC4(USP1), needle 1/2 30mm,round, sterile, single use			
x	Medical devices - Disposable	Surgical sutures	Suture,synthetic,absorbable,DEC4(USP1),needle 3/8 50mm,round, sterile, single use			
X	Medical devices - Disposable	Surgical sutures	Suture, synthetic, non-absorbable (Sizes USP/ DEC*) with needle (Shapes* and sizes*), sterile, single use		X	X
x	Medical devices - Disposable	Surgical sutures	Suture,synthetic,non-absorbable,DEC2(USP3/0),n eedle3/8 18mm,triangular, sterile, single use			
x	Medical devices - Disposable	Surgical sutures	Suture,synthetic,non-absorbable,DEC3(USP2/0),needle 3/8 30mm,triangular, sterile, single use			
x	Medical devices - Disposable	Surgical sutures	Suture,synthetic,non-absorbable,DEC4(USP1),needle 1/2 30mm,round, sterile, single use			

3.3 References

1. UNICEF supply catalogue. New York: United Nations Children's Fund; 2014 (https://supply.unicef.org/unicef_b2c/app/displayApp/%28layout=7.0-12_1_66_67_115&carea=%24ROOT%29/.do?rf=y, accessed 22 May 2014).

4. Matrix of medical devices in each stage of continuum of care, in each level of health-care facility

4.1 Continuum of care matrix

This section contains 17 different tables (Tables 20–35). For each of the six stages of the continuum of care described in Section 2.1, three levels of health-care facility are considered: health posts, health centres and district hospitals. For childbirth, only health centres and district hospitals are considered because delivery in a health post is not recommended.

The title of the table shows the stage and health-care facility referenced; for example, "Medical devices for family planning and reproductive health at health post" covers the stage of family planning and reproductive health in a health post. The priority interventions included in Table 3 are listed in the horizontal axis. The vertical axis consists of the medical devices included in Table 11.

To read the tables, locate the "X" below each priority intervention and trace it to the left to find the associated medical device. References to other tables indicate that the intervention is associated with a group of medical devices. The tables can be found in Section 3.2.

Table 20. Medical devices for Family planning and reproductive health at HEALTH POST

General type	Name of devices
Clinical laboratory devices	Lancet, blood, safety, sterile (Sizes*)
	Swab, cotton-tip, tube, sterile
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit
	Rapid Diagnostic Test (RDT), malaria, kit
	Rapid Diagnostic Test (RDT),Treponemal, syphilis, kit
	Test strip, pregnancy
Family planning devices	Female condoms
	Lubricants
	Male condoms
Medical devices - Disposable	Compress, gauze,sterile & non-sterile, single use
	Cotton wool, 500g, roll, non-sterile
	Needles, luer, sterile, single use (Sizes G*)
	Safety box, for used syringes/needles
	Syringes, auto-disable (AD), (Capacities ml*)
	Syringes, luer, sterile, single use (Capacities ml*)
	Syringes, reuse prevention (RUP), (Capacities ml*)
	Gloves, examination, latex, non-sterile, single use (Sizes*)
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis
Counselling material	Counselling material

First assessment			Provision of contraceptives			Detection and management of Sexually Transmitted Infection (STI) and other infections							Screening and management of cancers of the reproductive system	Management of gender-based violence (gbv)
Basic Medical Examination		Preventive Immunization	Contraceptive method selection			Syphilis	Human Immunodeficiency Virus (HIV)			Malaria			Breast cancer	Post-rape care
a) Check-up vital signs / measuring weight and height / Anthropometry	b) Pelvic examination	a) Vaccine for Hepatitis B	a) Provision of oral contraceptives	a) Provision of barriers methods	a) Provision of emergency contraception	a) Screening / diagnosis of Syphilis by laboratory test	a) Screening of HIV	b) Treatment for HIV (Antiretroviral Therapy (ART))	c) Provide post exposure prophylaxis for HIV discordant couple	a) Prophylactic antimalarial (IPT)	b) Diagnosis of malaria	c) Management of malaria	a) Breast examination	a) Management of post-rape care
						X	X				X			X
						X	X							X
							X							X
											X			
						X								X
	X													
				X										
				X										
				X										
												X		
		X										X		
										X		X		
		X								X		X		
		X												
										X		X		
										X		X		
X		X				X	X			X	X	X		
X	X	X		X	X	X	X	X	X	X	X	X	X	X
			X	X	X				X	X		X		X

Table 21. Medical devices for pregnancy at HEALTH POST

		First assessment		Emergency assessment
		Basic Medical Examination	Preventive Immunization	Emergency preparedness and referral
General type	**Name of devices**	a) Check-up vital signs / measuring weight and height / Anthropometry/ Vaginal examination	a) Vaccine for Tetanus	a) Emergency care and pre-referral treatment
Clinical laboratory devices	Lancet, blood, safety, sterile (Sizes*)			
	Swab, cotton-tip, tube, sterile			
	Blood glucometer, with accessories			
	Hemoglobinometer, with accessories			
	Haemoglobin colour scale (refill kit)			
	Haemoglobin colour scale (starter kit)			
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit			
	Rapid Diagnostic Test (RDT), malaria, kit			
	Rapid Diagnostic Test (RDT),Treponemal, syphilis, kit			
	Test strip, pregnancy	X		
	Test strip, urinalysis (10 parameter)	X		
Family planning devices	Female condoms			
	Lubricants			
	Male condoms			
Medical devices - Disposable	Compress, gauze,sterile & non-sterile, single use			
	Cotton wool, 500g, roll, non-sterile			
	Needles, luer, sterile, single use (Sizes G*)			
	Safety box, for used syringes/needles		X	
	Syringes, auto-disable (AD), (Capacities ml*)		X	
	Syringes, luer, sterile, single use (Capacities ml*)			
	Syringes, reuse prevention (RUP), (Capacities ml*)			
	Gloves, examination, latex, non-sterile, single use (Sizes*)		X	
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis	X	X	
	Commodities for emergency preparedness			X
Counselling material	Counselling material			

Detection and management of Sexually Transmitted Infection (STI) and other infections							Detection and management of maternal chronic medical conditions			
Syphilis	Human Immunodeficiency Virus (HIV)			Malaria			Iron Deficiency Anaemia			Diabetes
a) Screening / diagnosis of Syphilis by laboratory test	a) Screening of HIV	b) Prevention Mother To Child Transmission (PMTCT)	c) Treatment for HIV (Antiretroviral Therapy (ART))	a) Prophylactic antimalarial (IPT)	b) Diagnosis of malaria	c) Management of malaria	a) Diagnosis of anaemia	b) Iron and folic acid supplementation	c) Anthelminthic (deworm)	a) Glucose testing for detection
X	X				X		X			X
X	X									
										X
							X			
							X			
							X			
	X									
					X					
X										
										X
		X								
		X								
		X								
						X				
						X				
						X				
						X				
						X				
						X				
X	X				X	X				
X	X	X	X	X	X	X	X	X	X	X
		X	X	X		X		X	X	

Table 22. Medical devices for post-natal baby (newborn) at HEALTH POST

		Childbirth: Essential newborn care				
		Routine care				
General type	**Name of devices**	a) Full clinical examination / Check vital signs / measuring weight	b) Thermal Care	c) Breastfeeding support	d) Vitamin K prophylaxis and Immunization	e) Cord care
Clinical laboratory devices	Haemoglobin colour scale (refill kit)					
	Haemoglobin colour scale (starter kit)					
Medical devices - Disposable	Blanket, survival, 220x140cm, non-sterile		X			
	Compress, gauze, sterile & non-sterile, single use					X
	Cotton wool, 500g, roll, non-sterile					
	Tape, medical, roll (Sizes*)					X
	Safety box, for used syringes/needles					
	Syringes, auto-disable (AD), (Capacities ml*)					
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X	X		X
Medical devices - Equipment	Breastpump, manual, with accessories					
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis					
Counselling material	Counselling material		X	X	X	

Further assessment for all young infant			
Clinical visit			
a) Full clinical examination / check vital signs / measuring weight / check haemoglobin	b) Provision of vaccines (Diphtheria Pertussis Tetanus (DPT) + Haemophilus Influenzae type B (HIB), Oral Polio Vaccine (OPV), Hepatitis B)	c) Breastfeeding support and replacement feeding if necessary	d) Monitoring growth and development
X			
X			
	X		
	X		
	X		
X	X		
		X	
X	X	X	X
X	X	X	X

Table 23. Medical devices for infancy and childhood at HEALTH POST

		Essential care for monitoring growth and early childhood development						
		Routine care						
General type	**Name of devices**	a) Full clinical examination / check vital signs / measuring weight	b) Provision of vaccines	c) Growth monitoring	d) Early childhood development monitoring	e) Breastfeeding support and replacement feeding if necessary	f) Vitamin A supplementation	g) Deworming (Mebendazole)
Clinical laboratory devices	Lancet, blood, safety, sterile (Sizes*)							
	Swab, cotton-tip, tube, sterile							
	Haemoglobin colour scale (refill kit)							
	Haemoglobin colour scale (starter kit)							
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit							
Medical devices - Disposable	Compress, gauze, sterile & non-sterile, single use							
	Cotton wool, 500g, roll, non-sterile		X					
	Tape, medical, roll (Sizes*)							
	Needles, luer, sterile, single use (Sizes G*)		X					
	Safety box, for used syringes/needles		X					
	Syringes, auto-disable (AD), (Capacities ml*)		X					
	Syringes, luer, sterile, single use (Capacities ml*)							
	Syringes, reuse prevention (RUP), (Capacities ml*)		X					
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X					
Medical devices - Equipment	Breastpump, manual, with accessories					X		
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis	X	X	X	X	X	X	X
Counselling material	Counselling material	X	X	X		X		

Detection and management of common infections, illness and complications in infancy and childhood													
Severe Acute Malnutrition (SAM)	Pneumonia		Wheeze (Asthma, Bronchiolitis)		Diarrhoea	Human Immunodeficiency Virus (HIV)			Eye infection	Ear infection	Mouth infection	Skin infection	Chicken pox
a) Diagnosis of SAM	a) Differential diagnosis for pneumonia	b) Management of pneumonia and its complications	a) Diagnosis of condition with wheeze	b) Management of condition with wheeze	a) Differential diagnosis and management of diarrhoea and dysentery	a) Diagnosis of HIV	b) Treatment for HIV (Antiretroviral Therapy (ART))	c) Management of other opportunistic infections in HIV	a) Detection and management of eye infection / conjunctivitis	a) Detection and management of ear infection	a) Detection and management of mouth infection / thrush	a) Diagnosis and management of skin infections	a) Detection and management of chicken pox
						X							
						X							
X													
X													
						X							
						X			X	X	X	X	X
		X		X	X	X			X	X	X	X	X
									X	X	X	X	X
		X		X	X								
		X		X	X	X							
		X		X									
		X		X	X								
		X		X	X	X			X	X	X	X	X
X	X	X	X	X	X	X	X						
X					X	X	X	X					

Table 24. Medical devices for family planning and reproductive health at HEALTH CENTRE

		First assessment			Provision of contraceptives						
		Basic Medical Examination		Preventive Immunization	Contraceptive method selection						
General type	**Name of devices**	a) Check-up vital signs / measuring weight and height / Anthropometry	b) Pelvic examination	a) Vaccine for Hepatitis B	a) Provision of oral contraceptives	a) Provision of injectable contraceptives	a) Insertion and removal of Intrauterine device (IUD)s	a) Insertion and removal of contraceptive implants with anaesthesia	a) Provision of barriers methods	a) Provision of emergency contraception	a) Provision of vaginal rings and patches
Clinical laboratory devices	Container, sample, 50 ml										
	Lancet, blood, safety, sterile (Sizes*)										
	Swab, cotton-tip, tube, sterile										
	Cytology stain, kit										
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit										
	Rapid Diagnostic Test (RDT), malaria, kit										
	Rapid Diagnostic Test (RDT),Treponemal, syphilis, kit										
	Rapid Plasma Reagin (RPR), syphilis, kit										
	Test strip, pregnancy		X								
	Test strip, urinalysis (10 parameter)										
	Test strip, vaginal infection, pH										
Family planning devices	Female condoms								X		
	Intra-Uterine Devices (only prequalified copper IUDs)						X			X	
	Lubricants								X		
	Male condoms								X		
	Sub-dermal implants (included the insertion device)							X			
Medical devices - Disposable	Blanket, survival, 220x140cm, non-sterile										
	Compress, gauze,sterile & non-sterile, single use		X			X	X	X		X	
	Cotton wool, 500g, roll, non-sterile			X		X					
	Tape, medical, roll (Sizes*)										
	Needles, luer, sterile, single use (Sizes G*)					X		X			
	Needles, scalp vein, sterile, single use (Sizes G*)										
	Safety box, for used syringes/needles			X		X		X			
	Syringes, auto-disable (AD), (Capacities ml*)			X							
	Syringes, luer, sterile, single use (Capacities ml*)					X		X			
	Syringes, reuse prevention (RUP), (Capacities ml*)					X		X			
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X	X		X	X			X	
	Gloves, gynaecological, sterile, single use, pair (Sizes*)		X				X			X	
	Gloves, surgical, sterile, single use, pair (Sizes*)							X			
	Suture, synthetic, absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use							X			
	Suture, synthetic, non-absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use							X			
Medical devices - Equipment Grouping	Magnifying lens for Visual Inspection with Acetic Acid										
	Commodities for medical examination & diagnosis	X	X	X		X	X	X	X	X	X
	Commodities for surgery & anaesthesia							X			
Counselling material	Counselling material				X	X	X	X	X	X	X

	Detection and management of Sexually Transmitted Infection (STI) and other infections													Screening and management of cancers of the reproductive system				Management of gender-based violence (GBV)
	Syphilis		Human Immunodeficiency Virus (HIV)			Gonorrhoea		Chlamydia		Malaria			Other infections		Cervix cancer			Breast cancer	Post-rape care
a) Vasectomy with local anaesthesia	a) Screening / diagnosis of Syphilis by laboratory test	b) Treatment for Syphilis	a) Screening of HIV	b) Treatment for HIV (Antiretroviral Therapy (ART))	c) Provide post exposure prophylaxis for HIV discordant couple	a) Screening / diagnosis of Gonorrhoea	b) Treatment for Gonorrhoea	a) Screening / diagnosis of Chlamydia	b) Treatment for Chlamydia	a) Prophylactic antimalarial (IPT)	b) Diagnosis of malaria	c) Management of malaria	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	a) Diagnosis and treatment for bacterial vaginosis, trichomonas, candidiasis	a) Papanicolaou test	b) Visual Inspection with Acetic Acid (VIA / VIAM)	c) Human Papilloma Virus (HPV) test	a) Breast examination	a) Management of post-rape care
						X		X					X	X					X
	X		X								X								X
	X		X			X		X						X	X	X	X		X
															X				
			X																X
											X								
	X																		X
	X																		X
																			X
						X		X					X	X					X
						X		X						X					X
																			X
																			X
X		X					X		X			X	X	X		X			X
		X					X		X			X	X	X		X			X
																			X
X		X					X		X	X		X	X	X		X			X
X																			
X		X					X		X	X		X	X	X		X			X
X		X					X		X	X		X	X	X		X			X
X		X					X		X	X		X	X	X		X			X
X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
																			X
X																			
X																			
X																			
																X			
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
X					X					X		X							X

Table 25. Medical devices for pregnancy at HEALTH CENTRE

		First assessment		Emergency assessment	Detection and management of Sexually Transmitted Infection (STI) and other infections				
		Basic Medical Examination	Preventive Immunization	Emergency preparedness and referral	Syphilis		Human Immunodeficiency Virus (HIV)		
General type	**Name of devices**	a) Check-up vital signs / measuring weight and height / Anthropometry/ Vaginal examination	a) Vaccine for Tetanus	a) Emergency care and pre-referral treatment	a) Screening / diagnosis of Syphilis by laboratory test	b) Treatment for Syphilis	a) Screening of HIV	b) Prevention Mother To Child Transmission (PMTCT)	c) Treatment for HIV (Antiretroviral Therapy (ART))
Clinical laboratory devices	Container, sample, 50 ml								
	Lancet, blood, safety, sterile (Sizes*)				X		X		
	Swab, cotton-tip, tube, sterile				X		X		
	Blood glucometer, with accessories			X					
	Hemoglobinometer, with accessories			X					
	Enzyme Immuno Assay (EIA), gonorrhea Ag, kit								
	Haemoglobin colour scale (refill kit)			X					
	Haemoglobin colour scale (starter kit)			X					
	Nucleic Acid Test (NAT), chlamydia, kit								
	Nucleic Acid Test (NAT), gonorrhea, kit								
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit						X		
	Rapid Diagnostic Test (RDT), malaria, kit								
	Rapid Diagnostic Test (RDT),Treponemal, syphilis, kit				X				
	Rapid Plasma Reagin (RPR), syphilis, kit				X				
	Test strip, pregnancy	X							
	Test strip, urinalysis (10 parameter)	X							
Family planning devices	Female condoms							X	
	Lubricants							X	
	Male condoms							X	
Medical devices - Disposable	Bandage, elastic, 7.5cmx5m, roll			X					
	Blanket, survival, 220x140cm, non-sterile			X					
	Compress, gauze, sterile & non-sterile, single use	X	X	X		X			
	Cotton wool, 500g, roll, non-sterile			X		X			
	Tape, medical, roll (Sizes*)			X					
	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)			X					
	Infusion giving set, sterile, single use			X					
	Needles, luer, sterile, single use (Sizes G*)			X		X			
	Safety box, for used syringes/needles		X	X		X			
	Stopcock, 3-way, sterile, single use			X					
	Syringes, auto-disable (AD), (Capacities ml*)		X						

							Detection and management of maternal chronic medical conditions										Management of prelabour rupture of the membranes (PRM)		
Malaria			Rubella	Tuberculosis	Other infections		Iron Deficiency Anaemia			Hypertension and pre-eclampsia					Diabetes		Assessment of PRM		Preterm
a) Prophylactic antimalarial (IPT)	b) Diagnosis of malaria	c) Management of malaria	a) Diagnosis and treatment for rubella	a) Diagnosis and treatment for tuberculosis	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	a) Diagnosis and treatment of other STI/Reproductive Tract Infections (RTI): Candida vaginitis, gonorrhoea, chlamydia, bacterial vaginosis and trichomoniasis	a) Diagnosis of anaemia	b) Iron and folic acid supplementation	c) Anthelminthic (deworm)	a) Diagnosis of Pre-eclampsia-Eclampsia	b) Supplement calcium	c) Low-dose aspirin	d) Antihypertensive drugs	e) Magnesium sulfate	a) Glucose testing for detection	b) Treatment for insulin-dependent diabetic mother	a) Diagnosis and laboratory test	b) Fetal monitoring	a) Provision antibiotics if indicated
					X	X													
	X						X								X	X			
						X													
															X	X			
							X												
						X													
							X												
							X												
						X													
						X													
	X																		
			X		X					X					X				
		X															X		X
		X															X		X
																	X		X
																	X		X
																	X		X
		X			X					X							X		X
		X			X	X				X						X	X		X
																			X

Table 25 Medical devices for pregnancy at Health centre

		First assessment		Emergency assessment	Detection and management of Sexually Transmitted Infection (STI) and other infections				
		Basic Medical Examination	Preventive Immunization	Emergency preparedness and referral	Syphilis		Human Immunodeficiency Virus (HIV)		
General type	**Name of devices**	a) Check-up vital signs / measuring weight and height / Anthropometry/ Vaginal examination	a) Vaccine for Tetanus	a) Emergency care and pre-referral treatment	a) Screening / diagnosis of Syphilis by laboratory test	b) Treatment for Syphilis	a) Screening of HIV	b) Prevention Mother To Child Transmission (PMTCT)	c) Treatment for HIV (Antiretroviral Therapy (ART))
	Syringe for insulin, sterile, single use								
	Syringes, luer, sterile, single use (Capacities ml*)			X		X			
	Syringes, reuse prevention (RUP), (Capacities ml*)			X		X			
	Bag, urine, collecting, 2000ml			X					
	Catheter, Foley, sterile, single use (Sizes CH*)			X					
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)			X					
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)								
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X	X	X	X	X		
	Gloves, gynaecological, sterile, single use, pair (Sizes*)	X		X					
	Gloves, surgical, sterile, single use, pair (Sizes*)			X					
Medical devices - Equipment	Cardiotocograph (CTG), with accessories								
	Doppler, foetal heart rate (FHR) detector, with accessories			X					
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis	X	X	X	X	X	X	X	X
	Commodities for emergency preparedness			X					
Counselling material	Counselling material							X	X

Malaria			Rubella	Tuberculosis	Other infections		Detection and management of maternal chronic medical conditions									Management of prelabour rupture of the membranes (PRM)		
							Iron Deficiency Anaemia			Hypertension and pre-eclampsia					Diabetes	Assessment of PRM		Preterm
a) Prophylactic antimalarial (IPT)	b) Diagnosis of malaria	c) Management of malaria	a) Diagnosis and treatment for rubella	a) Diagnosis and treatment for tuberculosis	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	a) Diagnosis and treatment of other STI/Reproductive Tract Infections (RTI): Candida vaginitis, gonorrhoea, chlamydia, bacterial vaginosis and trichomoniasis	a) Diagnosis of anaemia	b) Iron and folic acid supplementation	c) Anthelminthic (deworm)	a) Diagnosis of Pre-eclampsia-Eclampsia	b) Supplement calcium	c) Low-dose aspirin	d) Antihypertensive drugs	e) Magnesium sulfate	a) Glucose testing for detection	b) Treatment for insulin-dependent diabetic mother	a) Diagnosis and laboratory test	b) Fetal monitoring	a) Provision antibiotics if indicated
																X			
		X			X	X				X							X		X
		X			X	X				X							X		X
										X									
										X									
	X	X			X	X				X						X	X		X
																		X	
																		X	
X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
										X									
X		X	X	X	X	X		X	X		X	X	X	X					

Table 26. Medical devices for childbirth at HEALTH CENTRE

		First assessment	Emergency assessment
		Basic Medical Examination	Emergency preparedness and referral
General type	**Name of devices**	a) Check-up vital signs / Vaginal examination	a) Emergency care and pre-referral treatment
Clinical laboratory devices	Container, sample, 50 ml		
	Lancet, blood, safety, sterile (Sizes*)		
	Swab, cotton-tip, tube, sterile		
	Blood glucometer, with accessories		X
	Hemoglobinometer, with accessories		X
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit		
	Test strip, pregnancy	X	
	Test strip, urinalysis (10 parameter)	X	
Medical devices - Disposable	Bandage, elastic, 7.5cmx5m, roll		X
	Blanket, survival, 220x140cm, non-sterile		X
	Bracelet, identification (Sizes*)	X	
	Compress, gauze,sterile & non-sterile, single use	X	X
	Cotton wool, 500g, roll, non-sterile		X
	Tape, medical, roll (Sizes*)		X
	Umbilical clamp, sterile, single use		
	Umbilical tape, 3mmx50m, roll, non-sterile		
	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)		X
	Infusion giving set, burette 100-150ml, sterile, single use		X
	Infusion giving set, sterile, single use		X
	Needles, luer, sterile, single use (Sizes G*)		X
	Safety box, for used syringes/needles		X
	Stopcock, 3-way, sterile, single use		X
	Syringes, luer, sterile, single use (Capacities ml*)		X
	Syringes, reuse prevention (RUP), (Capacities ml*)		X
	Bag, urine, collecting, 2000ml		X
	Catheter, Foley, sterile, single use (Sizes CH*)		X
	Catheter, urethral, sterile, single use (Sizes CH*)		X
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)		X
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)		X
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X
	Gloves, gynaecological, sterile, single use, pair (Sizes*)	X	X
	Gloves, surgical, sterile, single use, pair (Sizes*)		X
Medical devices - Equipment	Cardiotocograph (CTG), with accessories		
	Doppler, foetal heart rate (FHR) detector, with accessories		X
	Non-Pneumatic Anti-Shock Garment (NASG)		X
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis	X	X
	Commodities for emergency preparedness (see table 12)		X
	Commodities for labour, delivery & recovery (see table 13)		
Counselling material	Counselling material (see table 14)		

Mother care				Management of complications of labour and delivery				
Child-birth				Assessment for complications		Postpartum haemorrhage (PPH)	Human Immunodeficiency Virus (HIV) positive women	
a) Monitoring progress of labour	b) Active management of the third stage of labour (AMTSL): Prophylactic use of uterotonics	c) Spontaneous delivery	d) Assisted delivery (vacuum extraction) if needed	a) Diagnosis of complications	b) Fetal monitoring	a) Use of uterotonics of choice for the treatment of PPH	a) Screening of HIV	b) Prevention Mother To Child Transmission (PMTCT)
				X				
							X	
							X	
							X	
X								
	X	X	X	X		X		
	X		X	X		X		
	X		X	X		X		
		X	X					
		X	X					
	X		X	X		X		
	X		X	X		X		
	X			X		X		
	X		X	X		X		
	X			X		X		
	X			X		X		
	X			X		X		
						X		
						X		
		X	X					
		X	X					
		X	X					
	X	X	X	X		X	X	
	X	X	X	X				
		X	X			X		
					X			
					X			
				X	X	X	X	X
				X				
X	X	X	X	X	X	X	X	X
								X

Table 27. Medical devices for post-natal mother at HEALTH CENTRE

		First assessment			Emergency assessment
		Basic Medical Examination		Support for breast feeding	Emergency preparedness and referral
General type	**Name of devices**	a) Check-up vital signs	b) Screening for cervix and breast cancer	a) Management of mastitis / breast abscess	a) Emergency care and pre-referral treatment
Clinical laboratory devices	Container, sample, 50 ml				
	Lancet, blood, safety, sterile (Sizes*)				
	Swab, cotton-tip, tube, sterile		X		
	Hemoglobinometer, with accessories				
	Haemoglobin colour scale (refill kit)				
	Haemoglobin colour scale (starter kit)				
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit				
	Rapid Diagnostic Test (RDT), malaria, kit				
	Test strip, urinalysis (10 parameter)				
	Test strip, vaginal infection, pH				
Medical devices - Disposable	Bandage, elastic, 7.5cmx5m, roll				X
	Blanket, survival, 220x140cm, non-sterile				X
	Compress, gauze, sterile & non-sterile, single use			X	X
	Cotton wool, 500g, roll, non-sterile			X	X
	Tape, medical, roll (Sizes*)			X	X
	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)				X
	Infusion giving set, sterile, single use				X
	Needles, luer, sterile, single use (Sizes G*)			X	X
	Safety box, for used syringes/needles			X	X
	Stopcock, 3-way, sterile, single use				X
	Syringes, luer, sterile, single use (Capacities ml*)			X	X
	Syringes, reuse prevention (RUP), (Capacities ml*)			X	X
	Bag, urine, collecting, 2000ml				X
	Catheter, Foley, sterile, single use (Sizes CH*)				X
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)				X
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)				X
	Gloves, examination, latex, non-sterile, single use (Sizes*)		X	X	X
	Gloves, surgical, sterile, single use, pair (Sizes*)				X
Medical devices - Equipment	Breastpump, manual, with accessories			X	
Medical devices - Equipment Grouping (see tables 12, 13 and 16)	Commodities for medical examination & diagnosis	X	X	X	X
	Commodities for emergency preparedness				X
	Commodities for inpatient mother and newborn				
Counselling material	Counselling material				

Prevention and management of post partum bleeding				Detection and management of post partum infection			
Anaemia				HIV	Malaria	Other infection	
a) Management of post partum bleeding	b) Diagnosis of anaemia	c) Iron supplementation	d) Anthelminthic (deworm)	a) Diagnosis and treatment for HIV (Antiretroviral Therapy (ART))	a) Diagnosis and management of malaria	a) Diagnosis and management of postpartum endometritis and salpingitis	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis
							X
	X			X	X		
						X	
	X						
	X						
	X						
				X			
					X		
						X	X
						X	X
X					X	X	X
X					X	X	X
X					X	X	X
X							
X							
X							
X							
X							
X							
X				X	X	X	X
X	X	X	X	X	X	X	X
X							
X							
		X	X	X	X	X	X

Table 28. Medical devices for post-natal baby (newborn) at HEALTH CENTRE

		Childbirth: Essential newborn care								
		Immediate care at birth					Emergency support		Routine care	
General type	Name of devices	a) Dry baby thoroughly on mother's chest skin to skin and cover	b) Assess breathing	c) Clamp and cut cord / Check cord vessels / Check for bleeding and signs of cord infection	d) Prevent hypothermia when skin to skin is not possible	e) Support breastfeeding within the first hour	a) Basic neonatal resuscitation	b) Management of brain injury and intracranial haemorrhage (ICH)	a) Full clinical examination / Check vital signs / measuring weight	b) Thermal Care
Clinical laboratory devices	Container, sample, 50 ml									
	Lancet, blood, safety, sterile (Sizes*)									
	Swab, cotton-tip, tube, sterile									
	Hemoglobinometer, with accessories									
	Haemoglobin colour scale (refill kit)									
	Haemoglobin colour scale (starter kit)									
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit									
	Rapid Plasma Reagin (RPR), syphilis, kit									
	Treponema Pallidum Haemagglutination Assay (TPHA), syphilis, kit									
Medical devices - Disposable	Bandage, elastic, 7.5cmx5m, roll									
	Blanket, survival, 220x140cm, non-sterile				X					X
	Bracelet, identification (Sizes*)						X		X	
	Compress, gauze, sterile & non-sterile, single use			X			X			
	Cotton wool, 500g, roll, non-sterile									
	Tape, medical, roll (Sizes*)									
	Umbilical clamp, sterile, single use			X						
	Umbilical tape, 3mmx50m, roll, non-sterile			X						
	Infusion giving set, burette 100-150ml, sterile, single use									
	Needles, luer, sterile, single use (Sizes G*)									
	Needles, scalp vein, sterile, single use (Sizes G*)									
	Safety box, for used syringes/needles									
	Syringes, auto-disable (AD), (Capacities ml*)									
	Syringes, luer, sterile, single use (Capacities ml*)									
	Syringes, reuse prevention (RUP), (Capacities ml*)									
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)									
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)									
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X	X	X	X	X		X	X
	Gloves, surgical, sterile, single use, pair (Sizes*)			X						
Medical devices - Equipment	Breastpump, manual, with accessories									
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis (see table 12)	X	X	X	X	X	X		X	X
	Commodities for emergency preparedness (see table 13)						X			
	Commodities for labour, delivery & recovery (see table 14)	X	X	X	X	X	X			
	Commodities for inpatient mother and newborn (see table 16)									X
Counselling material	Counselling material	X			X	X				X

					Detection and management of congenital infections				Detection and management of common infections, illness and complications in the neonate and young infant				Further assessment for all young infant			
					Congenital infections				Cord infection	Pneumonia	Diarrhoea	Triage, emergency preparedness and referral	Clinical visit			
c) Breastfeeding support	d) Vitamin K prophylaxis and Immunization	e) Cord care	f) Prophylaxis for eye infection	g) Prophylactic antibiotics for neonates at risk of infection	a) Diagnosis of congenital syphilis	b) Prophylactic treatment for congenital syphilis	c) Screening of HIV (Dried Blood Spot (DBS))	d) Prophylactic treatment for HIV (Antiretroviral Therapy (ART))	a) Detection and management of cord infection	a) Diagnosis of pneumonia	a) Detection and management of diarrhoea	a) Detection of emergency signs, emergency care and pre-referral treatment	a) Full clinical examination / check vital signs / measuring weight / check haemoglobin	b) Provision of vaccines (Diphtheria Pertussis Tetanus (DPT) + Haemophilus Influenzae type B (HIB), Oral Polio Vaccine (OPV), Hepatitis B)	c) Breastfeeding support and replacement feeding if necessary	d) Monitoring growth and development
					X											
							X						X			
					X		X									
													X			
													X			
													X			
							X									
					X											
					X											
												X				
												X				
	X	X	X	X	X	X	X		X		X		X			
	X								X				X	X		
		X							X							
									X							
	X			X		X			X		X	X				
									X		X					
	X			X		X			X		X	X	X	X		
	X													X		
	X			X		X			X		X	X				
	X			X		X			X		X	X				
												X				
												X				
X	X	X	X	X	X	X	X	X	X		X	X	X	X		
		X														
															X	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
											X	X				
X	X	X	X	X	X	X	X	X	X	X	X					
X	X												X	X	X	X

Table 29. Medical devices for infancy and childhood at HEALTH CENTRE

		Essential care for monitoring growth and early childhood development							Detection and management of common infections, illness and complications in infancy and childhood				
		Routine care							Severe Acute Malnutrition (SAM)			Anaemia	
General type	**Name of devices**	a) Full clinical examination / check vital signs / measuring weight	b) Provision of vaccines	c) Growth monitoring	d) Early childhood development monitoring	e) Breastfeeding support and replacement feeding if necessary	f) Vitamin A supplementation	g) Deworming (Mebendazole)	a) Diagnosis of SAM	b) Feeding support	c) Pre-referral treatment for SAM	a) Diagnosis of anaemia	b) Management of anaemia
Clinical laboratory devices	Lancet, blood, safety, sterile (Sizes*)								X			X	X
	Swab, cotton-tip, tube, sterile												
	Blood glucometer, with accessories								X				
	Hemoglobinometer, with accessories								X			X	X
	Haemoglobin colour scale (refill kit)								X			X	
	Haemoglobin colour scale (starter kit)								X			X	
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit												
	Rapid Diagnostic Test (RDT), malaria, kit												
	Test strip, urinalysis (10 parameter)											X	
Medical devices - Disposable	Bandage, elastic, 7.5cmx5m, roll										X		
	Blanket, survival, 220x140cm, non-sterile										X		
	Bracelet, identification (Sizes*)									X	X		X
	Compress, gauze, sterile & non-sterile, single use								X	X	X	X	X
	Cotton wool, 500g, roll, non-sterile		X						X	X	X	X	X
	Tape, medical, roll (Sizes*)									X	X		X
	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)									X	X		X
	Infusion giving set, burette 100-150ml, sterile, single use									X	X		X
	Needles, luer, sterile, single use (Sizes G*)		X							X	X		X
	Needles, scalp vein, sterile, single use (Sizes G*)									X	X		X
	Safety box, for used syringes/needles		X						X	X	X	X	X
	Stopcock, 3-way, sterile, single use										X		
	Syringes, auto-disable (AD), (Capacities ml*)		X										
	Syringes, luer, sterile, single use (Capacities ml*)									X	X		X
	Syringes, reuse prevention (RUP), (Capacities ml*)		X							X	X		X
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)										X		X
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)										X		X
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X						X	X	X	X	X
	Gloves, surgical, sterile, single use, pair (Sizes*)												
Medical devices - Equipment	Breastpump, manual, with accessories					X				X			
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis (see table 12)	X	X	X	X	X	X	X	X	X	X	X	X
	Commodities for emergency preparedness (see table 13)								X	X	X		
	Commodities for inpatient child (see table 17)									X		X	X
Counselling material	Counselling material	X	X	X		X			X	X			

																			Supportive care for all sick infant and child
Pneumonia		Wheeze (Asthma, Bronchiolitis)		Tuberculosis		Diarrhoea	Malaria	Dengue fever	Measles	Human Immunodeficiency Virus (HIV)			Eye infection	Ear infection	Mouth infection	Skin infection	Chicken pox	Triage, emergency preparedness and referral	
a) Differential diagnosis for pneumonia	b) Management of pneumonia and its complications	a) Diagnosis of condition with wheeze	b) Management of condition with wheeze	a) Diagnosis of tuberculosis	b) Management of tuberculosis	a) Differential diagnosis and management of diarrhoea and dysentery	a) Diagnosis and management of malaria	a) Diagnosis and management of dengue fever	a) Diagnosis and management of measles	a) Diagnosis of HIV	b) Treatment for HIV (Antiretroviral Therapy (ART))	c) Management of other opportunistic infections in HIV	a) Detection and management of eye infection / conjunctivitis	a) Detection and management of ear infection	a) Detection and management of mouth infection / thrush	a) Diagnosis and management of skin infections	a) Detection and management of chicken pox	a) Detection of emergency signs, emergency care and pre-referral treatment	
							X	X		X									
X		X		X						X									
										X									
							X												
																			X
																			X
					X														
	X		X		X	X			X	X		X	X	X	X	X	X	X	
	X		X		X	X			X	X		X	X	X	X	X	X	X	
			X		X	X						X	X	X	X	X	X	X	
	X				X	X						X						X	
	X				X	X						X						X	
	X		X		X	X			X			X	X	X	X	X	X	X	
	X				X	X						X						X	
	X		X		X	X			X	X		X	X	X	X	X	X	X	
	X				X	X												X	
	X		X		X	X			X			X	X	X	X	X	X	X	
	X		X		X	X			X			X	X	X	X	X	X	X	
	X		X		X													X	
	X		X		X													X	
	X		X		X	X			X	X		X	X	X	X	X	X	X	
																		X	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	X		X															X	
	X		X				X	X	X			X							
						X	X	X		X	X	X							

Table 30. Medical devices for family planning and reproductive health at DISTRICT HOSPITAL

		First assessment			Provision of contraceptives						
		Basic Medical Examination		Preventive Immunization	Contraceptive method selection						
General type	**Name of devices**	a) Check-up vital signs / measuring weight and height / Anthropometry	b) Pelvic examination	a) Vaccine for Hepatitis B	a) Provision of oral contraceptives	a) Provision of injectable contraceptives	a) Insertion and removal of Intrauterine device (IUD)s	a) Insertion and removal of contraceptive implants with anaesthesia	a) Provision of barriers methods	a) Provision of emergency contraception	a) Provision of vaginal rings and patches	a) Vasectomy with local anaesthesia
Clinical laboratory devices	Container, sample, 50 ml											
	Lancet, blood, safety, sterile (Sizes*)											
	Needle holder, vacuum tubes, sterile											
	Needle, vacuum tube, sterile (Size*)											
	Swab, cotton-tip, tube, sterile											
	Tube, capillary, Ethylene Diamine Tetra-acetic Acid (EDTA)											
	Tube, vacuum, Ethylene Diamine Tetra-acetic Acid (EDTA), sterile (Capacity*)											
	Tube, vacuum, plain/dry, sterile (Capacity*)											
	Cytology stain, kit											
	Enzyme Immuno Assay (EIA), gonorrhea Ag, kit											
	Enzyme Immuno Assay (EIA), Human Immunodeficiency Virus (HIV), kit											
	Nucleic Acid Test (NAT), chlamydia, kit											
	Nucleic Acid Test (NAT), gonorrhea, kit											
	Nucleic Acid Test (NAT), Human Papilloma Virus (HPV), kit											
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit											
	Rapid Diagnostic Test (RDT), malaria, kit											
	Rapid Diagnostic Test (RDT),Treponemal, syphilis, kit											
	Rapid Plasma Reagin (RPR), syphilis, kit											
	Treponema Pallidum Haemagglutination Assay (TPHA), syphilis, kit											
	Test strip, pregnancy		X									
	Test strip, urinalysis (10 parameter)											
	Test strip, vaginal infection, pH											
Family planning devices	Cervical cap								X			
	Diaphragm								X			
	Female condoms								X			
	Intra-Uterine Devices (only prequalified copper IUDs)						X			X		
	Levonorgestrel Intra Uterin Device (IUD)						X					
	Lubricants								X			
	Male condoms								X			
	Sub-dermal implants (included the insertion device)							X				

	Detection and management of Sexually Transmitted Infection (STI) and other infections													Screening and management of cancers of the reproductive system									Management of gender-based violence (GBV)
	Syphilis		Human Immunodeficiency Virus (HIV)			Gonorrhoea		Chlamydia		Malaria			Other infections		Cervix cancer						Breast cancer			Post-rape care
a) Tubal ligation	a) Screening / diagnosis of Syphilis by laboratory test	b) Treatment for Syphilis	a) Screening of HIV	b) Treatment for HIV (Antiretroviral Therapy (ART))	c) Provide post exposure prophylaxis for HIV discordant couple	a) Screening / diagnosis of Gonorrhoea	b) Treatment for Gonorrhoea	a) Screening / diagnosis of Chlamydia	b) Treatment for Chlamydia	a) Prophylactic antimalarial (IPT)	b) Diagnosis of malaria	c) Management of malaria	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	a) Diagnosis and treatment for bacterial vaginosis, trichomonas, candidiasis	a) Papanicolaou test	b) Visual Inspection with Acetic Acid (VIA / VIAM)	c) Human Papilloma Virus (HPV) test	d) Colposcopy	e) Colposcopy and Biopsy / Pathology lab-test	f) Treatment for precancerous lesion (cryotherapy)	a) Breast examination	b) Diagnostic by image (mammography, ultrasound)	c) Biopsy / Pathology lab-test	a) Management of post-rape care
						X		X					X	X										X
	X		X								X													X
			X																					X
			X																					X
	X		X			X		X						X	X	X	X	X	X	X				X
			X																					X
			X																					X
			X																					X
															X									
						X																		X
			X																					X
								X																X
						X																		X
																	X							
			X																					X
											X													
	X																							X
	X																							X
	X																							X
																								X
						X		X					X	X										X
						X		X						X										X
																								X

Table 30 Medical devices for family planning and reproductive health at DISTRICT HOSPITAL

		First assessment			Provision of contraceptives							
		Basic Medical Examination		Preventive Immunization	Contraceptive method selection							
General type	**Name of devices**	a) Check-up vital signs / measuring weight and height / Anthropometry	b) Pelvic examination	a) Vaccine for Hepatitis B	a) Provision of oral contraceptives	a) Provision of injectable contraceptives	a) Insertion and removal of Intrauterine device (IUD)s	a) Insertion and removal of contraceptive implants with anaesthesia	a) Provision of barriers methods	a) Provision of emergency contraception	a) Provision of vaginal rings and patches	a) Vasectomy with local anaesthesia
Medical devices - Disposable	Blanket, survival, 220x140cm, non-sterile											
	Compress, gauze,sterile & non-sterile, single use		X			X	X	X		X		X
	Cotton wool, 500g, roll, non-sterile			X		X						
	Tape, medical, roll (Sizes*)											
	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)											
	Infusion giving set, sterile, single use											
	Needles, luer, sterile, single use (Sizes G*)					X		X				X
	Needles, scalp vein, sterile, single use (Sizes G*)											X
	Needles, spinal, sterile, single use (Sizes*)											
	Safety box, for used syringes/needles			X		X		X				X
	Syringes, auto-disable (AD), (Capacities ml*)			X								
	Syringes, luer, sterile, single use (Capacities ml*)					X		X				X
	Syringes, reuse prevention (RUP), (Capacities ml*)					X		X				X
	Airway, Guedel, translucent (Sizes*)											
	Catheter, urethral, sterile, single use (Sizes CH*)											
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)											
	Tube, endotracheal, with cuff, sterile, single use (Sizes ID*)											
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)											
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X	X		X	X			X		X
	Gloves, gynaecological, sterile, single use, pair (Sizes*)		X				X			X		
	Gloves, surgical, sterile, single use, pair (Sizes*)							X				X
	Suture, synthetic, absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use							X				X
	Suture, synthetic, non-absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use							X				X
Medical devices - Equipment	Breast biopsy system											
	Colposcope with biopsy set											
	Cryosurgical unit with tank and accesories											
	Magnifying lens for Visual Inspection with Acetic Acid											
	Mammograph with printer and accessories											
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis	X	X	X		X	X	X	X	X	X	X
	Commodities for surgery & anaesthesia							X				X
	Commodities for inpatient mother and newborn											
Counselling material	Counselling material				X	X	X	X	X	X	X	X

	Detection and management of Sexually Transmitted Infection (STI) and other infections														Screening and management of cancers of the reproductive system									Management of gender-based violence (GBV)
	Syphilis		Human Immunodeficiency Virus (HIV)			Gonorrhoea		Chlamydia		Malaria			Other infections		Cervix cancer						Breast cancer			Post-rape care
a) Tubal ligation	a) Screening / diagnosis of Syphilis by laboratory test	b) Treatment for Syphilis	a) Screening of HIV	b) Treatment for HIV (Antiretroviral Therapy (ART))	c) Provide post exposure prophylaxis for HIV discordant couple	a) Screening / diagnosis of Gonorrhoea	b) Treatment for Gonorrhoea	a) Screening / diagnosis of Chlamydia	b) Treatment for Chlamydia	a) Prophylactic antimalarial (IPT)	b) Diagnosis of malaria	c) Management of malaria	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	a) Diagnosis and treatment for bacterial vaginosis, trichomonas, candidiasis	a) Papanicolaou test	b) Visual Inspection with Acetic Acid (VIA / VIAM)	c) Human Papilloma Virus (HPV) test	d) Colposcopy	e) Colposcopy and Biopsy / Pathology lab-test	f) Treatment for precancerous lesion (cryotherapy)	a) Breast examination	b) Diagnostic by image (mammography, ultrasound)	c) Biopsy / Pathology lab-test	a) Management of post-rape care
																								X
X		X					X		X			X	X	X		X		X	X	X			X	X
		X					X		X			X	X	X		X								X
X												X	X	X										X
X												X	X	X										
X												X	X	X										
X		X					X		X	X		X	X	X		X							X	X
X																								
X		X					X		X	X		X	X	X		X							X	X
X		X					X		X	X		X	X	X		X							X	X
X		X					X		X	X		X	X	X		X							X	X
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																						X	X	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
X																							X	
X												X	X	X										
X					X					X		X											X	

Table 31. Medical devices for pregnancy at DISTRICT HOSPITAL

		First assessment		Emergency assessment	Detection and management of Sexually Transmitted Infection (STI) and other infections									
		Basic Medical Examination	Preventive Immunization	Emergency preparedness and referral	Syphilis		Human Immunodeficiency Virus (HIV)			Malaria			Rubella	Tuberculosis
General type	**Name of devices**	a) Check-up vital signs / measuring weight and height / Anthropometry/ Vaginal examination	a) Vaccine for Tetanus	a) Emergency care and pre-referral treatment	a) Screening / diagnosis of Syphilis by laboratory test	b) Treatment for Syphilis	a) Screening of HIV	b) Prevention Mother To Child Transmission (PMTCT)	c) Treatment for HIV (Antiretroviral Therapy (ART))	a) Prophylactic antimalarial (IPT)	b) Diagnosis of malaria	c) Management of malaria	a) Diagnosis and treatment for rubella	a) Diagnosis and treatment for tuberculosis
Blood Bank devices	Anti-A blood group reagent, monoclonal													
	Anti-B blood group reagent, monoclonal													
	Anti-D blood group reagent (Saline/monoclonal)													
	Blood administration set, sterile													
	Glass slides, 25x75mm													
	Markers, fine point, permanent black, for glassware													
	Pasteur pipettes with integral bulb, disposable, plastic non-sterile, 3 ml													
	Wooden or plastic applicator sticks													
Clinical laboratory devices	Container, sample, 50 ml													
	Lancet, blood, safety, sterile (Sizes*)				X		X				X			
	Needle holder, vacuum tubes, sterile						X							
	Needle, vacuum tube, sterile (Size*)						X							
	Swab, cotton-tip, tube, sterile				X		X							
	Tube, capillary, Ethylene Diamine Tetra-acetic Acid (EDTA)						X							
	Tube, vacuum, Ethylene Diamine Tetra-acetic Acid (EDTA), sterile (Capacity*)						X							
	Tube, vacuum, plain/dry, sterile (Capacity*)						X							
	Blood glucometer, with accessories			X										
	Hemoglobinometer, with accessories			X										
	Enzyme Immuno Assay (EIA), gonorrhea Ag, kit													
	Enzyme Immuno Assay (EIA), Human Immunodeficiency Virus (HIV), kit						X							
	Enzyme Immuno Assay (EIA), Rubella, kit												X	
	Nucleic Acid Test (NAT), chlamydia, kit													
	Nucleic Acid Test (NAT), gonorrhea, kit													
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit						X							
	Rapid Diagnostic Test (RDT), malaria, kit										X			
	Rapid Diagnostic Test (RDT),Treponemal, syphilis, kit				X									
	Rapid Plasma Reagin (RPR), syphilis, kit				X									
	Treponema Pallidum Haemagglutination Assay (TPHA), syphilis, kit				X									
	Test strip, pregnancy	X												
	Test strip, urinalysis (10 parameter)	X											X	
	Test strip, vaginal infection, pH													

		Detection and management of maternal chronic medical conditions													Management of prelabour rupture of the membranes (PRM)								Management of malpresentation at term			Management of female genital mutilation		Management of ectopic pregnancy				Management of miscarriage and abortion							
Other infections		Iron Deficiency Anaemia				Hypertension and pre-eclampsia							Diabetes		Assessment of PRM		Preterm				Term		Malpresentation at term			Female genital mutilation		Ectopic pregnancy				Miscarriage and abortion		Miscarriage			Safe abortion when indicated and legally permitted		
a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	a) Diagnosis and treatment of other STI/ Reproductive Tract Infections (RTI): Candida vaginitis, gonorrhoea, chlamydia, bacterial vaginosis and trichomoniasis	a) Diagnosis of anaemia	b) Iron and folic acid supplementation	c) Anthelminthic (deworm)	d) Management of severe anaemia (considering blood transfusion)	a) Diagnosis of Pre-eclampsia-Eclampsia	b) Supplement calcium	c) Low-dose aspirin	d) Antihypertensive drugs	e) Magnesium sulfate	f) Fetal monitoring	g) Induction of labour	a) Glucose testing for detection	b) Treatment for insulin-dependent diabetic mother	a) Diagnosis and laboratory test	b) Fetal monitoring	a) Provision antibiotics if indicated	b) Provision of tocolytics to prolong pregnancy if indicated	c) Provision of corticosteroids for prevention of neonatal respiratory distress syndrome	d) Provision of magnesium sulfate for neuroprotection of the newborn	a) Provision antibiotics if indicated	b) Induction of labour	a) Diagnosis of breech at term	b) External Cephalic Version	c) Monitoring progress of labour	a) Perineal incision with local anaesthesia	b) Identify the need of caesarean section	a) Pregnancy test	b) Ultrasound scan	c) Laparotomy	d) Blood transfusion	a) Pregnancy test	b) Ultrasound scan	a) Treatment of infections	b) Management of bleeding (considering Vacuum Aspiration and blood transfusion)	c) Management of major injuries (considering laparotomy)	a) Medical uterine evacuation for the first trimester	b) Vacuum Aspiration for the first trimester	c) Medical uterine evacuation beyond the first trimester
					X																										X				X				
					X																										X				X				
					X																										X				X				
					X																										X				X				
					X																										X				X				
					X																										X				X				
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																											X				X							
X						X							X																										
X																																							

Table 31. Medical devices for pregnancy at DISTRICT HOSPITAL

		First assessment		Emergency assessment	Detection and management of Sexually Transmitted Infection (STI) and other infections								
		Basic Medical Examination	Preventive Immunization	Emergency preparedness and referral	Syphilis		Human Immunodeficiency Virus (HIV)			Malaria			Rubella	Tuberculosis
General type	**Name of devices**	a) Check-up vital signs / measuring weight and height / Anthropometry/ Vaginal examination	a) Vaccine for Tetanus	a) Emergency care and pre-referral treatment	a) Screening / diagnosis of Syphilis by laboratory test	b) Treatment for Syphilis	a) Screening of HIV	b) Prevention Mother To Child Transmission (PMTCT)	c) Treatment for HIV (Antiretroviral Therapy (ART))	a) Prophylactic antimalarial (IPT)	b) Diagnosis of malaria	c) Management of malaria	a) Diagnosis and treatment for rubella	a) Diagnosis and treatment for tuberculosis
Family planning devices	Female condoms							X						
	Lubricants							X						
	Male condoms							X						
Medical devices - Disposable	Bandage, elastic, 7.5cmx5m, roll			X										
	Blanket, survival, 220x140cm, non-sterile			X										
	Bracelet, identification (Sizes*)													
	Compress, gauze,sterile & non-sterile, single use	X	X	X		X						X	X	X
	Cotton wool, 500g, roll, non-sterile			X		X						X	X	X
	Tape, medical, roll (Sizes*)			X								X		X
	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)			X								X		X
	Infusion giving set, burette 100-150ml, sterile, single use			X										
	Infusion giving set, sterile, single use			X								X		X
	Needles, luer, sterile, single use (Sizes G*)			X		X						X	X	X
	Needles, spinal, sterile, single use (Sizes*)													
	Safety box, for used syringes/needles		X	X		X						X	X	X
	Stopcock, 3-way, sterile, single use			X										
	Syringes, auto-disable (AD), (Capacities ml*)		X											
	Syringe for insulin, sterile, single use													
	Syringe for tuberculin, sterile, single use													X
	Syringes, luer, sterile, single use (Capacities ml*)			X		X						X	X	X
	Syringes, reuse prevention (RUP), (Capacities ml*)			X		X						X		
	Airway, Guedel, translucent (Sizes*)			X										
	Bag, urine, collecting, 2000ml			X										
	Catheter, Foley, sterile, single use (Sizes CH*)			X										

	Detection and management of maternal chronic medical conditions													Management of prelabour rupture of the membranes (PRM)									Management of malpresentation at term			Management of female genital mutilation		Management of ectopic pregnancy				Management of miscarriage and abortion								
Other infections			Iron Deficiency Anaemia			Hypertension and pre-eclampsia							Diabetes			Assessment of PRM		Preterm				Term		Malpresentation at term			Female genital mutilation		Ectopic pregnancy				Miscarriage and abortion		Miscarriage			Safe abortion when indicated and legally permitted		
a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	a) Diagnosis and treatment of other STI/ Reproductive Tract Infections (RTI): Candida vaginitis, gonorrhoea, chlamydia, bacterial vaginosis and trichomoniasis		a) Diagnosis of anaemia	b) Iron and folic acid supplementation	c) Anthelminthic (deworm)	d) Management of severe anaemia (considering blood transfusion)	a) Diagnosis of Pre-eclampsia-Eclampsia	b) Supplement calcium	c) Low-dose aspirin	d) Antihypertensive drugs	e) Magnesium sulfate	f) Fetal monitoring	g) Induction of labour	a) Glucose testing for detection	b) Treatment for insulin-dependent diabetic mother	a) Diagnosis and laboratory test	b) Fetal monitoring	a) Provision antibiotics if indicated	b) Provision of tocolytics to prolong pregnancy if indicated	c) Provision of corticosteroids for prevention of neonatal respiratory distress syndrome	d) Provision of magnesium sulfate for neuroprotection of the newborn	a) Provision antibiotics if indicated	b) Induction of labour	a) Diagnosis of breech at term	b) External Cephalic Version	c) Monitoring progress of labour	a) Perineal incision with local anaesthesia	b) Identify the need of caesarean section	a) Pregnancy test	b) Ultrasound scan	c) Laparotomy	d) Blood transfusion	a) Pregnancy test	b) Ultrasound scan	a) Treatment of infections	b) Management of bleeding (considering Vacuum Aspiration and blood transfusion)	c) Management of major injuries (considering laparotomy)	a) Medical uterine evacuation for the first trimester	b) Vacuum Aspiration for the first trimester	c) Medical uterine evacuation beyond the first trimester
																										X	X	X	X	X											
																										X	X	X	X	X											
																										X	X	X	X	X											
																										X	X	X	X	X											
																										X	X	X	X	X											
X	X					X	X			X	X		X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
X	X					X	X			X	X		X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X
X	X					X	X			X	X		X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X
X	X					X	X			X	X		X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X
X	X					X	X			X	X		X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X			X			X	X	X	X	X	X
X	X					X	X			X	X		X			X		X	X	X	X	X	X	X	X	X	X	X	X	X			X			X	X	X	X	X	X
																														X							X	X	X	X	X	X
X	X					X	X			X	X		X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X
						X	X			X	X		X			X		X	X	X	X	X	X	X	X	X	X	X	X	X			X			X	X	X	X	X	X
														X																												
X	X					X	X			X	X		X			X		X	X	X	X	X	X	X	X	X	X	X	X	X			X			X	X	X	X	X	X
X	X					X	X			X	X		X			X		X	X	X	X	X	X	X	X	X	X	X	X	X			X			X	X	X	X	X	X
																														X							X	X	X	X	X	X
							X																										X					X	X	X			
							X																										X					X	X	X			

Table 31. Medical devices for pregnancy at DISTRICT HOSPITAL

		First assessment		Emergency assessment	Detection and management of Sexually Transmitted Infection (STI) and other infections									
		Basic Medical Examination	Preventive Immunization	Emergency preparedness and referral	Syphilis		Human Immunodeficiency Virus (HIV)			Malaria			Rubella	Tuberculosis
General type	**Name of devices**	a) Check-up vital signs / measuring weight and height / Anthropometry/ Vaginal examination	a) Vaccine for Tetanus	a) Emergency care and pre-referral treatment	a) Screening / diagnosis of Syphilis by laboratory test	b) Treatment for Syphilis	a) Screening of HIV	b) Prevention Mother To Child Transmission (PMTCT)	c) Treatment for HIV (Antiretroviral Therapy (ART))	a) Prophylactic antimalarial (IPT)	b) Diagnosis of malaria	c) Management of malaria	a) Diagnosis and treatment for rubella	a) Diagnosis and treatment for tuberculosis
	Catheter, urethral, sterile, single use (Sizes CH*)													
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)			X										
	Tube, endotracheal, with cuff, sterile, single use (Sizes ID*)			X										
	Tube, feeding/aspirating, L120cm,catheter tip, sterile, single use (Sizes CH*)			X										
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)			X										
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X	X	X	X	X				X	X	X	X
	Gloves, gynaecological, sterile, single use, pair (Sizes*)	X		X										
	Gloves, surgical, sterile, single use, pair (Sizes*)			X										
	Suture, synthetic, absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use													
	Suture, synthetic, non-absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use													
Medical devices - Equipment	Cardiotocograph (CTG), with accessories													
	Doppler, foetal heart rate (FHR) detector, with accessories			X										
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis (see table 12)	X	X	X	X	X	X	X	X	X	X	X	X	X
	Commodities for emergency preparedness (see table 13)			X										
	Commodities for labour, delivery & recovery (see table 14)													
	Commodities for surgery & anaesthesia (see table 15)													
	Commodities for inpatient mother and newborn (see table 16)											X		X
	Commodities for intensive care of mother (see table 18)													
Counselling material	Counselling material							X	X	X		X	X	X

	Other infections	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis						X										X		X
		a) Diagnosis and treatment of other STI/ Reproductive Tract Infections (RTI): Candida vaginitis, gonorrhoea, chlamydia, bacterial vaginosis and trichomoniasis						X										X		X
Detection and management of maternal chronic medical conditions	Iron Deficiency Anaemia	a) Diagnosis of anaemia												X						
		b) Iron and folic acid supplementation												X						X
		c) Anthelminthic (deworm)												X						X
		d) Management of severe anaemia (considering blood transfusion)		X				X						X				X		
	Hypertension and pre-eclampsia	a) Diagnosis of Pre-eclampsia-Eclampsia		X			X	X						X	X				X	
		b) Supplement calcium												X						X
		c) Low-dose aspirin												X						X
		d) Antihypertensive drugs						X						X						
		e) Magnesium sulfate						X						X						
		f) Fetal monitoring											X	X	X		X			
		g) Induction of labour		X			X	X						X	X	X				
	Diabetes	a) Glucose testing for detection												X						
		b) Treatment for insulin-dependent diabetic mother						X						X						
Management of prelabour rupture of the membranes (PRM)	Assessment of PRM	a) Diagnosis and laboratory test						X						X						
		b) Fetal monitoring											X	X	X			X		
	Preterm	a) Provision antibiotics if indicated						X						X				X		
		b) Provision of tocolytics to prolong pregnancy if indicated						X						X				X		
		c) Provision of corticosteroids for prevention of neonatal respiratory distress syndrome						X						X				X		
		d) Provision of magnesium sulfate for neuroprotection of the newborn						X						X				X		
	Term	a) Provision antibiotics if indicated						X						X				X		
		b) Induction of labour		X			X	X						X		X		X		
Management of malpresentation at term	Malpresentation at term	a) Diagnosis of breech at term						X	X					X		X				
		b) External Cephalic Version						X	X					X		X				
		c) Monitoring progress of labour						X	X					X		X				
Management of female genital mutilation	Female genital mutilation	a) Perineal incision with local anaesthesia		X			X	X		X	X	X		X		X	X			
		b) Identify the need of caesarean section		X	X		X	X		X	X	X		X			X			
Management of ectopic pregnancy	Ectopic pregnancy	a) Pregnancy test												X						
		b) Ultrasound scan												X						
		c) Laparotomy			X		X	X		X	X	X		X			X			
		d) Blood transfusion						X						X						
Management of miscarriage and abortion	Miscarriage and abortion	a) Pregnancy test												X						
		b) Ultrasound scan						X						X						
	Miscarriage	a) Treatment of infections						X						X						
		b) Management of bleeding (considering Vacuum Aspiration and blood transfusion)		X	X		X	X	X	X				X			X			
		c) Management of major injuries (considering laparotomy)		X	X		X	X		X	X	X		X			X			
	Safe abortion when indicated and legally permitted	a) Medical uterine evacuation for the first trimester						X						X						
		b) Vacuum Aspiration for the first trimester	X	X	X		X	X	X	X				X			X			
		c) Medical uterine evacuation beyond the first trimester	X	X	X		X	X	X	X				X			X			

Table 32. Medical devices for childbirth at DISTRICT HOSPITAL

		First assessment	Emergency assessment	Mother care			
		Basic Medical Examination	Emergency preparedness and referral	Childbirth			
General type	**Name of devices**	a) Check-up vital signs / Vaginal examination	a) Emergency care and pre-referral treatment	a) Monitoring progress of labour	b) Active management of the third stage of labour (AMTSL): Prophylactic use of uterotonics	c) Spontaneous delivery	d) Assisted delivery (vacuum extraction) if needed
Blood Bank devices	Anti-A blood group reagent, monoclonal						
	Anti-B blood group reagent, monoclonal						
	Anti-D blood group reagent (Saline/monoclonal)						
	Blood administration set, sterile						
	Glass slides, 25x75mm						
	Markers, fine point, permanent black, for glassware						
	Pasteur pipettes with integral bulb, disposable, plastic non-sterile, 3 ml						
	Wooden or plastic applicator sticks						
Clinical laboratory devices	Container, sample, 50 ml						
	Lancet, blood, safety, sterile (Sizes*)						
	Needle holder, vacuum tubes, sterile						
	Needle, vacuum tube, sterile (Size*)						
	Swab, cotton-tip, tube, sterile						
	Tube, capillary, Ethylene Diamine Tetra-acetic Acid (EDTA)						
	Tube, vacuum, Ethylene Diamine Tetra-acetic Acid (EDTA), sterile (Capacity*)						
	Tube, vacuum, plain/dry, sterile (Capacity*)						
	Blood glucometer, with accessories		X				
	Hemoglobinometer, with accessories		X				
	Enzyme Immuno Assay (EIA), Human Immunodeficiency Virus (HIV), kit						
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit						
	Test strip, pregnancy	X					
	Test strip, urinalysis (10 parameter)	X					
Medical devices - Disposable	Bandage, elastic, 7.5cmx5m, roll		X				
	Blanket, survival, 220x140cm, non-sterile		X				
	Bracelet, identification (Sizes*)	X		X			
	Compress, gauze,sterile & non-sterile, single use	X	X		X	X	X
	Cotton wool, 500g, roll, non-sterile		X		X		X
	Tape, medical, roll (Sizes*)		X		X		X
	Umbilical clamp, sterile,single use					X	X
	Umbilical tape, 3mmx50m, roll, non-sterile					X	X
	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)		X		X		X
	Infusion giving set, burette 100-150ml, sterile, single use		X		X		

Management of complications of labour and delivery																
Assessment for complications		Post-partum haemorrhage (PPH)					Caesarean section due maternal/fetal indication			Other surgical procedures depending on the complication					Human Immunodeficiency Virus (HIV) positive women	
a) Diagnosis of complications	b) Fetal monitoring	a) Use of uterotonics of choice for the treatment of PPH	b) Manual removal of placenta (include use of antibiotics and uterotonics)	c) Blood transfusion	d) Use of balloon tamponade	e) Use of artery embolization	f) Hysterectomy	a) Use of prophylactic antibiotic	b) Caesarean section	c) Use of uterotonics	a) Episiotomy	a) Repair of ruptured uterus	a) Correct uterine inversion	a) Laparotomy or other abdominal surgical interventions during childbirth	a) Craniotomy and craniocentesis	a) Screening of HIV	b) Prevention Mother To Child Transmission (PMTCT)
				X													
				X													
				X													
				X													
				X													
				X													
				X													
				X													
X																	
																X	
																X	
																X	
																X	
																X	
																X	
																X	
				X													
																X	
																X	
X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		

Table 32. Medical devices for childbirth at DISTRICT HOSPITAL

		First assessment	Emergency assessment	Mother care			
		Basic Medical Examination	Emergency preparedness and referral	Childbirth			
General type	**Name of devices**	a) Check-up vital signs / Vaginal examination	a) Emergency care and pre-referral treatment	a) Monitoring progress of labour	b) Active management of the third stage of labour (AMTSL): Prophylactic use of uterotonics	c) Spontaneous delivery	d) Assisted delivery (vacuum extraction) if needed
	Infusion giving set, sterile, single use		X		X		X
	Needles, luer, sterile, single use (Sizes G*)		X		X		
	Needles, spinal, sterile, single use (Sizes*)						
	Safety box, for used syringes/needles		X		X		X
	Stopcock, 3-way, sterile, single use		X		X		
	Syringes, luer, sterile, single use (Capacities ml*)		X		X		
	Syringes, reuse prevention (RUP), (Capacities ml*)		X		X		
	Airway, Guedel, translucent (Sizes*)		X				
	Bag, urine, collecting, 2000ml		X				
	Catheter, balloon tamponade, post partum haemorrhage						
	Catheter, Foley, sterile, single use (Sizes CH*)		X				
	Catheter, urethral, sterile, single use (Sizes CH*)		X			X	X
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)		X			X	X
	Syringe, feeding, catheter tip, 50ml, sterile, single use		X				
	Tube, endotracheal, with cuff, sterile, single use (Sizes ID*)		X				
	Tube, feeding/aspirating, L120cm,catheter tip, sterile, single use (Sizes CH*)		X				
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)		X			X	X
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X		X	X	X
	Gloves, gynaecological, sterile, single use, pair (Sizes*)	X	X		X	X	X
	Gloves, surgical, sterile, single use, pair (Sizes*)		X			X	X
	Suture, synthetic, absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use		X				
	Suture, synthetic, non-absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use		X				
Medical devices - Equipment	Cardiotocograph (CTG), with accessories						
	Doppler, foetal heart rate (FHR) detector, with accessories		X				
	Non-Pneumatic Anti-Shock Garment (NASG)		X				
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis (see table 12)	X	X				
	Commodities for emergency preparedness (see table 13)		X				
	Commodities for labour, delivery & recovery (see table 14)			X	X	X	X
	Commodities for surgery & anaesthesia (see table 15)						
Counselling material	Counselling material						

Management of complications of labour and delivery																
Assessment for complications		Post-partum haemorrhage (PPH)						Caesarean section due maternal/fetal indication			Other surgical procedures depending on the complication					Human Immunodeficiency Virus (HIV) positive women	
a) Diagnosis of complications	b) Fetal monitoring	a) Use of uterotonics of choice for the treatment of PPH	b) Manual removal of placenta (include use of antibiotics and uterotonics)	c) Blood transfusion	d) Use of balloon tamponade	e) Use of artery embolization	f) Hysterectomy	a) Use of prophylactic antibiotic	b) Caesarean section	c) Use of uterotonics	a) Episiotomy	a) Repair of ruptured uterus	a) Correct uterine inversion	a) Laparotomy or other abdominal surgical interventions during childbirth	a) Craniotomy and craniocentesis	a) Screening of HIV	b) Prevention Mother To Child Transmission (PMTCT)
X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
					X	X	X		X			X	X	X	X		
X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
X		X	X	X	X	X	X	X	X	X		X		X	X		
X		X	X		X	X	X	X	X	X	X	X	X	X	X		
X		X	X		X	X	X	X	X	X	X	X	X	X	X		
			X		X	X	X		X			X	X	X	X		
		X	X		X	X	X		X			X		X	X		
					X												
		X	X		X	X	X		X			X		X			
													X		X		
			X		X	X	X		X		X	X	X	X	X		
			X		X	X	X		X			X	X	X	X		
			X		X	X	X		X		X	X	X	X	X		
X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
X			X										X				
		X	X		X	X	X		X		X	X	X	X	X		
							X		X		X	X		X			
							X		X		X	X		X			
	X																
	X																
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
X																	
X	X	X	X	X												X	X
					X	X	X	X	X	X	X	X	X	X	X		
																	X

Table 33. Medical devices for post-natal mother at DISTRICT HOSPITAL

		First assessment			Emergency assessment
		Basic Medical Examination		Support for breast feeding	Emergency preparedness and referral
General type	**Name of devices**	a) Check-up vital signs	b) Screening for cervix and breast cancer	a) Management of mastitis / breast abscess	a) Emergency care and pre-referral treatment
Blood Bank devices	Anti-A blood group reagent, monoclonal				
	Anti-B blood group reagent, monoclonal				
	Anti-D blood group reagent (Saline/monoclonal)				
	Blood administration set, sterile				
	Glass slides, 25x75mm				
	Markers, fine point, permanent black, for glassware				
	Pasteur pipettes with integral bulb, disposable, plastic non-sterile, 3 ml				
	Wooden or plastic applicator sticks				
Clinical laboratory devices	Container, sample, 50 ml		X		
	Lancet, blood, safety, sterile (Sizes*)				
	Needle holder, vacuum tubes, sterile				
	Needle, vacuum tube, sterile (Size*)				
	Swab, cotton-tip, tube, sterile		X		
	Tube, capillary, Ethylene Diamine Tetra-acetic Acid (EDTA)				
	Tube, vacuum, Ethylene Diamine Tetra-acetic Acid (EDTA), sterile (Capacity*)				
	Hemoglobinometer, with accessories				
	Cytology stain, kit		X		
	Enzyme Immuno Assay (EIA), Human Immunodeficiency Virus (HIV), kit				
	Nucleic Acid Test (NAT), Human Papilloma Virus (HPV), kit		X		
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit				
	Rapid Diagnostic Test (RDT), malaria, kit				
	Test strip, urinalysis (10 parameter)				
	Test strip, vaginal infection, pH				
Medical devices - Disposable	Bandage, elastic, 7.5cmx5m, roll				X
	Blanket, survival, 220x140cm, non-sterile				X
	Compress, gauze,sterile & non-sterile, single use			X	X
	Cotton wool, 500g, roll, non-sterile			X	X
	Tape, medical, roll (Sizes*)			X	X
	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)				X
	Infusion giving set, sterile, single use				X
	Needles, luer, sterile, single use (Sizes G*)			X	X
	Needles, spinal, sterile, single use (Sizes*)				

Prevention and management of post partum bleeding					Detection and management of post partum infection				Postoperative care		
Anaemia					Human Immuno-deficien-cy Virus (HIV)	Malaria	Other infection		Assessment of postop-erative care		Surgical procedure
a) Management of post partum bleeding	b) Diagnosis of anaemia	c) Iron supplementation	d) Anthelminthic (deworm)	e) Management of severe anaemia (considering blood transfusion)	a) Diagnosis and treatment for HIV (Antiretroviral Therapy (ART))	a) Diagnosis and management of malaria	a) Diagnosis and management of postpartum endometritis and salpingitis	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	a) Postcaesarean care	b) Diagnosis of pelvic abscess, peritonitis or other postoperative complication	c) Surgical management of pelvic abscess, peritonitis or other postoperative complication with laparotomy
				X							
				X							
				X							
				X							
				X							
				X							
				X							
				X							
								X			X
	X			X	X	X					
					X						
					X		X				
					X						
					X						
					X						
	X			X							
							X				
					X						
					X						
						X					
							X	X			
							X	X			
X				X		X	X	X	X	X	X
X				X		X	X	X	X	X	X
X				X		X	X	X	X	X	X
X				X		X	X	X	X	X	X
X				X		X	X	X	X	X	X
X						X	X	X	X	X	X
											X

Table 33. Medical devices for post-natal mother at DISTRICT HOSPITAL

		First assessment			Emergency assessment
		Basic Medical Examination		Support for breast feeding	Emergency preparedness and referral
General type	**Name of devices**	a) Check-up vital signs	b) Screening for cervix and breast cancer	a) Management of mastitis / breast abscess	a) Emergency care and pre-referral treatment
	Safety box, for used syringes/needles			X	X
	Stopcock, 3-way, sterile, single use				X
	Syringes, luer, sterile, single use (Capacities ml*)			X	X
	Syringes, reuse prevention (RUP), (Capacities ml*)			X	X
	Airway, Guedel, translucent (Sizes*)				X
	Bag, urine, collecting, 2000ml				X
	Catheter, Foley, sterile, single use (Sizes CH*)				X
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)				X
	Tube, endotracheal, with cuff, sterile, single use (Sizes ID*)				X
	Tube, feeding/aspirating, L120cm,catheter tip, sterile, single use (Sizes CH*)				
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)				X
	Gloves, examination, latex, non-sterile, single use (Sizes*)		X	X	X
	Gloves, surgical, sterile, single use, pair (Sizes*)				X
	Suture, synthetic, absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use				X
	Suture, synthetic, non-absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use				X
Medical devices - Equipment	Breastpump, manual, with accessories			X	
	Colposcope with biopsy set		X		
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis (see table 12)	X	X	X	X
	Commodities for emergency preparedness (see table 13)				X
	Commodities for labour, delivery & recovery (see table 14)				
	Commodities for surgery & anaesthesia (see table 15)				
	Commodities for inpatient mother and newborn (see table 16)	X		X	
Counselling material	Counselling material				

Prevention and management of post partum bleeding					Detection and management of post partum infection				Postoperative care		
Anaemia					Human Immuno-deficien-cy Virus (HIV)	Malaria	Other infection		Assessment of postop-erative care		Surgical procedure
a) Management of post partum bleeding	b) Diagnosis of anaemia	c) Iron supplementation	d) Anthelminthic (deworm)	e) Management of severe anaemia (considering blood transfusion)	a) Diagnosis and treatment for HIV (Antiretroviral Therapy (ART))	a) Diagnosis and management of malaria	a) Diagnosis and management of postpartum endometritis and salpingitis	a) Diagnosis and treatment for urinary tract infections: bacteriuria, pyelonephritis	a) Postcaesarean care	b) Diagnosis of pelvic abscess, peritonitis or other postoperative complication	c) Surgical management of pelvic abscess, peritonitis or other postoperative complication with laparotomy
X				X		X	X	X	X	X	X
X						X	X	X	X	X	X
X						X	X	X	X	X	X
X						X	X	X	X	X	X
											X
											X
											X
				X							X
											X
											X
											X
X				X	X	X	X	X	X	X	X
									X	X	X
											X
											X
X	X	X	X	X	X	X	X	X	X	X	X
X				X							
				X							
											X
X				X		X	X	X	X	X	
		X	X		X	X	X	X			

Table 34. Medical devices for post-natal baby (newborn) at DISTRICT HOSPITAL

		Childbirth: Essential newborn care														Detection and management of congenital infections			
		Immediate care at birth					Emergency support		Routine care							Congenital infections			
General type	**Name of devices**	a) Dry baby thoroughly on mother's chest skin to skin and cover	b) Assess breathing	c) Clamp and cut cord / Check cord vessels / Check for bleeding and signs of cord infection	d) Prevent hypothermia when skin to skin is not possible	e) Support breastfeeding within the first hour	a) Basic neonatal resuscitation	b) Management of brain injury and intracranial haemorrhage (ICH)	a) Full clinical examination / Check vital signs / measuring weight	b) Thermal Care	c) Breastfeeding support	d) Vitamin K prophylaxis and Immunization	e) Cord care	f) Prophylaxis for eye infection	g) Prophylactic antibiotics for neonates at risk of infection	a) Diagnosis of congenital syphilis	b) Prophylactic treatment for congenital syphilis	c) Screening of HIV (Dried Blood Spot (DBS))	d) Prophylactic treatment for HIV (Antiretroviral Therapy (ART))
Blood Bank devices	Anti-A blood group reagent, monoclonal																		
	Anti-B blood group reagent, monoclonal																		
	Anti-D blood group reagent (Saline/ monoclonal)																		
	Blood administration set, sterile																		
	Glass slides, 25x75mm																		
	Markers, fine point, permanent black, for glassware																		
	Pasteur pipettes with integral bulb, disposable, plastic non-sterile, 3 ml																		
	Wooden or plastic applicator sticks																		
Clinical laboratory devices	Container, sample, 50 ml															X			
	Lancet, blood, safety, sterile (Sizes*)																	X	
	Needle holder, vacuum tubes, sterile															X		X	
	Needle, vacuum tube, sterile (Size*)															X		X	
	Paper, dry blood spot																		
	Swab, cotton-tip, tube, sterile															X		X	
	Tube, blood collection, newborn cord blood, sterile			X															
	Tube, capillary, Ethylene Diamine Tetra-acetic Acid (EDTA)															X		X	
	Tube, capillary, heparin,															X			
	Tube, vacuum, Ethylene Diamine Tetra-acetic Acid (EDTA), sterile (Capacity*)															X		X	
	Tube, vacuum, plain/dry, sterile (Capacity*)															X		X	
	Analyzer, blood gas																		
	Blood glucometer, with accessories																		
	Hemoglobinometer, with accessories																		
	Enzyme Immuno Assay (EIA), Human Immunodeficiency Virus (HIV), kit																	X	
	Haemoglobin colour scale (refill kit)																		
	Haemoglobin colour scale (starter kit)																		
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit																	X	
	Rapid Diagnostic Test (RDT),Treponemal, syphilis, kit															X			
	Rapid Plasma Reagin (RPR), syphilis, kit															X			
	Treponema Pallidum Haemagglutination Assay (TPHA), syphilis, kit															X			
	Test strip, urinalysis (10 parameter)																	X	

Detection and management of common infections, illness and complications in the neonate and young infant											Specific interventions for small, low weight birth and pre-term babies						Supportive care for all sick neonate and sick young infant							Further assessment for all young infant				
Cord infection	Jaundice		Anaemia			Pneumonia		Diarrhoea	Septicaemia and/or meningitis		Apnoea	Respiratory Distress Syndrome (RDS)			Necrotizing enterocolitis		Supportive care					Triage, emergency preparedness and referral		Clinical visit				Optional interventions
a) Detection and management of cord infection	a) Diagnosis of jaundice	b) Management of jaundice	a) Diagnosis of anaemia	b) Management of anaemia	c) Pre-referral treatment for severe anaemia (blood transfusion)	a) Diagnosis of pneumonia	b) Management of pneumonia and its complications	a) Detection and management of diarrhoea	a) Diagnosis of septicaemia and/or meningitis: Blood Culture, Lumbar Puncture, Urine Analysis	b) Management of septicaemia and/or meningitis and its complications	a) Prevention of Apnoea	a) Diagnosis of RDS and provision of prophylaxis surfactant	b) Apply Continuous Positive Airway Pressure (CPAP) with nasal cannula or face mask	c) Ventilatory support and oxygen therapy including mechanical ventilation and CPAP	a) Diagnosis of necrotizing enterocolitis	b) Management of necrotizing enterocolitis	a) Monitor blood glucose and management of hypoglycaemia	b) Monitor nutrition and provision of tube feeding support	c) Provision of intravenous therapy	d) Monitor temperature and management of hypothermia (Kangaroo mother care)	e) Monitor oxygenation and management of hypoxia	a) Detection of emergency signs, emergency care and pre-referral treatment	b) Advanced resuscitation	a) Full clinical examination / check vital signs / measuring weight / check haemoglobin	b) Provision of vaccines (Diphtheria Pertussis Tetanus (DPT) + Haemophilus Influenzae type B (HIB), Oral Polio Vaccine (OPV), Hepatitis B)	c) Breastfeeding support and replacement feeding if necessary	d) Monitoring growth and development	a) Male circumcision
					X																							
					X																							
					X																							
					X																							
					X																							
					X																							
					X																							
					X																							
									X																			
	X		X	X					X						X									X				
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									X							X													
									X																				
					X		X			X				X			X				X	X							
										X							X					X							
			X	X	X																	X		X				
																								X					
																								X					
	X		X						X																			

Table 34. Medical devices for post-natal baby (newborn) at DISTRICT HOSPITAL

		Childbirth: Essential newborn care														Detection and management of congenital infections			
		Immediate care at birth					Emergency support		Routine care							Congenital infections			
General type	**Name of devices**	a) Dry baby thoroughly on mother's chest skin to skin and cover	b) Assess breathing	c) Clamp and cut cord / Check cord vessels / Check for bleeding and signs of cord infection	d) Prevent hypothermia when skin to skin is not possible	e) Support breastfeeding within the first hour	a) Basic neonatal resuscitation	b) Management of brain injury and intracranial haemorrhage (ICH)	a) Full clinical examination / Check vital signs / measuring weight	b) Thermal Care	c) Breastfeeding support	d) Vitamin K prophylaxis and Immunization	e) Cord care	f) Prophylaxis for eye infection	g) Prophylactic antibiotics for neonates at risk of infection	a) Diagnosis of congenital syphilis	b) Prophylactic treatment for congenital syphilis	c) Screening of HIV (Dried Blood Spot (DBS))	d) Prophylactic treatment for HIV (Antiretroviral Therapy (ART))
Medical devices - Disposable	Bandage, elastic, 7.5cmx5m, roll																		
	Blanket, survival, 220x140cm, non-sterile				X					X									
	Bracelet, identification (Sizes*)						X	X	X										
	Compress, gauze, sterile & non-sterile, single use			X			X	X				X	X	X	X	X	X	X	
	Cotton wool, 500g, roll, non-sterile											X							
	Tape, medical, roll (Sizes*)							X					X						
	Umbilical clamp, sterile, single use			X															
	Umbilical tape, 3mmx50m, roll, non-sterile			X															
	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)							X											
	Catheter, Intra Venous (IV) umbilical vein, sterile, single use							X											
	Infusion giving set, burette 100-150ml, sterile, single use							X											
	Needles, luer, sterile, single use (Sizes G*)											X			X		X		
	Needles, scalp vein, sterile, single use (Sizes G*)							X											
	Needles, spinal, sterile, single use (Sizes*)																		
	Safety box, for used syringes/needles							X				X			X		X		
	Stopcock, 3-way, sterile, single use																		
	Syringes, auto-disable (AD), (Capacities ml*)											X							
	Syringes, luer, sterile, single use (Capacities ml*)											X			X		X		
	Syringes, reuse prevention (RUP), (Capacities ml*)											X			X		X		
	Airway, Guedel, translucent (Sizes*)							X											
	Collector, urine, adhesive, 10-100ml							X											
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)							X											
	Syringe, feeding, catheter tip, 50ml, sterile, single use							X											
	Syringe, feeding, luer tip, 50ml, sterile, single use							X											
	Tube, endotracheal, without cuff, sterile, single use (Sizes ID*)							X											
	Tube, feeding/aspirating, L120cm,catheter tip, sterile, single use (Sizes CH*)																		
	Tube, feeding, L40cm, luer tip, sterile, single use (Sizes CH*)							X											
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)							X											
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Detection and management of common infections, illness and complications in the neonate and young infant											Specific interventions for small, low weight birth and pre-term babies					Supportive care for all sick neonate and sick young infant							Further assessment for all young infant				
Cord infection	Jaundice		Anaemia			Pneumonia		Diarrhoea	Septicaemia and/or meningitis		Apnoea	Respiratory Distress Syndrome (RDS)			Necrotizing enterocolitis		Supportive care					Triage, emergency preparedness and referral		Clinical visit				Optional interventions
a) Detection and management of cord infection	a) Diagnosis of jaundice	b) Management of jaundice	a) Diagnosis of anaemia	b) Management of anaemia	c) Pre-referral treatment for severe anaemia (blood transfusion)	a) Diagnosis of pneumonia	b) Management of pneumonia and its complications	a) Detection and management of diarrhoea	a) Diagnosis of septicaemia and/or meningitis: Blood Culture, Lumbar Puncture, Urine Analysis	b) Management of septicaemia and/or meningitis and its complications	a) Prevention of Apnoea	a) Diagnosis of RDS and provision of prophylaxis surfactant	b) Apply Continuous Positive Airway Pressure (CPAP) with nasal cannula or face mask	c) Ventilatory support and oxygen therapy including mechanical ventilation and CPAP	a) Diagnosis of necrotizing enterocolitis	b) Management of necrotizing enterocolitis	a) Monitor blood glucose and management of hypoglycaemia	b) Monitor nutrition and provision of tube feeding support	c) Provision of intravenous therapy	d) Monitor temperature and management of hypothermia (Kangaroo mother care)	e) Monitor oxygenation and management of hypoxia	a) Detection of emergency signs, emergency care and pre-referral treatment	b) Advanced resuscitation	a) Full clinical examination / check vital signs / measuring weight / check haemoglobin	b) Provision of vaccines (Diphtheria Pertussis Tetanus (DPT) + Haemophilus Influenzae type B (HIB), Oral Polio Vaccine (OPV), Hepatitis B)	c) Breastfeeding support and replacement feeding if necessary	d) Monitoring growth and development	a) Male circumcision
																						X						
																						X						
X		X		X	X		X	X		X	X		X	X		X	X	X	X	X	X	X	X					X
X	X	X	X	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X					X
X		X		X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X				X
X		X		X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X					X
X		X		X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X					X
									X	X		X	X	X	X	X	X	X	X	X	X	X	X	X					X
X		X		X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X					X
X		X		X			X	X	X	X		X				X	X	X	X			X	X	X					X
X		X		X			X	X	X	X		X	X	X	X	X	X	X	X			X	X	X					X
									X																				
X	X	X	X	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X				X
							X			X		X				X	X		X			X	X	X					
																										X			
X		X		X			X	X	X	X		X				X	X		X			X	X	X					X
X		X		X			X	X	X	X		X				X			X			X	X	X					X
										X				X		X						X	X	X					
					X		X			X				X		X			X			X	X	X					
		X		X	X		X	X	X	X			X	X	X	X					X	X	X	X						X
					X		X			X				X		X	X	X	X		X	X	X	X					
										X				X		X					X	X	X	X					
					X		X			X				X		X	X	X	X		X	X	X	X					
					X		X			X				X		X	X	X	X		X	X	X	X					
					X		X	X	X	X			X	X	X	X	X	X	X		X	X	X	X					X
X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X			X

Table 34. Medical devices for post-natal baby (newborn) at DISTRICT HOSPITAL

		Childbirth: Essential newborn care													Detection and management of congenital infections			
		Immediate care at birth					Emergency support		Routine care						Congenital infections			
General type	**Name of devices**	a) Dry baby thoroughly on mother's chest skin to skin and cover	b) Assess breathing	c) Clamp and cut cord / Check cord vessels / Check for bleeding and signs of cord infection	d) Prevent hypothermia when skin to skin is not possible	e) Support breastfeeding within the first hour	a) Basic neonatal resuscitation	b) Management of brain injury and intracranial haemorrhage (ICH)	a) Full clinical examination / Check vital signs / measuring weight	b) Thermal Care	c) Breastfeeding support	d) Vitamin K prophylaxis and Immunization	e) Cord care	f) Prophylaxis for eye infection	g) Prophylactic antibiotics for neonates at risk of infection	a) Diagnosis of congenital syphilis	b) Prophylactic treatment for congenital syphilis	c) Screening of HIV (Dried Blood Spot (DBS))	d) Prophylactic treatment for HIV (Antiretroviral Therapy (ART))
	Gloves, surgical, sterile, single use, pair (Sizes*)			X									X						
	Suture, synthetic, absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use																		
	Suture, synthetic, non-absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use																		
Medical devices - Equipment	Apnoea monitor																		
	Auditory, function screening devices, newborn								X										
	Bilirubinometer																		
	Breastpump, manual, with accessories																		
	Phototherapy light, mobile, with accessories																		
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis (see table 12)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Commodities for emergency preparedness (see table 13)						X	X											
	Commodities for labour, delivery & recovery (see table 14)	X	X	X	X	X	X												
	Commodities for surgery & anaesthesia (see table 15)																		
	Commodities for inpatient mother and newborn (see table 16)									X	X	X	X	X	X	X	X	X	X
	Commodities for intensive care of newborn (see table 17)							X											
Counselling material	Counselling material	X			X	X				X	X	X							

Detection and management of common infections, illness and complications in the neonate and young infant												Specific interventions for small, low weight birth and pre-term babies						Supportive care for all sick neonate and sick young infant							Further assessment for all young infant				
Cord infection	Jaundice		Anaemia			Pneumonia		Diarrhoea	Septicaemia and/or meningitis			Apnoea	Respiratory Distress Syndrome (RDS)			Necrotizing enterocolitis		Supportive care					Triage, emergency preparedness and referral		Clinical visit				Optional interventions
a) Detection and management of cord infection	a) Diagnosis of jaundice	b) Management of jaundice	a) Diagnosis of anaemia	b) Management of anaemia	c) Pre-referral treatment for severe anaemia (blood transfusion)	a) Diagnosis of pneumonia	b) Management of pneumonia and its complications	a) Detection and management of diarrhoea	a) Diagnosis of septicaemia and/or meningitis: Blood Culture, Lumbar Puncture, Urine Analysis	b) Management of septicaemia and/or meningitis and its complications	a) Prevention of Apnoea	a) Diagnosis of RDS and provision of prophylaxis surfactant	b) Apply Continuous Positive Airway Pressure (CPAP) with nasal cannula or face mask	c) Ventilatory support and oxygen therapy including mechanical ventilation and CPAP	a) Diagnosis of necrotizing enterocolitis	b) Management of necrotizing enterocolitis	a) Monitor blood glucose and management of hypoglycaemia	b) Monitor nutrition and provision of tube feeding support	c) Provision of intravenous therapy	d) Monitor temperature and management of hypothermia (Kangaroo mother care)	e) Monitor oxygenation and management of hypoxia	a) Detection of emergency signs, emergency care and pre-referral treatment	b) Advanced resuscitation	a) Full clinical examination / check vital signs / measuring weight / check haemoglobin	b) Provision of vaccines (Diphtheria Pertussis Tetanus (DPT) + Haemophilus Influenzae type B (HIB), Oral Polio Vaccine (OPV), Hepatitis B)	c) Breastfeeding support and replacement feeding if necessary	d) Monitoring growth and development	a) Male circumcision
									X														X						X
																							X						X
																							X						
											X	X																		
	X																												
																											X		
		X																											
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
							X	X	X	X													X	X					
																													X
X	X	X	X	X	X	X		X			X																		X
		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
																					X				X	X	X	X	

Table 35. Medical devices for infancy and childhood at DISTRICT HOSPITAL

		Essential care for monitoring growth and early childhood development							Detection and management of common infections, illness and complications in infancy and childhood									
		Routine care							Severe Acute Malnutrition (SAM)			Anaemia			Pneu-monia		Wheeze (Asthma, Bronchi-olitis)	
General type	**Name of devices**	a) Full clinical examination / check vital signs / measuring weight	b) Provision of vaccines	c) Growth monitoring	d) Early childhood development monitoring	e) Breastfeeding support and replacement feeding if necessary	f) Vitamin A supplementation	g) Deworming (Mebendazole)	a) Diagnosis of SAM	b) Feeding support	c) Pre-referral treatment for SAM	a) Diagnosis of anaemia	b) Management of anaemia	c) Pre-referral treatment for severe anaemia (Blood transfusion)	a) Differential diagnosis for pneumonia	b) Management of pneumonia and its complications	a) Diagnosis of condition with wheeze	b) Management of condition with wheeze
Blood Bank devices	Anti-A blood group reagent, monoclonal													X				
	Anti-B blood group reagent, monoclonal													X				
	Anti-D blood group reagent (Saline/ monoclonal)													X				
	Blood administration set, sterile													X				
	Glass slides, 25x75mm													X				
	Markers, fine point, permanent black, for glassware													X				
	Pasteur pipettes with integral bulb, disposable, plastic non-sterile, 3 ml													X				
	Wooden or plastic applicator sticks													X				
Clinical laboratory devices	Container, sample, 50 ml																	
	Lancet, blood, safety, sterile (Sizes*)								X			X	X					
	Needle holder, vacuum tubes, sterile																	
	Needle, vacuum tube, sterile (Size*)																	
	Paper, dry blood spot																	
	Swab, cotton-tip, tube, sterile														X		X	
	Tube, capillary, Ethylene Diamine Tetra-acetic Acid (EDTA)																	
	Tube, capillary, heparin,																	
	Tube, vacuum, Ethylene Diamine Tetra-acetic Acid (EDTA), sterile (Capacity*)																	
	Tube, vacuum, plain/dry, sterile (Capacity*)																	
	Analyzer, blood gas													X		X		
	Blood glucometer, with accessories								X									
	Hemoglobinometer, with accessories								X			X	X	X				
	Enzyme Immuno Assay (EIA), Human Immunodeficiency Virus (HIV), kit																	
	Rapid Diagnostic Test (RDT), Human Immunodeficiency Virus (HIV), kit																	
	Rapid Diagnostic Test (RDT), malaria, kit																	
	Test strip, urinalysis (10 parameter)											X						
Medical devices - Disposable	Bandage, elastic, 7.5cmx5m, roll										X			X				
	Blanket, survival, 220x140cm, non-sterile										X			X				
	Bracelet, identification (Sizes*)										X		X	X		X		
	Compress, gauze, sterile & non-sterile, single use								X	X	X	X	X	X		X		X
	Cotton wool, 500g, roll, non-sterile		X						X	X	X	X	X	X		X		X
	Tape, medical, roll (Sizes*)									X	X		X	X		X		X
	Cannulas, Intra Venous (IV) short, sterile, single use (Sizes G*)									X	X		X	X		X		
	Catheter, Intra Venous (IV) umbilical vein, sterile, single use																	

																	Supportive care for all sick infant and child								Further assessment for all infant and child
Tuberculosis		Diarrhoea	Septicaemia and/or meningitis		Malaria	Dengue fever	Measles	Human Immunodeficiency Virus (HIV)			Eye infection	Ear infection	Mouth infection	Skin infection	Chicken pox		Supportive care						Triage, emergency preparedness and referral		Optional interventions
a) Diagnosis of tuberculosis	b) Management of tuberculosis	a) Differential diagnosis and management of diarrhoea and dysentery	a) Diagnosis of septicaemia and/or meningitis : Blood Culture, Lumbar Puncture, Urine Analysis	b) Management of septicaemia and/or meningitis and its complications	a) Diagnosis and management of malaria	a) Diagnosis and management of dengue fever	a) Diagnosis and management of measles	a) Diagnosis of HIV	b) Treatment for HIV (Antiretroviral Therapy (ART))	c) Management of other opportunistic infections in HIV	a) Detection and management of eye infection / conjunctivitis	a) Detection and management of ear infection	a) Detection and management of mouth infection / thrush	a) Diagnosis and management of skin infections	a) Detection and management of chicken pox	a) Management of hypoglycaemia	b) Tube feeding support	c) Intravenous therapy	d) Management of hypothermia	e) Management of hypoxia	f) Pain control	a) Detection of emergency signs, emergency care and pre-referral treatment	b) Advanced resuscitation	a) Male circumcision
			X														X								
			X		X	X		X								X						X			
			X					X																	
			X					X																	
			X																						
X			X					X																	
			X					X																	
			X																						
			X					X																	
				X												X				X		X			
				X												X						X			
								X																	
					X			X																	
								X															X		
																				X			X		
	X	X		X	X											X	X	X	X	X	X	X	X	X	
	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	X	X	X	X	X	X				X						X	X	X	X	X	X	X	X	X	X	
																									X	

Table 35. Medical devices for infancy and childhood at DISTRICT HOSPITAL

		Essential care for monitoring growth and early childhood development							Detection and management of common infections, illness and complications in infancy and childhood									
		Routine care							Severe Acute Malnutrition (SAM)		Anaemia				Pneu-monia		Wheeze (Asthma, Bronchi-olitis)	
General type	**Name of devices**	a) Full clinical examination / check vital signs / measuring weight	b) Provision of vaccines	c) Growth monitoring	d) Early childhood development monitoring	e) Breastfeeding support and replacement feeding if necessary	f) Vitamin A supplementation	g) Deworming (Mebendazole)	a) Diagnosis of SAM	b) Feeding support	c) Pre-referral treatment for SAM	a) Diagnosis of anaemia	b) Management of anaemia	c) Pre-referral treatment for severe anaemia (Blood transfusion)	a) Differential diagnosis for pneumonia	b) Management of pneumonia and its complications	a) Diagnosis of condition with wheeze	b) Management of condition with wheeze
	Infusion giving set, burette 100-150ml, sterile, single use									X	X		X	X		X		
	Needles, luer, sterile, single use (Sizes G*)		X							X	X		X	X		X		X
	Needles, scalp vein, sterile, single use (Sizes G*)									X	X		X	X		X		
	Needles, spinal, sterile, single use (Sizes*)																	
	Safety box, for used syringes/needles		X						X	X	X	X	X	X		X		X
	Stopcock, 3-way, sterile, single use										X			X		X		
	Syringes, auto-disable (AD), (Capacities ml*)		X															
	Syringe for tuberculin, sterile, single use																	
	Syringes, luer, sterile, single use (Capacities ml*)									X	X		X	X		X		X
	Syringes, reuse prevention (RUP), (Capacities ml*)		X							X	X		X	X		X		X
	Airway, Guedel, translucent (Sizes*)										X					X		
	Collector, urine, adhesive, 10-100ml										X			X				
	Prongs, nasal, oxygen, non sterile, single use (Sizes*)										X		X	X		X		X
	Syringe, feeding, catheter tip, 50ml, sterile, single use										X			X				
	Syringe, feeding, luer tip, 50ml, sterile, single use										X			X				
	Tube, endotracheal, without cuff, sterile, single use (Sizes ID*)										X					X		
	Tube, feeding/aspirating, L120cm,catheter tip, sterile, single use (Sizes CH*)										X			X				
	Tube, feeding, L40cm, luer tip, sterile, single use (Sizes CH*)										X			X				
	Tube, suction, L50cm, catheter tip, sterile, single use (Sizes CH*)										X		X	X		X		X
	Gloves, examination, latex, non-sterile, single use (Sizes*)	X	X						X	X	X	X	X	X		X		X
	Gloves, surgical, sterile, single use, pair (Sizes*)																	
	Suture, synthetic, absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use																	
	Suture, synthetic, non-absorbable (Sizes USP/DEC*) with needle (Shapes* and sizes*), sterile, single use																	
Medical devices - Equipment	Auditory, function screening devices, newborn	X			X													
	Breastpump, manual, with accessories					X				X								
Medical devices - Equipment Grouping	Commodities for medical examination & diagnosis (see table 12)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Commodities for emergency preparedness (see table 13)								X	X	X			X		X		X
	Commodities for surgery & anaesthesia (see table 14)																	
	Commodities for inpatient child (see table 17)									X		X	X			X		X
	Commodities for intensive care of child (see table 18)									X	X			X		X		X
Counselling material	Counselling material	X	X	X		X			X	X								

																	Supportive care for all sick infant and child								Further assessment for all infant and child
Tuberculosis		Diarrhoea	Septicaemia and/or meningitis		Malaria	Dengue fever	Measles	Human Immunodeficiency Virus (HIV)			Eye infection	Ear infection	Mouth infection	Skin infection	Chicken pox		Supportive care						Triage, emergency preparedness and referral		Optional interventions
a) Diagnosis of tuberculosis	b) Management of tuberculosis	a) Differential diagnosis and management of diarrhoea and dysentery	a) Diagnosis of septicaemia and/or meningitis : Blood Culture, Lumbar Puncture, Urine Analysis	b) Management of septicaemia and/or meningitis and its complications	a) Diagnosis and management of malaria	a) Diagnosis and management of dengue fever	a) Diagnosis and management of measles	a) Diagnosis of HIV	b) Treatment for HIV (Antiretroviral Therapy (ART))	c) Management of other opportunistic infections in HIV	a) Detection and management of eye infection / conjunctivitis	a) Detection and management of ear infection	a) Detection and management of mouth infection / thrush	a) Diagnosis and management of skin infections	a) Detection and management of chicken pox	a) Management of hypoglycaemia	b) Tube feeding support	c) Intravenous therapy	d) Management of hypothermia	e) Management of hypoxia	f) Pain control	a) Detection of emergency signs, emergency care and pre-referral treatment	b) Advanced resuscitation	a) Male circumcision
	X	X	X	X	X	X				X						X	X	X	X	X	X	X	X	X
	X	X	X	X	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X				X						X	X	X	X	X	X	X	X	X
			X																					
	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	X	X	X	X																		X	X	
	X																							
	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
				X																X		X	X	
		X	X	X	X	X										X		X		X		X		
	X	X		X	X	X										X			X	X		X	X	X
		X		X												X	X	X		X		X		
		X		X												X	X	X		X		X		
				X																X		X	X	
		X		X												X	X	X		X		X		
		X		X												X	X	X		X		X		
	X	X		X	X	X										X	X	X	X	X		X	X	X
	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			X																			X		X
																						X		X
																						X		
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
																						X	X	
																								X
	X	X	X		X	X	X			X														X
																X	X	X	X	X	X	X	X	
		X			X	X		X	X	X									X		X			

4.2 Devices and interventions in specialized care

Other optional devices, which are considered to be useful in specialized hospitals and optional surgery procedures are not covered by the main matrix. The use of such devices and procedures in low-resource settings should be assessed according to the principle of health technology assessment in future work. In specialized hospitals, it would be better to consider the use of procedures and devices such as a laparoscopy system and proctoscope and anoscope system.

The current document does not include guidance on quantification for the medical devices, sets and kits covered in the list. This will depend on many different factors within a health-care facility, and quantification activities should be led locally. The quantity of medical devices needed per intervention will be based on assessments at the national level and will systematically take the following factors into consideration:

- health system – policies and protocols;
- health facility – capacity, activities and organization;
- existing replenishment/inventory system for medical devices – renewable/consumable and equipment.

Table 35. Medical devices for specialized care

Name	Link	Description
Laparoscope system	http://www.who.int/surgery/publications/scdh_manual/en/	An assembly of sterile laparoscopes and their accessories used for the visual examination and treatment of the abdominal/retroperitoneal cavity and its organs (laparoscopy). The insertion is typically through an incision(s) made in the abdominal wall (routinely just below the umbilicus or in the near vicinity). This system is mostly used for gynaecological procedures involving the evaluation/treatment of abdominal or pelvic pain, ectopic pregnancy, ovarian cysts, appendicitis, or for female sterilization.
Mammography unit	http://www.who.int/medical_devices/innovation/mammography.pdf	A complete mammographic radiographic system includes an x-ray generator, an x-ray tube and gantry, and a recording medium. The x-ray generator modifies incoming voltage to provide the x-ray tube with the power necessary to produce an x-ray beam. They also include a “paddle” for compression and placement of the breasts during imaging.
Radiographic, Fluoroscopic system	http://www.who.int/medical_devices/innovation/radiographic_fluorescence.pdf	This technology is effective in arthrography, bronchography, gastrointestinal and biliary tree studies, hysterosalpingography, intravenous and retrograde pyelography, myelography, and sialography. Other applications include locating ingested foreign materials; localizing lesions for needle aspiration or biopsy; highlighting congenital anatomic abnormalities; diagnosing congestive heart failure; and evaluating chest pain.
Radiotherapy Systems	http://www.who.int/medical_devices/innovation/radiotherapy_system.pdf http://www.who.int/medical_devices/innovation/radiotherapy_planning.pdf	Linear accelerators (linacs) and cobalt radiotherapy units are used in external-beam radiation therapy to treat cancer. Cobalt units and low-energy linacs are used primarily to treat bone cancer and tumors of the head, neck, and breast.
Scanning System, Computed Tomography	http://www.who.int/medical_devices/innovation/scanning_CT.pdf	Devices that consist of an x-ray subsystem, a gantry, a patient table, and a controlling computer. These scanners are used for a wide variety of diagnostic procedures, including spine and head injuries, lesions, and abdominal and pelvic malignancies; to examine the cerebral ventricles, the chest wall, and the large blood vessels; and to assess musculoskeletal degeneration.
Scanning System, Magnetic Resonance Imaging	http://www.who.int/medical_devices/innovation/scanning_MRI_full_body.pdf	An MRI unit consists of a magnet, shimming magnets, an RF transmitter/receiver system with an antenna coil, a gradient system, a patient table, a computer, display monitors, and an operator console. It is primarily used to identify diseases of the central nervous system, brain, and spine and to detect musculoskeletal disorders. It is also used to view cartilage, tendons, and ligaments. MRI can be used to help diagnose infectious diseases; to detect metastatic liver disease; to display heart-wall structure; to stage prostate, bladder, and uterine cancer; to evaluate kidney transplant viability; and to study marrow diseases.

4.3 Innovative health technologies

Since 2011 the Essential Health Technologies Department and later the Essential Medicines and Health Products department of WHO has published three editions of the Compendium of innovative health technologies for low-resource settings to distribute information about alternative, new or adapted technologies designed to fill existing gaps in the availability of health products to vulnerable populations, especially with regard to innovative medical devices for newborn and children's health, such as bedside newborn phototherapy, compact portable ultrasound, fetal heart rate monitoring, infant warming, and oxygen concentrator-driven bubble continuous positive airway pressure.

The choice of technology depends on the capabilities of the medical unit and the intention of use. For example, to maintain the proper temperature in a baby, a traditional incubator can be used if there is a source of electricity; if not, the Compendium describes an innovative infant warmer that does not require a constant supply of electricity.

Table 36. Innovative health technologies for reproductive, maternal, newborn and child health

Name	Link	Description
Bedside newborn phototherapy	http://www.who.int/medical_devices/innovation/compendium_med_dev2013_1.pdf?ua=1	Bedside Newborn Phototherapy is a device designed to treat jaundice in the mother's room in rural clinics. The double-sided, high-power LED lighting cures the most severe cases of jaundice and dramatically reduces treatment time.
Birthing simulator for training	http://www.who.int/medical_devices/innovation/compendium_other2012_2.pdf?ua=1	The birthing simulator enables the instructor to create very compelling simulations of normal to more complex birthing scenarios, and is particularly suitable for training control of post-partum haemorrhage.
Compact portable ultrasound	http://www.who.int/medical_devices/innovation/compendium_med_dev2013_2.pdf?ua=1	This device provides a non-invasive look inside the body for immediate visual validation of what a clinician can feel or hear. The device is small and lightweight, which makes it easy to carry and its battery capacity provides over one hour of scanning on a single charge, giving it enough power for a full day's worth of patient exams.
Fetal heart rate monitor	http://www.who.int/medical_devices/innovation/compendium_med_dev2011_1.pdf?ua=1	Using advanced Doppler ultrasound technology, the monitor detects and measures the fetal heart rate. This vital indicator of fetal stress allows rural healthcare workers to make life-saving decisions during childbirth. Destined for use in low resource settings, its design focuses on simplicity of use, durability and electrical power independence.
Infant radiant warmer	http://www.who.int/medical_devices/innovation/compendium_med_dev2013_6.pdf?ua=1	The device consists of a biocompatible bed on which to place the infant, and an overhead heater that delivers radiant heat. A skin temperature probe monitors infant temperature. Heat output can be controlled manually or through baby mode (feedback mode) for thermoregulation. Visual and audio alarms are present for safety. An APGAR timer helps to efficiently take APGAR scores post-delivery.
Infant warmer (neonatal sleeping bag warmer)	http://www.who.int/medical_devices/innovation/compendium_med_dev2013_7.pdf?ua=1	The infant warmer works without a constant supply of electricity. It has no moving parts, and is safe and easy to use. It consists of three parts - a sleeping bag to place the baby, a pouch of phase change material and an electric heater. The pouch is heated for 30 mins in the heater (second version uses boiling water instead of electricity to heat) and then placed in the sleeping bag. It maintains the WHO recommended temperature of 37 deg C for 4-6 hours, after which it can be reheated.
LED phototherapy for neonatal jaundice	http://www.who.int/medical_devices/innovation/compendium_med_dev2013_9.pdf?ua=1	The device emits light through an array of high-powered light emitting diodes (LEDs). These LEDs have been specifically selected to emit a narrow wavelength of blue light (dominant wavelength 458nm) that maximises the rate of bilirubin breakdown. The arrangement of the LEDs along with the optics have been designed to provide uniformity of light on the patient, while minimizing unwanted spill and glare outside the treatment surface.

Table 36. Innovative health technologies for reproductive, maternal, newborn and child health

Name	Link	Description
Newborn simulator for resuscitation training	http://www.who.int/medical_devices/innovation/compendium_other2011_1.pdf?ua=1	The proposed solution is a highly realistic and affordable newborn simulator. The baby's status can be simulated as desired to facilitate role playing in relevant scenarios covering basic newborn care as well as standard resuscitation measures. The simulator is available with therapeutic tools.
Non-invasive hypothermia indicator for newborns	http://www.who.int/medical_devices/innovation/compendium_med_dev2012_11.pdf?ua=1	The hypothermia indicator is a 12mm diameter disc with a black 'face' with two small white "dots" on one side, the other side has a self-adhesive facility. This device comes in a strip of 5 units. Liquid crystal technology provides function for it to perform reliably and accurately within an operating tolerance of +/- 0.5 degree Celsius.
Non-pneumatic anti-chock garment	http://www.who.int/medical_devices/innovation/compendium_med_dev2011_5.pdf?ua=1	For women suffering from uncontrollable PPH, a method to control the bleeding, reverse the shock, and stabilize the patient for safe transport to a comprehensive obstetric care facility could be lifesaving. One method to manage PPH is the use of a non-pneumatic anti-shock garment (NASG).
Non-surgical male circumcision device	http://www.who.int/medical_devices/innovation/compendium_med_dev2012_13.pdf?ua=1	The device consists of an Inner Ring, Elastic Ring and Applicator. The device applies controlled radial elastic pressure to compress the foreskin and cut off circulation. The distal foreskin becomes necrotic and is removed after 5-7 days. The procedure takes less than 5 minutes, is bloodless, requires no injected anaesthesia, no sutures, no sterile settings.
Oxygen concentrator-driven bubble CPAP	http://www.who.int/medical_devices/innovation/compendium_med_dev2013_14.pdf?ua=1	This device generates and delivers a safe, easily controllable mixture of humidified oxygen and air for CPAP treatment. It is driven by an oxygen concentrator that generates oxygen from atmospheric air, eliminating the need for expensive cylinders of compressed gases. The device delivers flows of up to 8L/min of both oxygen and air. Pressure in the system is controlled by a bubble bottle that depends on the depth of tubing under water, and is set by a simple dial on the bottle.
Oxytocin in prefilled auto-disable injection system	http://www.who.int/medical_devices/innovation/compendium_med_dev2011_6.pdf?ua=1	A compact, prefilled, auto-disable injection system is used to deliver Oxytocin. A time-temperature indicator on each package indicates heat exposure. Oxytocin in this device can enable minimally trained health workers to provide the PPH prevention dose.
Phototherapy for neonatal jaundice treatment	http://www.who.int/medical_devices/innovation/compendium_med_dev2011_8.pdf?ua=1	Phototherapy is an efficient mean to treat Hyperbilirubinemia. By emitting blue light over the patient's skin, it converts toxic bilirubin molecules in the blood into less toxic isomeric forms, by photo-oxidation and photoisomerization. The device uses high power LEDs for treatment and negligible emission of UV / IR radiation.
Reusable neonatal suction device	http://www.who.int/medical_devices/innovation/compendium_med_dev2011_13.pdf?ua=1	The proposed solution is a bulb suction device that is particularly suitable for use in developing countries. It is easy to use and reusable when disinfected in accordance with instructions, over the product's lifespan.
Transcutaneous bilirubin measurement system for infants	http://www.who.int/medical_devices/innovation/compendium_med_dev2011_16.pdf?ua=1	The device provides a numerical measurement of predicted bilirubin count in mg/dL or Qmol/L within a clinically beneficial range that has been correlated with total serum bilirubin concentration measured by High Pressure Liquid Chromatography (HPLC).

Table 36. Innovative health technologies for reproductive, maternal, newborn and child health

Name	Link	Description
Umbilical artery doppler analyser	http://www.who.int/medical_devices/innovation/compendium_med_dev2013_16.pdf?ua=1	The technology measures blood flow in the umbilical artery of the fetus at greater than 24 weeks gestation. From such a measurement, decisions can be made about the ability for the placenta to provide sufficient nutrients and oxygen in order to sustain adequate fetal development. The ultrasonic Doppler probe connects to the USB port of a standard Pentium PC or laptop on which proprietary software is installed. The product consists of a graphic user interface, operational software and the physical mechanical parts of the probe (hosing, acoustic nose, etc.).
Ventilator using continuous positive airway pressure	http://www.who.int/medical_devices/innovation/compendium_med_dev2011_17.pdf?ua=1	CPAP assists infants with respiratory distress in maintaining continuous positive airway pressure while breathing on their own. This solution is customized for the use in hospitals with basic infrastructure and limited resources.

Source: WHO Compendium of innovative health technologies for low-resource settings 2011 - 2013

http://www.who.int/medical_devices/innovation/compendium/en/index3.html

4.4 References

1. Health technology assessment of medical devices. Geneva: World Health Organization; 2011 (http://www.who.int/medical_devices/assessment/en/, accessed 22 May 2014).

2. Compendium of innovative health technologies for low-resource settings. Geneva: World Health Organization; 2014 (http://www.who.int/medical_devices/innovation/compendium/en/index3.html, accessed 22 May 2014).

5.1 Laboratory supply

To implement the various priority interventions described in this document, laboratory studies may be required. A nonexclusive list of recommended laboratory supplies for health posts, health centres and district hospitals is given in Table 37.

Table 37. Laboratory supplies by health-care facilities

Classification	Name of medical device	Potential Use at			
		Community level	Health Center	District Hospital	Regional/ Provincial Hospital
CD4 enumeration technologies (instruments)	PoC CD4 instrument, portable, with accessories	X	X		
	Dedicated flow cytometer, with accessories			X	X
	Classical flow cytometry, with accessories				X
Chemicals and analytical testing	Acetic acid, 36 %, bottle			X	X
	Acetone, bottle			X	X
	Aglutination latex test for meningitis			X	X
	Bromine solution			X	X
	Buffer, tablets, PH 7.2, box			X	X
	Diethyl ether, bottle			X	X
	Drug susceptibility testing			X	X
	Ethanol, denaturised, 70 %, bottle	X	X	X	X
	Ethanol, denaturised, 95 %, bottle			X	X
	Formaldehyde, 10%, 10ml, ampoule			X	X
	Gentian violet, solution, bottle			X	X
	Glycerol, bottle			X	X
	Hydrochloric acid, 40 %, bottle			X	X
	Indian ink, black, bottle			X	X
	KI starch solution			X	X
	Lugol iodine, bottle			X	X
	Methanol, bottle			X	X
	Methylene blue, bottle			X	X
	Nitric acid			X	X
	Oil, immersion, bottle			X	X
	Oxidase test			X	X
	Petroleum gel, paraffin, bottle			X	X
	Plates, culture, agar - chocolate			X	X
	Plates, culture, agar- blood			X	X
	Potassium iodide			X	X
	Silica gel (desiccant for DBS), pouch	X	X	X	X
	Sodium bicarbonate			X	X
	Sodium chloride, powder, bottle			X	X
	Sodium hypochlorite, tablets			X	X
	Sodium persulfate			X	X
	Stain, Field A, solution			X	X
	Stain, Field B, solution			X	X
	Stain, Giemsa, solution			X	X
	Stain, Gram, set			X	X
	Stain, May-Grunwald Giemsa, set			X	X
	Stain, Ziehl–Neelsen, solution, bottle			X	X
	Sugar fermentation tests			X	X

Classification	Name of medical device	Potential Use at			
		Community level	Health Center	District Hospital	Regional/ Provincial Hospital
	Sulphuric acid, 95 %			X	X
	Test, Nickerson or saboraud medium, kit			X	X
	Test, potassium hydroxide KOH, preparation			X	X
	Trichloroacetic acid, crystals, bottle			X	X
	Urine culture agar: 5% sheep BAP and MAC			X	X
	Xylene, bottle			X	X
Clinical chemistry	Test strip, urinalysis (10 parameter)	X	X	X	X
	Blood glucometer, with accessories	X	X	X	X
	Analyser, clinical chemistry (inc. blood gas, electrolytes)			X	X
Blood cold chain	Refrigerator, laboratory, 2 to 8C, 110L/250 L			X	X
	Refrigerator/freezer, laboratory, 2 to 8C/-20C, 180L/40L			X	X
	Freezer, laboratory, -20C/-80C, 140L			X	X
General equipment	Microscope, binocular		X	X	X
	Cabinet for microscope		X	X	X
	Counter, hand tally, mechanical		X	X	
	Counter, cell, manual differential		X	X	
	Counting chamber, Neubauer		X	X	
	Centrifuge, micro - haematocrit			X	X
	Centrifuge, complete with accessories for serology			X	X
	Shaker, orbital			X	X
	Rotator, blood specimen			X	X
	Rotator, agglutination test			X	X
	Vortex, test tube			X	X
	Scale, precision, digital, 500g/0.01g			X	X
	Scale, digital, 1500g/0.1g			X	X
	Pipette, digital, 2-20 ul			X	X
	Pipette, digital, 10-100 ul			X	X
	Pipette, digital, 20-200 ul			X	X
	Pipette, digital, 100-1000 ul			X	X
	Pipette, digital, 8 channel, 5-50 ul			X	X
	Pipette, digital, 8 channel, 20-200 ul			X	X
	Pipette, repeating, 5 volume			X	X
	Pipette, stand, 4 positions			X	X
	Pipette, filler, wheel-run, set/2			X	X
	Pipettes, blood graduated, 0.05 ml			X	X
	Hot plate, with stirrer			X	X
	Incubator, 30 L, up to 80 C			X	X
	Water bath, 7 L			X	X
	Distillation unit, 2 L/h, with tank			X	X
	Sterilizer steam autoclave, 24 L			X	X
	Biosafety cabinet,class II,stand alone			X	X
	Timer, digital	X	X	X	X
	Timer, 60 min, mechanical	X	X	X	X
	Thermometer, glass, min/max -20C/100C	X	X	X	X
	Thermometer, min/max -30C/60C	X	X	X	X
	Magnifying glass	X	X	X	X
	Spatula, stainless steel, # sizes			X	X
	Forceps, dressing,155mm, straight	X	X	X	X
	Marker, diamond		X	X	X
	Punch, Dry Blood Spot (DBS), 3.0mm			X	X
	Brush, bottles and flasks, # sizes			X	X

Classification	Name of medical device	Potential Use at			
		Community level	Health Center	District Hospital	Regional/ Provincial Hospital
	Brush, test tubes, # sizes			X	X
	Clamp, test tubes			X	X
	Rack, test tubes, 24 positions			X	X
	Rack, ESR, 5 positions			X	X
	Rack,tubes, 0.5/2.0/5.0 ml,24 positions			X	X
	Rack, drying glass & plastic ware			X	X
	Rack, drying slides, 12 positions			X	X
	Rack, staining slides, horizontal, 12 positions			X	X
	Box,storage 0.5/2/5 ml tubes,100 positions			X	X
	Box, refill, pipette tips, empty			X	X
	Box, storage, 100 slides			X	X
	Box, specimen transport, 2L/4 L			X	X
	Biosafe, puncture-proof waste disposal box, for used syringes/needles, sharps	X	X	X	X
	Wash bottle, 250 ml			X	X
	Bottle, plastic, 1 L			X	X
	Goggles, protective	X	X	X	X
	Eye wash station		X	X	X
	Tourniquet, with buckle			X	X
	Spectrophotometer, ultraviolet / visible			X	X
	pH meter			X	X
	Cytology stain kit		X	X	X
	Water distilled, bottle			X	X
Glass and plastic ware	Cylinder, measuring, glass, 10 ml /100 ml / 500 ml/ 100 ml			X	X
	Beaker, glass, 100 ml / 250 ml			X	X
	Bottle, amber, dropper, 30 ml			X	X
	Bottle, amber, screw cap, 100 ml / 250 ml / 1000 ml			X	X
	Bottle, culture, blood, aerobic			X	X
	Bottle, culture, blood, anaerobic			X	X
	Jar, Coplain, staining			X	X
	Funnel, glass			X	X
	Funnel, plastic			X	X
	Slide, microscope, frosted		X	X	X
	Slide, microscope		X	X	X
	Cover glass, slides		X	X	X
	Petri dish, glass, with lid			X	X
	Rod, glass			X	X
Haematology	Haemoglobin colour scale (starter kit)	X	X		
	Haemoglobin colour scale (refill kit)	X	X		
	Hemoglobinometer, with accessories	X	X	X	X
	Analyser, haematology, 8 parameter			X	
	Analyser, haematology, 18 parameter				X
Nucleic Acid Testing (NAT) (qualitative and/ or quantitative molecular technologied - instruments)	Nucleic acid testing platform, with accessories, closed system				X
	Nucleic acid testing platform, with accessories, closed system (POC)			X	X

Classification	Name of medical device	Potential Use at			
		Community level	Health Center	District Hospital	Regional/ Provincial Hospital
Reagents	Reagents, HIV-1/2 RDT	X	X	X	
	Reagents, HIV-1/2 (antigen and antibody) EIA			X	X
	Reagents, HIV-1/2 supplemental assay				X
	Reagents, CD4 enumeration (absolute, %) POC	X	X	X	
	Reagents, CD4 enumeration (absolute, %) dedicated cytometer			X	X
	Reagents, CD4 enumeration (absolute, %) classical flow cytomer				X
	Reagents, HIV qualitative NAT				X
	Reagents, HIV quantitative NAT				X
	Reagents, Treponemal (syphilis) RDT	X	X	X	
	Reagents, TPHA			X	X
	Reagents, RPR			X	X
	Reagents, Treponemal (syphilis) EIA			X	X
	Reagents, HCV RDT	X	X	X	
	Reagents, HCV EIA			X	X
	Reagents, HCV quantitative NAT				X
	Reagents, HBsAg RDT	X	X	X	
	Reagents, HBsAg EIA			X	X
	Reagents, HBsAg quantitative NAT				X
	Reagents, malaria RDT, Pf/pan	X	X		
	Reagents, malaria RDT, Pf	X	X		
	Reagents, chlamydia EIA			X	X
	Reagents, chlamydia NAT				X
	Reagents, gonorrhea antigen EIA			X	X
	Reagents, gonorrhea NAT			X	X
	Reagents, tuberculosis NAT (POC)			X	X
	Reagents, HPV NAT				X
	Reagents, HSV II NAT				X
	Reagents, rubella EIA			X	X
Renewable	Paper, lens	X	X	X	X
	Paper, pH indicator 2.0 to 9.0			X	X
	Paper, filter #1			X	X
	Paper, dry blood spot	X	X	X	X
	Rack, drying DBS cards, 10 positions	X	X	X	X
	Paper, weighing			X	X
	Film, sealing, flexible, 10cmx38m, roll			X	X
	Sealant, compound			X	X
	Inoculation loop, plastic, sterile			X	X
	Microplate, ELISA, 96 U-well			X	X
	Tube, capillary, heparin	X	X	X	X
	Tube, capillary, EDTA	X	X	X	X
	Tube, screw cap, 0.2 ml / 0.5 ml / 2.0 ml / 5.0 ml, sterile			X	X
	Tube, screw cap, 0.2 ml / 0.5 ml / 2.0 ml / 5.0 ml, non-sterile			X	X
	Tube, screw cap, conic, 15/50ml,non-sterile			X	X
	Tube, push cap, 0.2 ml, PCR, sterile			X	X
	Tube, push cap, 5.0 ml, non-sterile			X	X
	Tube, vacuum, EDTA, 2 ml / 4 ml / 6 ml, sterile			X	X
	Tube, vacuum, serum, 4 ml / 6 ml, sterile			X	X
	Tube, vacuum, plain/dry, 4 ml / 6 ml,sterile			X	X
	Needle, vacuum tube, 20 G / 22 G, sterile			X	X
	Needle holder, vacuum tubes, sterile			X	X

Classification	Name of medical device	Potential Use at			
		Community level	Health Center	District Hospital	Regional/ Provincial Hospital
	Blood collection tube, neonatal cord blood, sterile			X	X
	Lancet, 2mm, safety, sterile	X	X	X	X
	Bandage, adhesive, 3.0 cm, box/100	X	X	X	X
	Compress, gauze, 10x10cm, non-sterile	X	X	X	X
	Compress, gauze, anti-septic, 6x3cm, sterile	X	X	X	X
	Pipette, transfer, 3 ml, sterile			X	X
	Pipette, transfer, 3 ml, non-sterile			X	X
	Pipette, tip, white, 2-20 ul			X	X
	Pipette, tip, yellow, 10-100 ul / 20-200 ul			X	X
	Pipette, tip, blue, 100-1000 ul			X	X
	Pipette, tip, barrier, 200 ul / 1000 ul,sterile			X	X
	Pipette, repeat, tip 2.5/5.0 ml, 10/25 ml			X	X
	Marker pen, glassware			X	X
	Marker pen, cryoware, color			X	X
	Applicator, wood, non-sterile			X	X
	Swab, cotton-tip, tube, sterile	X	X	X	X
	Reservoir, reagent, 60 ml			X	X
	Container, sample, 50 ml			X	X
	Monitor card,humidity,passive/cumulative			X	X
	Sheet,absorbent,bench,50x40cm	X	X	X	X
	Coat, lab work, medium size	X	X	X	X
	Gloves, nitrile, powder-free, non-sterile,single use	X	X	X	X
	Bag, re-sealeable, plastic	X	X	X	X
	Bag, biohazard, 20 L			X	X
	Label, self-adhesive, 5x10 cm	X			
	Label, self-adhesive, freezer				
	Label, biohazard, adhesive, 3x4cm				
	Envelope, packing, 27x36 cm	X			
	Cotton wool, 500g, roll, non-sterile			X	X
	Dressing strip, adhesive, diam 3.0 cm, sterile			X	X
	Kato-Katz, kit, stool sample preparation			X	X
Serology	EIA, reader, 8 channel			X	X
	EIA, washer, 8 channel			X	X
	EIA, incubator, 4 plate			X	X
Test strip	Test strip, pregnancy	X	X	X	X
	Test strip, vaginal infection, pH	X	X	X	X

5.2 Diagnostic tests and Laboratory

Uninterrupted provision of testing services requires a continuous supply of diagnostics/reagents and the required consumables—for example, specimen transfer devices, lancets, alcohol swabs, and blood collection equipment. This requires accurate forecasting of testing needs, efficient planning and distribution of test kits and consumables, and continuous post-market surveillance to report any quality problems. Certain types of diagnostics will require laboratory equipment/analyzers that must be correctly installed, then maintained and used properly to prevent breakdown. Testing facilities should be clean with adequate room and storage, and due care should be given to temperature and humidity as these factors may affect the reliable functioning of certain test kits, and equipment/analyzers.

Any country considering the selection and use of diagnostics and laboratory technologies should have:

- A national laboratory policy and national laboratory strategic plan *(1, 2);*
- A national quality assurance programme including quality control, external quality assessment, equipment maintenance, documentation/recordkeeping, etc. *(3,4,5);*
- A national list of testing services to be provided for each level of the health system (by analyte, and by test format), including use of nationally validated testing algorithms with back-up options, as appropriate *(6, 7);*
- Accurate forecasting to avoid stock-outs of test kits and related consumables.

WHO recommends standardized testing strategies[1] to maximize the accuracy of test results while minimizing cost. Validated testing algorithms should ideally use the assay with highest sensitivity first, then assays with highest specificity used second and/or third, depending on the required predictive values (99% is desirable). When two or more assays are used, it is essential to use assays with different antigen preparations (components) to minimize the potential for shared false non-reactivity or false reactivity. The following considerations should be taken into account when validating a set of potential testing algorithms, see Table 38.

Table 38. Specific considerations for selection of diagnostics

Parameter	Considerations
Performance characteristics	
Clinical sensitivity	Set a minimum acceptable criteria
Clinical specificity	Set a minimum acceptable criteria
Seroconversion sensitivity	Important for blood screening
Limit of detection/ dynamic range	Set a minimum acceptable criteria that relates to a clinically relevant level.
Misclassification rate	Important for monitoring of disease and/or treatment
Inter-reader variability, if subjectively read format	Set a minimum acceptable criteria
Invalid rate, devices/test results, test runs	Set a minimum acceptable criteria
Operational characteristics	
Test format	RDTs (immunochromatographic, immunofiltration) Simple (comb formats, agglutination assays) EIAs (manual plate-based EIAs, immunoanalysers) Supplemental assays (Western blot, line immunoassays) Nucleic Acid Testing (qualitative, quantitative)
Specimen type	Serum/plasma, venous or capillary whole blood, dried blood spot, oral fluid
Detection type	If HIV; discriminatory detection of HIV-1 and HIV-2 antibodies or combined detection of HIV-1/2 antibodies. If HIV; simultaneous or combined detection of HIV-1 antigen and HIV-1/2 antibodies
Subtype detection	If HIV; M, N, O subtypes
Time to result	If RDT; immunochromatographic (less than 30 minutes with fewer steps) or immunofiltration (less than 5 minutes with more steps). If EIA; random access analyser or not?
Endpoint stability	How long is the result stable? Is longer reading time or shorter reading time desirable? (depends on service delivery model)
Ease of use	If RDT; depends on a combination of: • nature of specimen collection (fingerstick whole blood by lancet or venous whole blood by venipuncture); • number of steps in the test procedure; • ease of reading the test band, line, spot; • ease of interpretation of testing results; • addition of procedural quality control (band appears when human specimen is added versus band appears when running buffer is added).

1 In this context, a testing strategy generically describes a testing approach for a specific need (for example, transfusion and transplantation screening, surveillance, and/or diagnosis of infection) taking into consideration the presumed prevalence in the population being tested. A testing algorithm describes the combination and sequence of specific assays used within a giventesting strategy. It has been shown that combinations of EIAs or combinations of RDTs or mixed combinations of EIAs and RDTs can provide reliable results.

Table 38. Specific considerations for selection of diagnostics

Parameter	Considerations
Degree of laboratory infrastructure required i.e. which level of the health system	Refrigeration for storage of test kits and/or reconstituted reagents. Temperature-controlled work space. Electricity/generator.
Equipment/consumables required but not provided in the test kit	Lancets, alcohol swabs for fingerstick whole blood. Blood collection equipment for venous whole blood. Other general laboratory consumables.
Specimen through-put and individual testing service delivery models	RDTs if ≤40 specimens per day per operator with limited laboratory infrastructure. EIAs if ≥40 specimens per day per operator with laboratory infrastructure.
Technical skill of staff conducting testing	Including both laboratory and phlebotomy skills.
Availability of test kit controls and compatibility with QC materials	Some are available but separate from test kit. See also note above on procedural in-built quality control.
Shelf-life of test kits	Must be negotiated as part of the procurement contract.
Access to referral laboratory	Particularly important when 4th generation assays are used.

WHO Prequalification of Diagnostics programme

Through the WHO Prequalification of Diagnostics programme, WHO conducts independent and impartial assessments of the quality and performance of commercially available diagnostics and laboratory technologies that are best suited to resource-limited settings. Performance and operational characteristics are assessed using panels of biological specimens. In addition, WHO assesses the quality management system under which the product is made through dossier review and site inspection to provide continual assurance of quality. Further information concerning the prequalification of diagnostics is available on the WHO website at http://www.who.int/diagnostics_laboratory.

UN Bulk Procurement Scheme

Diagnostics found to meet minimum standards for WHO prequalification are then eligible for procurement by WHO and United Nations (UN) agencies. Further information concerning the list of products eligible for procurement is available on the WHO website at http://www.who.int/diagnostics_laboratory/procurement/purchase/en/index.html or by contacting WHO at diagnostics@who.int

Further reading

Guidelines for organizing national external quality assessment schemes for HIV serological testing. Geneva: United Nations Programme on HIV/AIDS; 1996 (http://www.who.int/diagnostics_laboratory/quality/en/EQAS96.pdf, accessed 22 May 2014).

Maintenance manual for laboratory equipment, 2nd edition. Spain: World Health Organization; 2008 (http://whqlibdoc.who.int/publications/2008/9789241596350_eng_low.pdf, accessed 22 May 2014).

Manual of Basic Techniques for a Health Laboratory, 2nd edition. Geneva: World Health Organization; 2003 (http://apps.who.int/medicinedocs/documents/s16537e/s16537e.pdf, accessed 22 May 2014).

Basic Laboratory Procedure in Clinical Bacteriology, 2nd edition. Geneva: World Health Organization; 2003 (http://whqlibdoc.who.int/publications/2003/9241545453.pdf, accessed 22 May 2014).

Laboratory Biosafety Manual, 3rd edition. Geneva: World Health Organization; 2004 (http://www.who.int/csr/resources/publications/biosafety/en/Biosafety7.pdf, accessed 22 May 2014)

5.3 Blood bank commodities

Considering the significant positive impact of increasing the availability of blood transfusions on maternal health outcomes, Table 39 contains a list of essential items for a blood bank.

Table 39. Essential items for blood bank: blood collection, testing and processing, clinical transfusion, blood storage and blood transportation

Blood Collection, Testing and Processing		
a) Collection		
Classification	**Description**	**Indication**
Consumables: non-perishable	Adhesive plasters, 6x2cm	For application after blood donation and patients' sample collection
Consumables: non-perishable	Blood lancets, sterile, disposable	For haemoglobin estimation during donor selection
Consumables: non-perishable	Emergency medicines (Crystalloids, corticosteroid, adrenaline, antihistamine and other essential medicines)	For management of donor reactions
Consumables: non-perishable	Gauze swabs, 8-ply, 10x10cm/Cotton swabs	For applying pressure on the venepuncture site after blood donation, during patients' sample collection
Consumables: non-perishable	Impregnated medicated swabs, chlorhexadine or isopropanol	For donors' arm cleansing before blood donation
Consumables: non-perishable	Rapid test for haemoglobin estimation	Suitable for estimation of donors' haemoglobin during donor selection
Consumables: non-perishable	Single blood collection bags, CPD-A1 (needle must be in-built preventing re-use)	350 ml or 450 ml
Consumables: non-perishable	Surgical plaster roll	
Consumables: non-perishable	Test tubes, round bottom, polystyrene, 10 ml	For collecting blood samples for donation testing and patients' blood samples for blood grouping
Medical Device	Artery forceps (Clamp)	For use during blood donation
Medical Device	Sphygmomanometer	For measuring blood pressure during donor selection
Medical Device	Spring balance, range 250 – 600 gm	For monitoring blood volume during blood donation
Medical Device	Surgical scissors	For use during blood donation and patient sample collection
Medical Device	Test tube racks, 30 holes, plastic/wooden	For holding sample tubes with donors and patients
Medical Device	Tourniquets, arm, adjustable	
Medical Device	Tube stripper	
Medical Device	Weighing scale, range 0 –150 Kg	For checking donors' weight during donor selection
Recommended stationery	Blood donor questionnaires	For use during donor selection
Recommended stationery	Labels for blood bags	To include patient and cross-match information on the blood unit
Recommended stationery	Registers, hard-cover, A4	For donor and patient records
b) Blood group serology testing		
Classification	**Description**	**Indication**
Consumables: non-perishable	Glass slides, 25x75mm	For performing blood grouping on donated blood and patient sample For cross-matching*
Consumables: non-perishable	Markers, fine point, permanent black, for glassware	For labelling on glassware
Consumables: non-perishable	Pasteur pipettes with integral bulb, disposable, plastic non-sterile, 3 ml	For blood grouping and screening of donated blood for TTIs For patients' blood grouping and cross- matching
Consumables: non-perishable	Wooden or plastic applicator sticks	For mixing of reagents and blood samples while blood grouping
Perishable items: must be stored at 2°C to 8°C	Anti-A blood group reagent, monoclonal	Required for ABO blood grouping
Perishable items: must be stored at 2°C to 8°C	Anti-B blood group reagent, monoclonal	Required for ABO blood grouping
Perishable items: must be stored at 2°C to 8°C	Anti-D blood group reagent (Saline/monoclonal)	Required for Rh D blood grouping

Table 39. Essential items for blood bank: blood collection, testing and processing, clinical transfusion, blood storage and blood transportation

c) Screening donated blood for transfusion transmissible infections		
Classification	**Description**	**Indication**
Consumables: non-perishable	Markers, fine point, permanent black, for glassware	For labelling on glassware
Consumables: non-perishable	Pasteur pipettes with integral bulb, disposable, plastic non-sterile, 3 ml	For blood grouping and screening of donated blood for TTIs For patients' blood grouping and cross- matching
Perishable items: must be stored at 2°C to 8°C	HBsAg rapid tests	Required for screening of donated blood for HBsAg
Perishable items: must be stored at 2°C to 8°C	HCV rapid tests	Required for screening of donated blood for HCV
Perishable items: must be stored at 2°C to 8°C	HIV 1+2 rapid tests	Required for screening of donated blood for HIV 1+2
Perishable items: must be stored at 2°C to 8°C	RPR rapid test	Required for screening of donated blood for syphilis

NOTE: This list of commodities is recommended only for the Referral level.

Clinical Transfusion		
a) Blood Cross-Matching		
Classification	**Description**	**Indication**
Consumables: non-perishable	Glass slides, 25x75mm	For performing blood grouping on donated blood and patient sample For cross-matching*
Consumables: non-perishable	Markers, fine point, permanent black, for glassware	For labelling on glassware
Consumables: non-perishable	Needle, hypo, disposable, 21G x1.5", sterile	
Consumables: non-perishable	Needle, hypo, disposable, 23 G x 1", sterile	
Consumables: non-perishable	Pasteur pipettes with integral bulb, disposable, plastic non-sterile, 3 ml	For blood grouping and screening of donated blood for TTIs For patients' blood grouping and cross- matching
Consumables: non-perishable	Syringe 5ml, hypo, disposable	For collecting patients' blood samples
Consumables: non-perishable	Test tube racks, 30 holes, plastic/wooden	For holding sample tubes with donors and patients
Consumables: non-perishable	Test tubes, round bottom, polystyrene, 10 ml	For collecting blood samples for donation testing and patients' blood samples for blood grouping
Consumables: non-perishable	Wooden or plastic applicator sticks	For mixing of reagents and blood samples while blood grouping
Perishable items: must be stored at 2°C to 8°C	Anti-A blood group reagent, monoclonal	Required for ABO blood grouping
Perishable items: must be stored at 2°C to 8°C	Anti-B blood group reagent, monoclonal	Required for ABO blood grouping
Perishable items: must be stored at 2°C to 8°C	Anti-D blood group reagent (Saline/monoclonal)	Required for Rh D blood grouping
Recommended stationery	Labels for blood bags	To include patient and cross-match information on the blood unit
Recommended stationery	Registers, hard-cover, A4	For donor and patient records
b) Blood Transfusion		
Classification	**Description**	**Indication**
Consumables: non-perishable	Blood administration set with have an integral filter with pore size 170–200 micron	Required for administration of blood to the patients
Consumables: non-perishable	IV catheter, 20 G x1Ð", sterile, disposable, with wing	Used for blood administration depending on size of vein and desired rate of transfusion
Consumables: non-perishable	IV catheter, 22 G x1", sterile, disposable, with wing	
Consumables: non-perishable	IV catheter, 23 G xÐ ", sterile, disposable, with wing	
Medical Device	Surgical scissors	For use during blood donation and patient sample collection
Medical Device	Tourniquets, arm, adjustable	
Recommended stationery	Transfusion request forms	For requesting blood transfusion for a patient

NOTE: This list of commodities is linked with interventions in the main matrix.

Table 39. Essential items for blood bank: blood collection, testing and processing, clinical transfusion, blood storage and blood transportation

Equipment in the Blood Centre		
Classification	**Description**	**Indication**
Medical Device	Autoclaves	
Medical Device	Automated sample processor	
Medical Device	Automatic pipette	
Medical Device	Binocular microscopes	
Medical Device	Blood collection bag weighing balances	
Medical Device	Cell washer centrifuge	
Medical Device	Colorimeters	
Medical Device	Cryoprecipitate bath (40C)	
Medical Device	Donor weighing scale	For weighing blood donors
Medical Device	Double beam balance	For weighing blood packs
Medical Device	Electronic balance	For weighing chemicals
Medical Device	ELISA plate reader	
Medical Device	ELISA plate washers	
Medical Device	Equipment necessary for producing chemically pure and /or pyrogen-free water (e.g. still; deionizer)	
Medical Device	Haematology autoanalyzer with platelet counts	
Medical Device	Haemocue/instrument for Haemoglobin Estimation	
Medical Device	Incubators	For laboratory serology tests
Medical Device	Laboratory bench top centrifuge for separation of samples	
Medical Device	Laboratory thermometers	
Medical Device	Laminar Airflow cabinet	
Medical Device	Micro plate shaker	
Medical Device	Oxygen supply equipment (such as cylinder)	It covers the administration set (mask)
Medical Device	pH Meter	
Medical Device	Plasma extractors	
Medical Device	Plasma freezer –300C	
Medical Device	Plasma thawing bath	
Medical Device	Platelet incubator and shaker	
Medical Device	Serologic rotators	
Medical Device	Spectrophotometers	
Medical Device	Sphygmomanometers	
Medical Device	Tube sealers	
Recommended stationery	Blast freezer	
Recommended stationery	Blood bank refrigerator	
Recommended stationery	Blood transportation box	
Recommended stationery	Container for safe disposal of sharps	
Recommended stationery	Deep freezer -80 C	
Recommended stationery	Donor beds/couches	
Recommended stationery	Hot Air ovens	
Recommended stationery	PC with accessories and software	
Recommended stationery	Refrigerated centrifuges	
Recommended stationery	Stop watches/timers	
Recommended stationery	Vehicles for outdoor blood donation sessions	
Recommended stationery	Voltage stabilizers	
Recommended stationery	Water bath	

Table 39. Essential items for blood bank: blood collection, testing and processing, clinical transfusion, blood storage and blood transportation

Equipment in the Hospital Blood Storage Centre and for Blood Transportation		
Classification	**Description**	**Indication**
Medical Device	Binocular microscopes	For temporary storage and transportation of blood
Medical Device	Incubators for laboratory serology tests	For temporary storage and transportation of blood
Medical Device	Laboratory bench top centrifuge for separation of samples	For temporary storage and transportation of blood
Medical Device	Plasma freezer –300C	For temporary storage and transportation of blood
Medical Device	Platelet incubator and shaker	For temporary storage and transportation of blood
Recommended stationery	Blood bank refrigerator	For storage of blood and reagents
Recommended stationery	Blood transportation box	For temporary storage and transportation of blood
Recommended stationery	Deep freezer -80 C	For temporary storage and transportation of blood
Recommended stationery	Insulated cool box, 10 L (capacity depending on need)	For temporary storage and transportation of blood

NOTE: The list of equipment should be adapted to be used for the blood centres in various levels in the country where assessment is conducted. If national standards for equipment requirements at various level of blood transfusion services are available, this list should be based on these standards.

Standard Precautions		
Classification	**Description**	**Indication**
Consumables: non-perishable	Gloves, latex, disposable for single use (in different sizes)	For standard precautions
Consumables: non-perishable	Sharps containers	For safety disposal of sharps
Consumables: non-perishable	Waste bags, 35 L, black plastic	For disposal of general waste
Consumables: non-perishable	Waste bags, 35 L, yellow	For disposal of contaminated swabs

Blood screening laboratories should have appropriate quality standards, based on national standards, to ensure process control and valid results. Globally recognized international standards could also be adopted by blood transfusion services to ensure a consistent approach to quality throughout their activities and to ensure the overall safety and efficacy of blood and blood products prepared for therapeutic use. The standards should take into account relevant existing legislation and other national requirements.

All donations, blood components, blood samples, test kits and reagents should be stored in suitable equipment in which defined storage temperatures and conditions are strictly maintained, monitored and recorded.

These lists of supplies should be adapted for use at various levels in the country where assessment is conducted, depending on national regulations and infrastructure.

5.4 Safe blood and clinical transfusion

Checklist of Essential Items for Collection, Testing and Transfusion of 50 Units of Whole Blood

Blood transfusion contributes to saving millions of lives every year, improves life expectancy and the quality of life of patients suffering from life-threatening conditions, and supports complex medical and surgical procedures. Every country should put in place policies, systems and structures to ensure the safety, quality, accessibility and timely availability of blood and blood products to meet the needs of all patients who require transfusion.

Provision of safe blood and blood products

Blood transfusion services should comply with national policies and strategies to ensure they implement standards and meet targets for the provision of safe blood and blood products. To perform their functions efficiently, BTS should have:

- Adequate number of qualified, skilled and experienced personnel in human resource management, finance and administration, quality systems, transfusion medicine, blood donor programme and laboratory testing and blood processing
- Suitable infrastructure and facilities in all centres in which blood collection, testing, processing and storage of blood and blood products take place.

Requirements include:

- Effective quality system within which all activities are performed in a quality-focused way and are continuously monitored
- Sustainable donor education, motivation, voluntary none remunerated blood donor recruitment and retention programme
- Safe blood collection process, including donor selection and deferral, donor care, notification, counselling and referral, and confidentiality
- Testing and processing using the most appropriate and effective methodologies and best laboratory practices
- Efficient inventory management system for optimum blood stocks and minimal wastage
- Effective blood cold chain for safe storage and distribution of blood and blood products
- Information management system encompassing all activities from blood donors to distribution of blood and blood products to hospitals, and issue and transfusion of blood and blood products to patients
- Liaison with hospitals in the implementation of transfusion guidelines and staff training
- Participation in national haemovigilance system.

Table 40. Essential Items for Blood Transfusion in Emergency Settings

Item Description	Usual or preferred presentation	Recommended quantity	Remarks
Perishable items: must be stored at 2°C to 8°C			
1. Anti-A blood group reagent, monoclonal	5 ml vial	1 x 5 ml	Required for ABO blood grouping
2. Anti-B blood group reagent, monoclonal	5 ml vial	1 x 5 ml	
3. Anti-D blood group reagent (Saline/ monoclonal)	5 ml vial	1 x 5 ml	Required for Rh D blood grouping
4. HIV 1+2 rapid tests	100 tests	1 x 100	Required for screening of donated blood for transfusion- transmissible infections (TTIs), including HIV 1+2, hepatitis B and C, and syphilis
5. HBsAg rapid tests	100 tests	1 x 100	
6. HCV rapid tests	100 tests	1 x 100	
7. RPR rapid test	100 tests	1 x 100	
Consumables: non-perishable			
8. Single blood collection bags, CPD-A1 (needle must be in-built preventing re-use)	Pack with 6 blood collection bags each	9 packs (50-60 bags)	350 ml or 450 ml
9. Blood administration set with have an integral filter with pore size 170–200 micron	50 sets	1 x 50 sets	Required for administration of blood to the patients
10. IV catheter, 20 G x1¼", sterile, disposable, with wing	50 pieces	1 x 50 pieces	Used for blood administration depending on size of vein and desired rate of transfusion
11. IV catheter, 22 G x1", sterile, disposable, with wing	50 pieces	1 x 50 pieces	
12. IV catheter, 23 G x¾ ", sterile, disposable, with wing	50 pieces	1 x 50 pieces	
13. Pasteur pipettes with integral bulb, disposable, plastic non-sterile, 3 ml	100 pipettes	2 x 100 pipettes	• For blood grouping and screening of donated blood for TTIs • For patients' blood grouping and cross-matching
14. Blood lancets, sterile, disposable	100	1 x 100	For haemoglobin estimation during donor selection
15. Gauze swabs, 8-ply, 10x10cm/Cotton swabs	100 swabs	2 x 100 swabs	• For applying pressure on the venepuncture site after blood donation • During patients' sample collection
16. Adhesive plasters, 6x2cm	100 pieces	1 x 100 pieces	For application after blood donation and patients' sample collection
17. Surgical plaster roll	2 pieces	1 x 2 pieces	
18. Markers, fine point, permanent black, for glassware	10 markers	1 x 10 markers	For labelling on glassware
19. Impregnated medicated swabs, chlorhexadine or isopropanol	100 pieces	2 x 100	For donors' arm cleansing before blood donation
20.Test tubes, round bottom, polystyrene, 10 ml	100 tubes	2 x 100 tubes	For collecting blood samples for donation testing and patients' blood samples for blood grouping
21. Glass slides, 25x75mm	50	4 x 50 slides	• For performing blood grouping on donated blood and patient sample • For cross-matching*
22. Wooden or plastic applicator sticks	200	2 x 200	For mixing of reagents and blood samples while blood grouping

Table 40. Essential Items for Blood Transfusion in Emergency Settings

Item Description	Usual or preferred presentation	Recommended quantity	Remarks
23. Syringe 5ml, hypo, disposable	100 syringes	1 x 100	For collecting patients' blood samples
24. Needle, hypo, disposable, 21G x1.5", sterile	100 needles	1 x 100	
25. Needle, hypo, disposable, 23 G x 1", sterile	100 needles	1 x 100	
26. Rapid test for haemoglobin estimation	Depending on the available products	For up to 100 tests	Suitable for estimation of donors' haemoglobin during donor selection
27. Gloves, latex, disposable for single use (in different sizes)	50 pairs	2 x 50 pairs	For standard precautions
28. Emergency medicines (Crystalloids, corticosteroid, adrenaline, antihistamine and other essential medicines)	Depending on the available products	1	For management of donor reactions
29. Sharps containers	Depending on the available products	2	For disposal of sharps
30. Waste bags, 35 L, black plastic	20 a roll	1 roll	For disposal of general waste
31. Waste bags , 35 L, yellow	20 a roll	1 roll	For disposal of contaminated swabs
Recommended stationery			
32. Blood donor questionnaires		60	For use during donor selection
33. Labels for blood bags		50 of each type	To include patient and cross-match information on the blood unit
34. Registers, hard-cover, A4		5	For donor and patient records
35. Transfusion request forms		50	For requesting blood transfusion for a patient
One-off items – if above are re-ordered, these should not be repeated			
36. Sphygmomanometer		1	For measuring blood pressure during donor selection
37. Surgical scissors		2	For use during blood donation and patient sample collection
38. Tourniquets, arm, adjustable		2	
39. Weighing scale, range 0 –150 Kg		1	For checking donors' weight during donor selection
40. Spring balance, range 250 – 600 gm		2	For monitoring blood volume during blood donation
41. Artery forceps (Clamp)		2	For use during blood donation
42. Tube stripper		2	
43. Test tube racks, 30 holes, plastic/wooden		5	For holding sample tubes with donors and patients
44. Insulated cool box, 10 L		2	For temporary storage of donated blood
45. Blood bank refrigerator		1	For storage of blood

* In settings where tube method cannot be used.

5.5 References

1. Development of national health laboratory policy and plan. India: World Health Organizations; 2011 (http://www.wpro.who.int/health_technology/documents/docs/Nationalhealthlab2_0F38.pdf, accessed 22 May 2014).
2. Service delivery approaches to HIV testing and counselling (HTC): A strategic policy framework. Geneva: World Health Organization; 2012 (http://www.who.int/hiv/pub/vct/htc_framework/en/, accessed 22 May 2014).
3. Guidelines for assuring the accuracy and reliability of HIV rapid testing: applying a quality system approach. Geneva: World Health Organization; 2005 (http://whqlibdoc.who.int/publications/2005/9241593563_eng.pdf, accessed: 22 May 2014).
4. HIV rapid test training package. Geneva: World Health Organization; 2005 (http://www.who.int/diagnostics_laboratory/documents/guidance/hivrttraining_overview/en/index.html, accessed: 22 May 2014).
5. Laboratory quality management system training toolkit. Geneva: World Health Organization, U.S. Centers for Disease Control and Prevention, the Clinical and Laboratory Standards Institute; 2009 (http://www.who.int/ihr/training/laboratory_quality/en/index.html, accessed 22 May 2014).
6. Guidelines for appropriate evaluations of HIV testing technologies in Africa. Geneva: World Health Organization Regional Office for Africa, U.S. Centers for Disease Control and Prevention, Association of Public Health Laboratories; 2002 (http://whqlibdoc.who.int/afro/2002/a82959_eng.pdf, accessed 22 May 2014).
7. WHO expert meeting report on short, medium, and longer term product development priorities in HIV-related diagnostics, 6–7 June 2012 Geneva, Switzerland. Geneva: World Health Organization; 2012 (http://apps.who.int/iris/bitstream/10665/75971/1/9789241504522_eng.pdf, accessed 22 May 2014)

6. Surgery and Anaesthesia

6.1 Surgery and Anaesthesia

As a first estimate, conditions treatable by surgery account for 11% of the global burden of disease(Debas H, Gosselin R, McCord C, et al. 2006). Surgically addressable burden of disease at the first referral level include the following *(1)*:

- Injuries (e.g. from road traffic accidents - from which 1.3 million people lose their lives each year, violence, falls, and burns)
- Pregnancy related complications - every year over 287,000 women die before, during or after childbirth (complications requiring surgical intervention include haemorrhage, obstructed labour, unsafe abortion, ectopic pregnancy).
- Anaesthesia is an integral component of surgical care systems and anaesthesia-related complications have also been cited as a significant cause of maternal deaths
- Infection (e.g. wound infections, abscesses, and bone infections)
- Acute abdominal conditions (e.g. gastro-intestinal obstruction, perforation and strangulation)
- Congenital anomalies (e.g. club foot)
- Other surgical conditions

Often surgical procedures cannot be performed or referred to higher level health facilities due to lack of or non-functioning equipment such as oxygen supply and anaesthesia machine *(2,3,4)*. To maximize the effectiveness of district and sub-district health facilities in the management of pregnancy-related complications, injuries, congenital anomalies and prevention of infection, and enable them to meet the MDGs 4, 5, and 6, the following strategies should be implemented:

1. Personnel with appropriate education and training in *(5)*:
   - Anesthesia and resuscitation
   - Obstetrics and gynecology
   - General surgery
   - Traumatology
   - Orthopedics
2. Practical skills training and continuing education programmes in the management of essential anesthesia and surgical (emergency, obstetrics, trauma) care, to maintain the quality and safety of care through:
   - Evaluation of training needs
   - Coordinated plan for education and training
   - Educational resources and best practice protocols at the point of care
   - Monitoring and evaluation of the progress and impact of education and training
3. Appropriate physical facilities for:
   - Casualty area, operating room, labour room, high dependency area
   - Continuous oxygen supply
   - Blood bank and laboratory
   - Diagnostic imaging
   - Sterilization
   - Water, electricity, safe waste disposal and communications
4. Equipment (including basic monitoring) and instruments to meet the needs of district surgical services for minor and major surgical interventions in :
   - Obstetrics and gynecology surgery
   - Abdominal surgery
   - Orthopedic surgery
   - Common pediatric surgical conditions
   - Anesthesia
   - Resuscitation

5. A reliable system for the supply of :
   - Medication, blood and intravenous fluids
   - Surgical materials
   - Other consumables
6. A quality assurance system for:
   - Patient safety
   - Management
   - Communication
   - Supervision
   - Evaluation

The WHO *Integrated Management for Emergency & Essential Surgical* (IMEESC) toolkit was developed to provide guidance on strengthening surgical care health systems. It contains *(6):*

- Policies to ensure quality and safety in provision of anesthesia, obstetrics, trauma and surgical care
- Planning tool to guide incorporation of district surgical services within the national health plan
- Guidance on organization and management of district hospital
- Education and training tools to enable health providers to provide an effective surgical, obstetrics, trauma and anesthetic service
- Essential emergency equipment generic list
- Guidance to infrastructure and supplies at various levels of health care facilities to assure adequate and reliable supplies of medicines, anaesthesia and surgical materials and other consumables
- Best practice protocols on anesthesia, obstetrics, common pediatric surgical conditions, trauma, disaster situations and surgical care, infection control and for referral to higher level health facilities.
- Situation analysis tool to assess emergency, anesthesia, obstetrics, pediatrics, trauma and surgical services at various levels of care
- Monitoring and Evaluation tool to monitor progress of improvement in surgical care systems

6.2 Grouping of common surgical instruments by surgical procedure

Surgical instruments are often packed into sets related to the surgical procedures for which they are required. These sets can often be used for multiple procedures. Contents of each surgical instrument set is listed in Table 41.

Table 41. Contents of surgical instrument sets

1. Basic surgery set
The basic surgery set is used for minor surgery and/or exploratory of complex wounds.
Set content:
4 x Clamp,towel,Backhaus,130mm
2 x Forceps,tissue seizing,Allis,150mm
6 x Forceps, artery, Halsted-Mosquito, 125mm, curved
1 x Forceps,artery,Kocher,140mm,straight
1 x Forceps,dressing,standard,155mm,straight
1 x Forceps,tissue holding,Collin,160mm
1 x Forceps,tissue,standard,145mm,straight
1 x Forceps,dressing & polypus,Cheron,250mm
1 x Needle holder,Mayo-Hegar,180mm,straight
1 x Probe,double-ended,145mm
1 x Retractor,Farabeuf,double-ended,120mm,pair
1 x Scalpel handle,no.4
1 x Scissors,Metzembaum,140mm,curved, blunt/blunt
1 x Scissors,Mayo,140mm,curved, blunt/blunt
1 x Bowl, stainless steel, 180 ml
2. Delivery set
The delivery set is used for spontanous delivery to clamp/cut the umbilical cord and it is also be used in combination with the suture set when episiotomy is necessary.
Set content:

Table 41. Contents of surgical instrument sets

1 x Scissors,Mayo,140mm,curved, blunt/blunt
1 x Scissors,gynecological,200mm,curved, blunt/blunt
2 x Forceps,artery,Kocher,140mm,straight
3. Dilatation/Evacuation (D&E) set
The dilatation and evacuation set is used for surgical methods of safe abortion beyond the first trimester. The evacuation reququires electric or manual vacuum aspiration equipment with different sizes of plastic cannulae, ranging from 12 - 16mm in diameter and long forceps.
Set content:
1 x Dilators, uterine, tapered, up to 51 mm
1 x Forceps, dressing, ring
1x Forceps, uterine, ovum, Bierer, large
1x Forceps, uterine, ovum, Bierer, small
1x Forceps, uterine, ovum, Sopher, small
1 x Retractor, vaginal, Doyen, 45 x 85 mm
1 x Retractor, vaginal, Auvard, 38 x 80 mm
1 x Curette, postpartum flexible, large
1 x Forceps, tenaculum, atraumatic
1 x Speculum, vaginal, Graves, wide mouth
1 x Bowl, stainless steel, 180 ml
Footnotes: Recommendation: Vacuum aspiration is the recommended technique of surgical abortion for pregnancies of up to 12 to 14 weeks of gestation. The procedure should not be routinely completed by sharp currettage. Dilation and sharp currettage (D&C), if still practised should be replaced by vacuum aspiration (page.2 in the reference). Dilatation and curettage: Where it is still practised, all possible efforts should be made to replace D&C with vacuum aspiration, to improve the safety and quality of care of women. At sites where vacuum aspiration has yet to be introduced, manegers must ensure that proper painmanagement protocols are followed, and that D&C procedures are performed by well-trained staff under adequate supervision. Reference: Safe abortion second edition, 2012: http://www.who.int/reproductivehealth/publications/unsafe_abortion/9789241548434/en/
4. Dressing set
The dressing set is used for simple wound dressings, basic instrument donation for medical staff.
Set content:
1 x Forceps,artery,Kocher,140mm,str
1 x Forceps,dressing,standard,155mm,str
1 x Scissors,Deaver,140mm,str,s/b
5. Early infant male circumcision set
The early infant male circumcision set is used for male circumcision in ealy infancy, mostly within the first two months of life in case of full-term baby. Three different circumcision devices are existing. The circumcision device should be selected by a surgeon based on his learning technique and experiences accordingly.
Set content:
One 7.5-cm to 12.5-cm (3-inch to 5-inch) flexible probe
Three small mosquito haemostats, two curved and one straight (80 - 125 mm)
Small straight scissors, (115 - 140 mm)
Desired male circumcision device (Mogen, Gomco or Plastibell) and all appropriate parts
Reference; Manual for early infant male circumcision under local anaethesia, 2010: http://www.who.int/hiv/pub/malecircumcision/manual_infant/en/ Specifications and picures of male circumcision devices in Page 42 to 51.
6. Embryotomy set
The set is used for embryotomy (cranioclasy, craniotomy).
Set content:
1 x Cranioclast,Braun,420mm
1 x Perforator,Smellie,250mm
1 x Scissors,gynecological,200mm,curved, blunt/blunt
1 x Hook,decapitation,Braun,310mm
7. Examination/suturing, vaginal/cervical set
The set is used for checking and repairing cervical tears and deep vaginal tears.
Set content:
1 x Scissors,Mayo,170mm,curved, blunt/blunt
1 x Needle holder,Mayo-Hegar,180mm,straight
2 x Retractor,vaginal,Doyen,45x85mm
1 x Speculum,vaginal,Graves,75x20mm

Table 41. Contents of surgical instrument sets

1 x Speculum,vaginal,Graves,95x35mm
1 x Speculum,vaginal,Graves,115x35mm
2 x Forceps,dressing & polypus,Cheron,250mm
8. Intra uterin device (IUD) insertion/removal set
The intra uterin device (IUD) set is used for insertion and removal of intra uterin devices through vigina as one of contraseptive methods.
Set content:
1 x Speculum, vaginal, Graves, 75 x 20mm
1 x Speculum, vaginal, Graves, 115 x 35mm
1 x Speculum, vaginal, Graves, 115 x 35mm
1 x Forceps,dressing & polypus,Cheron,250mm
1 x Forceps, artery,Pean/Rochester, 220mm, straight
1 x Forceps,uterine, vulsellum,Duplay,280mm,curved
1 x Sound, uterine, Martin, 320mm
1 x Scissors, gynaecological, 200mm, curved
1 x Bowl, approx. 180ml
1 x Basin, kidney, approx. 825ml
9. Laparotomy (gyn/obs) set
The laparotomy set is used for exploratory laparotomy, ceasarean section & related complications (uterin rupture, hysterectomy..), salpingectomy, ectopic pregnancy, and other gynaecological operations.
Set content:
4 x Clamp,towel,Backhaus,130mm
1 x Forceps,artery,Kelly,140mm,curved
2 x Forceps,artery,Kocher,140mm,straight
2 x Forceps,artery,Pean/Rochester,200mm,curved
2 x Forceps,artery,Pean/Rochester,240mm,curved
6 x Forceps, artery, Halsted-Mosquito, 125mm, curved
1 x Forceps,artery,Mixter,230mm
1 x Forceps,dressing,standard,155mm,straight
1 x Forceps,dressing,standard,250mm,straight
1 x Forceps,dressing & polypus,Cheron,250mm
2 x Forceps,intestinal,clamp,Doyen,230mm,curved
2 x Forceps,uterine, haemostatic, Phaneuf,215mm,curved
1 x Forceps,uterine, vulsellum,Duplay,280mm,curved
2 x Forceps,tissue seizing,Allis,150mm
1 x Forceps,tissue & organ holding,Babcock,200mm
2 x Forceps,tissue holding,Duval,230mm
1 x Forceps,tissue,standard,145mm,straight
1 x Forceps,tissue,standard,250mm,straight
1 x Needle holder,Mayo-Hegar,180mm,straight
1 x Retractor,abdominal,Collin,3 blades
1 x Retractor,abdominal,Balfour,3 blades
1 x Retractor,Farabeuf,double-ended,180mm,pair
1 x Scalpel handle,no.4
1 x Scissors,Metzembaum/Nelson,180mm,curved, blunt/blunt
1 x Scissors,Metzembaum/Nelson,230mm,curved, blunt/blunt
1 x Scissors,Mayo,170mm,curved, blunt/blunt
1 x Scissors,Mayo,230mm,curved, blunt/blunt
2 x Spatula,abdominal,malleable,270mm
1 x Tube suction,Yankauer,270mm
1 x Bowl,stainless steel,600ml

Table 41. Contents of surgical instrument sets

10. Suture set
The suture set is used in addition to the delivery set for episiotomy, perineum repairs, and/or simple suturing ,complex dressings. It can also be used (Family Planning) for Sub-dermal implants removal if needed.
Set content:
1 x Scissors,Deaver,140mm,curved, sharp/blunt
1 x Needle holder,Mayo-Hegar,180mm,straight
1 x Forceps,artery,Kocher,140mm,straight
1 x Scalpel handle,no.4
1 x Forceps,tissue,standard,145mm,straight
1 x Probe,double-ended,145mm
11. Vacuum Aspiration set
The vacuum aspiration set is used for surgical methods of sage abortion up to gestational age less than 15 weeks. Vacuum Aspiration requires electric or manual vacuum aspiration equipment with different sizes of plastic cannulae, ranging from 4 - 16mm in diameter.
Set content:
1 x Dilators, uterine, Hegar, double-ended, 3-4mm to 17-18mm, stainless steel
1 x Forceps, dressing, ring
1 x Forceps, tenaculum, atraumatic
1 x Speculum, vaginal, Graves, 95 x 35 mm
1 x Bowl, stainless steel, 180 ml
Footnotes; Recommendation: Vacuum aspiration is the recommended technique of surgical abortion for pregnancies of up to 12 to 14 weeks of gestation. The procedure should not be routinely completed by sharp currettage. Dilation and sharp currettage (D&C), if still practised should be replaced by vacuum aspiration (page.2 in the reference). Dilatation and curettage: Where it is still practised, all possible efforts should be made to replace D&C with vacuum aspiration, to improve the safety and quality of care of women. At sites where vacuum aspiration has yet to be introduced, manegers must ensure that proper painmanagement protocols are followed, and that D&C procedures are performed by well-trained staff under adequate supervision. Reference: Safe abortion second edition, 2012: http://www.who.int/reproductivehealth/publications/unsafe_abortion/9789241548434/en/
12. Vasectomy set
The vasectomy set is used for vasectomy as one of contraseptive methods. This method requires also scissors for clipping scrotal hair and disposables for local anaesthesia.
Set content:
1 x Bowl, 180ml, stainless steel
4 x Clamp, towel, Jones, 50 mm
4 x Forceps, artery, Kelly, 140 mm,straight,
2 x Forceps, artery, Halsted/Mosquito, 125 mm, curved
2 x Forceps,tissue seizing, Allis, 150 mm
1 x Scalpel handle, no.3
1 x Scissors, 120 mm, curved
13. Vasectomy non-scalpel set
The non-scalpel set is used for vasectomy with non-scalpel technique which requires the extracutaneous ringed forceps, called Ringed clamp, for grasping the vas voth extracutaneously and directly, and Dissecting forceps for puncturing the scrotal skin and spreading the tissues. This method requires also scissors for clipping scrotal hair and disposables for local anaesthesia .
Set content:
Ringed clamp (inside dimensions of clamp 3.0, 3.5, or 40. mm)
Dissecting forceps
Straight, scissors
Reference: No-Scalpel Vasectomy third edition (http://www.engenderhealth.org/files/pubs/family-planning/no-scalpel.pdf) Page 7 to 9.

6.3 Surgical instrument stainless steel

Surgical stainless steel is a specific type of stainless steel, used in medical applications. The word 'surgical' refers to the fact that these types of steel are well-suited for making surgical instruments: they are strong, corrosion-resistant, easy to clean and sterilize.

Surgical stainless steel includes elements of: chromium, nickel and molybdenum.

The chromium gives the metal its scratch resistance and corrosion resistance. The nickel provides a smooth and polished finish. The molybdenum gives greater hardness and helps maintain a cutting edge.

Although there are myriad of variations, there are two main categories of stainless steel: martensitic and austenitic (Table 42);

Surgical stainless steels are defined by the standard EN ISO 7153-1: Surgical instruments - Metallic materials – Part 1: Stainless steel.

Table 42. Two main types of stainless steel

Martensitic stainless steels	Austenitic stainless steels
These are quenched, magnetic steels. They contain: CARBON => 0,1 to 1 % Gives hardness and tensile strength Lowers corrosion resistance CHROMIUM => 12 to 14 % Essential alloying element Gives corrosion resistance MOLYBDENUM => 0,2 to 1 % Improves the cutting qualities Gives corrosion and impact resistance Cannot be used for pressure force instruments, as it makes them brittle SILICON => 0,5 to 1 % MANGANESE => 0,4 to 2 %	These are non-quenched, non-magnetic steels. They contain: CHROMIUM => 16 to 20 % Essential alloying element Gives corrosion resistance MOLYBDENUM => 2 to 3 % Gives corrosion and impact resistance NICKEL => 8 to 12 % SILICON => 0,5 to 1 % MANGANESE => 0,4 to 2 %

Note: Most surgical instruments are made out of martensitic stainless steel, it is much harder than austenitic stainless steel, and easier to keep sharp. Depending on the type of surgical instruments, the stainless steel composition & manufacturing process vary slightly to get more sharpness or more strength.

Families of products

1. Pressure force instruments and springs => martensitic steel

- Haemostatic forceps
- Dissecting forceps
- Gripping forceps
- Surgical towel clamp
- Needle-holding forceps
- Threading forceps
- Clamping forceps

The steel used must be springy and highly impact resistant.

Carbon gives them hardness, while chromium gives them corrosion resistance. The proportions must be very exact.

Instruments made of these steels have to undergo a complex, rigorous heat treatment which allows the steel to be hardened; otherwise they will bend the first time they are used.

Instruments made of these steels must be carefully polished; the quality of the polishing determines the corrosion resistance.

2. Instruments that cut by shearing => martensitic steel

- Scissors
- Curettes
- Raspatories
- Gouge shears
- Cutting forceps

The steel used has a higher percentage of carbon than for the pressure force instruments in order to increase hardness.

The percentage of chromium is the same to give corrosion resistance, while incorporation of molybdenum makes up the balance and improves the cutting qualities.

3. Instruments that cut by percussion => martensitic steel

- Chisel shears
- Osteotomes
- Gouges

For the cutting part, the heat treatment and polishing are the same as for instruments that cut by shearing.

For the non cutting part, the heat treatment and polishing are the same as for pressure force instruments.

4. Static function instruments => martensitic or austenitic steel

- Autostatic retractors
- Long-handled retractors
- Valves
- Speculums
- Dilators

5. Miscellaneous instruments => austenitic steel

- Instrument box
- Obstetrical hook
- Manual drill etc.

Table 43. Standard grades of steel for surgical instruments

Families of products	Type of steel	Composition of the steel					
		CARBON	CHROMIUM	MOLYBDENUM	NICKEL	SILICON	MANGANESE
1. Pressure force instruments & springs							
Haemostatic forceps	Martensitic	0.2 %	13 %			1 %	1 %
Dissecting forceps	Martensitic	0.2 %	13 %			1 %	1 %
Gripping forceps	Martensitic	0.2 %	13 %			1 %	1 %
Surgical towel clamps	Martensitic	0.2 %	13 %			1 %	1 %
Needle-holding forceps	Martensitic	0.2 %	13 %			1 %	1 %
Threading forceps	Martensitic	0.2 %	13 %			1 %	1 %
Clamping forceps	Martensitic	0.2 %	13 %			1 %	1 %
2. Instruments that cut by shearing							
Scissors	Martensitic	0.4 %	14 %			0.5 %	0.4 %
Curettes	Martensitic	0.2 %	13 %			1 %	1 %
Raspatories	Martensitic	0.2 %	13 %			1 %	1 %
Gouge shears	Martensitic	0.3 %	13 %			1 %	1 %
Cutting forceps	Martensitic	0.3 %	13 %			1 %	1 %
3. Instruments that cut by percussion							
Chisel shears	Martensitic	0.5–0.7 %	13–14 %	0.5-0.9 %		1 %	1 %
Osteotomes	Martensitic	0.5–0.7 %	13–14 %	0.5-0.9 %		1 %	1 %
Gouges	Martensitic	0.3 %	13 %			1 %	1 %
4. Static function instruments							
Autostatic retractors	Martensitic	0.3 %	13 %	2-3 %	8-10 %	1 %	2 %
Long-handled retractors	Austenitic		18 %		10-12 %	1 %	2 %
Valves	Austenitic		16–18 %		10-12 %	1 %	2 %
Speculums	Austenitic		16–18 %	2-3 %	8-10 %	1 %	2 %
Dilators	Austenitic		18 %			1 %	2 %
5. Miscellaneous instruments							
Instrument box etc.	Austenitic						

6.4 Surgical sutures

A surgical suture is a sterile single use medical device used to hold body tissues together after an injury or surgery.

Needle-suture combination (atraumatic suture), needle with attached length of thread, is recommended. Note: Swaged needles are eyeless needles attached onto sutures threads at the factory, allowing a smooth junction between them. They are therefore less traumatic for the tissues.

A number of different needles shapes, sizes and thread materials have been developed over its millennia of history.

Sutures threads are made from numerous materials and exist in very specific sizes.

Suture material can be classified on the basis of the characteristics absorbability, origin of material and thread structures. The original sutures were made from biological materials either absorbable, such as collagen derived from healthy beef and sheep (catgut) or non-absorbable, such as organic protein called fibrin (silk). Most modern sutures are from synthetic polymers, such as polyamide, polyolefines and polyesters, including non-absorbable as well as absorbable derived from polyglycolic acid.

Sutures must be strong enough to hold tissue securely but flexible enough to be knotted. They must be hypoallergenic and avoid the “wick effect” (capillary action) that would allow fluids and thus infection to penetrate the body along the suture tract.

Type of thread

Suture absorbable (naturally biodegradable in the body),

- Natural:(i.e. catgut),
  - » Absorption by enzymatic process, varying resorption time.
- Synthetic (i.e. polyglycolic acid, polylactic acid)
  - » Absorption by hydrolysis.

Suture non absorbable

- Natural: (i.e. silk)
- Synthetic (i.e nylon,polypropylene).

Structure of thread

- - Monofilament
  - » thread made of one single filament presenting a unique physical structure,
  - » knot tying more difficult,
  - » have no capillarity.
- Multifilament
  - » thread made of several braided filaments,
  - » easier to handle and to tie,
  - » usely coated to reduce capillarity.

Classification of suture thread sizes

The tensile strength and knot-tying properties of a surgical suture material are determined not only by the starting material and structure, but also by the thickness of the thread. Classification of thread size must therefore be precise.

Suture thread sizes are defined by two parralele systems:

The United States Pharmacopeia (U.S.P.),

- range from 10-0 (or 10/0) to 5
- Size refers to the diameter of the suture strand and is denoted as zeroes. The more zeroes characterizing a suture size, the smaller the resultant strand diameter (eg, 4-0 is larger than 5-0).

The European Pharmacopia (E.P.) metric, according to decimal system.

- range from 0.2 to 7 (this denotes the diameter of the suture strand as a multiple of 0.1 mm.)
- Size refers to the diameter of the suture strand and is denoted asa multiple of 0.1 mm
- expressed as a DEC number (DEC2 = 0.20 mm)

Table 44. Size of non-absorbable and absorbable synthetic sutures

USP	EP (metric)	Ø in mm
Non-absorbable & absorbable synthetic materials	Non-absorbable & absorbable synthetic materials	Limit on average diam Min - Max (mm)
10-0	0.2	0.020-0.029
9-0	0.3	0.030-0.039
8-0	0.4	0.040-0.049
7-0	0.5	0.050-0.069
6-0	0.7	0.070-0.099
5-0	1	0.100-0.149
4-0	1.5	0.150-0.199
3-0	2	0.200-0.249
2-0	3	0.300-0.349
0	3.5	0.350-0.399
1	4	0.400-0.499
2	5	0.500-0.599
3 and 4	6	0.600-0.699
5	7	0.700-0.799

Non-needled suture (spooled suture)

Threads for non-swaged needles are supplied in spools and must be threaded on surgical needles with eyes by the user only at the time of use. They are more traumatic when passing through the tissues and increase the risk of accident (including users stick injuries). Consequently they need to be avoided.

Needle-suture combination (atraumatic suture)

Atraumatic sutures are defined as needle-suture combinations. Swaged needles are eyeless needles attached onto sutures threads at the factory, allowing a smooth junction between them in order to reduce tissue trauma. Threads of needle-suture combinations have an average length of 75 cm. Nowdays, atraumatic sutures are widely used.

There is a wide range of needles, they are made of stainless steel. They are defined by their curvature (longitudinal shape), their body (cross section) - point, their length.

Box 2. Needle shape

1. Curved needle, 1/2 circle (= half) (= 4/8)

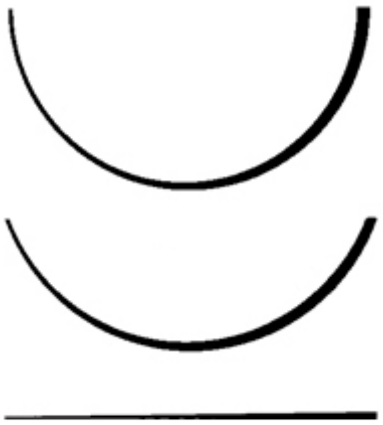
Deep sutures, stomatology, gynaecology...

2. Curved needle, 3/8 circle

General surgery, vascular sutures...

3. Straight needle

To be avoided (more dangerous than the curved needles).



Needle body – point

Round-bodied needles taper gradually to a point whereas triangular-bodied needles have cutting edges along three sides.

Examples include:Taper point needle (needle body is round and tapers smoothly to a point) & reverse cutting needle (needle body is triangular and has the third cutting edge located on the outer convex curvature of the needle)

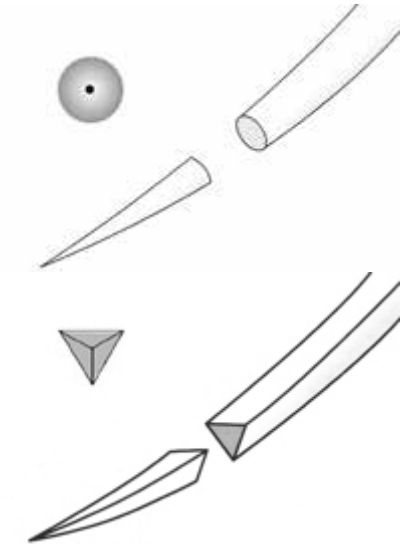
Box 3. Needle body – point

1. Round-bodied – Taperpoint needle

Sutures of soft tissues, mucous membranes and vessels.

2. Triangular bodied - Reverse cutting needle

Sutures of muscles and skin.



6.5 References

1. WHO Emergency & Essential Surgical Care. (http://www.who.int/surgery/en/, accessed 22 May 2014).
2. D Vo, M N Cherian, S Bianchi, L Noël, G Lundeg, A Taqdeer, B T Jargo, M Okello-Nyeko, A Kahandaliyanage, O Sentumbwe-Mugisa, A Ochroch E, D Okello, J Abdoulie, O.Ayankogbe, O A Soyannwo, P Hoekman, P Bossyn, R Sani, M Thompson, S Mwinga, S Prasad, M Wekesa, O Toliva, P Kibatala and M McCunn, Anesthesia capacity in 22 Low and Middle Income Countries. (2012). J Anesth Clin Res. April;3(4):207.
3. Ologunde R, Vogel JP, Cherian MN, Sbaiti M, Merialdi M,Yeats J, et al Assessment of cesarean delivery availability in 26 low- and middle-income countries: a cross-sectional study. (2014). Am J Obstet Gynecol.
4. Belle J, Cohen H, Shindo N, Lim M, Velazquez-Berumen A, Ndihokubwayo JB, Cherian MN.Influenza preparedness in low-resource settings: a look at oxygen delivery in 12 African countries. J Infect Dev Ctries. 2010 August;4(7):419-424.
5. Aide memoire on surgical and emergency obstetrical care at first referral level. Geneva: World Health Organization; 2003 (http://www.who.int/surgery/publications/en/Aide-Memoire_surgery.pdf, accessed 22 May 2014).
6. Integrated Management for Emergency and Essential Surgical Care (IMEESC) toolkit. Geneva: World Health Organization; 2009 (http://www.who.int/surgery/publications/imeesc/en/index.html, accessed 22 May 2014).

7. Infection prevention and control

7.1 Injection safety

With an estimated 25 billion injections administered annually in developing and transitional countries alone, injections are among the most frequently used medical procedures. If delivered unsafely, injections have the potential to contribute to the transmission of bloodborne pathogens with devastating consequences such as disability and death. Unsafe practices and the overuse of injections can cause an estimated 32% of Hepatitis B virus, 40% of Hepatitis C virus and 5% of all new HIV (human immunodeficiency virus) infections every single year *(1)*.

The risk of an unsafe injection is not only associated with the patient but also the health care worker (HCW) administering the injection and the community following dangerous waste disposal practices. In 1999, the World Health Organization (WHO) launched the Safe Injection Global Network (SIGN), an international alliance hoping to achieve the safe and appropriate use of injections on a global scale. The Injection Safety programme comprises of three core technical strategies believed to be necessary to bring about an improvement in injection practice. These include; *(2)*

1. Behaviour change among patients and healthcare workers to decrease injection overuse and achieve injection safety
2. Availability of necessary and of good quality injection devices and supplies
3. Management of sharps waste

Implementation of these strategies will facilitate

- improved patient safety by preventing the reuse of injection equipment or reducing unnecessary injections;
- health care worker safety through needle stick injury prevention, provision of Hepatitis B vaccine or post exposure prophylaxis and
- community safety via safe sharps waste management.

Despite the simple strategies to improve injection safety, many countries are still facing to address unsafe injections issue: *(3)*

- Poor practices are being targeted such as preventing the reuse of equipment through the introduction of reuse prevention syringes (RUPs) syringes, however many challenges still remain. Injection equipment availability, supply and quality are still key issues that need to be resolved to ensure safer injection practices.
- Patient preference or doctor over-prescription of injectable medications means unnecessary injections are still a major issue. It is estimated that over 70% of
- injections are unnecessary when oral formulation could have been used as an alternative therapy.
- To bring about behaviour change is a well-recognized challenge yet it is essential that these issues and gaps in interventions are addressed to ensure improved injection safety throughout the world. Recent evidence suggests that change is possible. Intervention strategies that target all three core components simultaneously have been shown to have the greatest positive effect on improved injection safety.

To ensure rational use of injections and avoid risks of transmission of bloodborne pathogens to patients, healthcare workers and the community at large, WHO recommends to implement the following key steps: *(4, 5, 6, 7, 8)*

1. Always use one single-use sterile needle and one single-use sterile syringe per patient and per injection, and to reconstitute each unit of injectable medication.
2. Promote oral treatment and limit the number of injections to only those strictly necessary. Use oral rehydration to limit the use of drips.
3. Single-use syringes with a reuse-prevention feature (RUPs) should be considered for therapeutic injections, and auto-disable syringes with attached needles (Ads) for immunization activities.
4. Ensure adequate supply of good quality and safety injection devices and that all injectable medications are supplied with matching quantities of single-use safety syringes, appropriate diluents and safety boxes/sharp containers according to the bundle principle.
5. Use single-dose vials rather than multi-dose vials. If multi-dose vials must be used, always pierce the septum with a sterile needle and avoid leaving a needle in place in the vial stopper.
6. Collect used needles and syringes in a sharps container according to waste segregation rules.

7.2 Decontamination and Sterilization at healthcare facilities *(9, 10, 11)*

Safe maternal childbirth is one of the Millennium Goals set by the WHO, however this goal cannot be achieved due to a lack of properly sterilized medical devices in health delivery areas resulting in transmission of infectious agents such as hepatitis B and C, HIV and bacterial pathogens. Antenatal care and management of sexually transmitted diseases are offered in primary health clinics and community units. Maternal obstetric units (MOU) provide facilities for both natural deliveries as well as assisted childbirth such as Caesarean section.

Medical devices used for examination of women, which come in contact with mucous membranes and maternal birth canal must be either disposable or, if reused, sterilized using heat s.

Disposal items available in such healthcare facilities include personal protective clothing (such as gloves and plastic aprons), disposable vaginal speculae, needles and syringes, suturing material, and laboratory collection tubes

A separate designated area should be made available to reprocess medical devices. It must have running water preferably both hot and cold, electricity and good light and ventilation. Only trained staff should clean medical devices and prepare them for safe patient use. Protective equipment such as a visor, mask, apron and gloves and headgear must be provided during the cleaning and reprocessing of medical devices.

The first step and most important step in reprocessing medical devices is thorough cleaning prior to any method of disinfection or sterilization. This can be done either manually in a sink or bowl, via an ultra sonic bath or an automated washer disinfector. Manual cleaning will require a pair of domestic gloves, water with detergent at the correct dilution and a soft nylon brush to clean the medical devices by holding them under the water level to avoid splashing. Automated systems should include a disinfection stage with temperatures of not less than 80°C for 10 minutes or 90°C for 1 minute. Medical devices reprocessed in a washer disinfector must emerge dry.

Chemical disinfectants such as sodium hypochlorite must never be used to soak medical devices prior to cleaning- these destroy the integrity of the medical device coating, create crevices and increase the risk of contamination- they also give a false sense of security to the users.

After cleaning, the medical devices are inspected for cleanliness especially the hinges, serrated edges and teeth, integrity and functionality. Those found to be unfit for use are replaced before sterilizing with heat. In the absence of heat, a high level disinfectant (such as glutaraldehyde or peracetic acid) will be considered but the chemicals must be rinsed off thoroughly and medical devices dried prior to use. There is a danger of carrying over chemicals which can cause injury to the vaginal mucosa and therefore great care must be taken when using chemicals for maternity units and primary health care.

Boiling sterilizers: these require filling with water and boiling for 10 min. Some have temperature and pressure gauges (pressure cookers) fitted to them. The advantage is that these is that they are cheap and can be used anywhere where there is electricity or a source of heating up the water. The disadvantage is that the process cannot be controlled and the devices cannot be dried without contaminating them.

Bench top sterilizers: There is wide range of bench top sterilizers ranging from those that require filling and have a heating element to sophisticated self steam generating sterilizers. The medical devices are loaded in open trays and placed in the sterilizer. Some have built in validation processes.

The advantage is that the medical devices are exposed to high temperatures and the process is much safer. The cycle is short and therefore the devices are readily available. The disadvantages are that the medical devices are not wrapped and therefore can become contaminated, the devices emerge hot and have to be cooled down and each cycle has to be monitored manually.

Figure 3. Bench top front loading sterilizer

Figure 4. Pot sterilizer

Dry Heat or Hot Air Sterilizers: These consist of a simple chamber incorporating a heating element and a fan. The advantages of these are that they only require a source of electricity and do not need running water. The disadvantages are that they require a very long cycle time that exceeds 3 hours by the time heat up is included. As with bench top sterilizers, the medical devices are not wrapped and therefore can become contaminated, the devices emerge hot and have to be cooled down and each cycle has to be monitored manually.

Figure 5. Dry Heat sterilizer

Whatever type of sterilizer is used, it is important that the process is validated and that either biological indicators or chemical indicators are routinely used to prove the sterilizing performance.

Documentation requires standard operating procedures (SOP) that everyone carrying out the procedure will follow easily. There must be a register or a logbook kept of medical devices processed and by which method, to ensure patient safety records- Traceability is essential.

Acknowledgement:

Contribution on behalf of the Decontamination Working Group under WHO Patient Safety,

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Mr Wayne Spencer, Hospital Engineer, Healthcare Facilities Consultants, member of Decontamination Working Group under the WHO Patient Safety.

Box 4. Model 10 Point Manual Washing Procedure:

1. Fill the sink or other clean receptacle with potable water to a predetermined level at the specified temperature and with the appropriate detergent. Detergents used must be specifically designed to clean surgical instruments: washing-up liquid should not ideally be used. Detergent dilution and water temperature should be in accordance with the manufacturer's instructions and local policy. Consideration should be given to the use of an enzymatic detergent to facilitate the cleaning of surgical instruments with channels or complex parts.
2. Dismantle or open the instrument to be cleaned and fully immerse in the solution to displace trapped air and, in the case of hollow instruments, to ensure penetration of channels.
3. Brush, wipe, agitate, irrigate, jet-wash or hand-spray the item to dislodge and remove all visible dirt, taking care to ensure the item remains under the surface of the water at all times to prevent the creation of aerosol (spray). Brushes should be made from nylon bristles and should be cleaned and sterilized daily, or preferably, should be single-use only.
4. If high-pressure-jet guns are used for cannulated instruments, they should be connected to the cold-water supply only. The gun is connected to the instrument and held under water during the irrigation process.
5. Remove the device from the sink or bowl and drain any excess cleaning solution before placing into a second sink or bowl for rinsing.
6. Change the rinse-water after every batch of instruments or when it becomes visibly soiled or cloudy.
7. Rinse the item thoroughly with clean potable water using the water-jet gun when necessary (see point 5).
8. Remove and drain the item, and then dry using the preferred method: for example, by using a clean, non-linting cloth or by mechanical drying. An alcohol wipe can be used to facilitate the drying process.
9. Cleaning materials should be safely disposed of in accordance with local waste policy.
10. Record the device that has been processed including the method and solutions used and details of the staff member who completed the procedure.

7.3 Sterilization equipment

Processing of reusable medical devices must be done according to the risk of infections (critical, semi-critical and noncritical items) and the heat resistance of the materials (thermoresistant or thermosensitive devices). Thermoresistant critical items (such as surgical instruments and surgical drapes) must be sterilized by steam autoclave between each patient and kept sterile until use. Thermosensitive critical items (such as tubes and catheters) are for single use only and must not be resterilized or reused. Thermoresistant semi-critical items must be sterilized by steam autoclave between each patient but do not need to be kept sterile until use. Thermosensitive semi-critical items must be subjected to high-level disinfection between each patient. Non-critical items must be cleaned and disinfected regularly but not necessarily between each patient, unless they have been soiled by blood or other biological fluids or in case of infection requiring isolation. For more information, please see Section 5 (special note on decontamination and sterilization at health-care facilities).

Table 45. Basic sterilization equipment and other relevant equipment *(12)*

Drum, sterilizing # sizes
Indicator, TST control, spot & tape
Masking tape, for sterilization pack
Paper sheet, crepe, for sterilization pack
Timer, 60 min, mechanical
Sterilizer, steam, approx. # capacities, electric with accessories

7.4 Health care waste management

Health-care waste is a by-product of health care that includes sharps, non-sharps, blood, body parts, chemicals, pharmaceuticals, medical devices and radioactive materials. In order to avoid air and water pollution and the possible transmission of infections by health-care waste, proper health-care waste management should be implemented and promoted in all situations. *(13, 14)*

Health-care waste management includes the following steps:

1. Segregation of the various categories of waste;
2. Storage and collection;
3. Treatment and disposal;
4. Waste zone.

Segregation

The four major categories of health-care waste recommended for organizing segregation and separate storage, collection and disposal are (WHO 2005):

- sharps (needles, scalpels etc.), which may be infections or not;
- non-sharps infections waste (anatomical waste, pathological waste, dressings, used syringes, used single-use gloves);
- non-sharps non-infections (general) waste (paper, packaging etc.);
- hazardous waste (expired drugs, mercury-containing thermometers, laboratory reagents, radioactive waste, insecticides etc.).

Storage and collection

Sharps should be places immediately after use in puncture resistant, fluid impermeable sharps containers which are placed at the site of use and regularly collected for disposal.

Non-sharps infections waste contains (15-401 capacity, with lids) should be collected, emptied, cleaned, disinfected and replaces after each intervention (e.g. in an operating or maternity unite) or twice daily.

Non-sharps non-infections waste (20-601 capacity) should be collected, emptied, cleaned and replaces daily; alternatively, plastic bags may be used inside the containers (MSF 2005).

For the above categories of waste, it is recommended that waste containers are a maximum of 5m from the point of waste generation, in 2 sets for each location, for a minimum 3 types of waste. At least one set of waste containers should be provided per 20 beds in a ward (MSF 2005).

Hazardous waste should be collected and stored in appropriate labelled containers places in a secure location. Radioactive waste should be stored in containers that prevent dispersion, behind lead shielding. *(14)*

Treatment and disposal

Sharps should be disposed of in a sharps pit (buried drum in small centres or emergency structures, concrete-lined sealed pit in other settings) or autoclave followed by shredding after which they can be buried in a pit or landfill.

Non-sharps infections waste should be buried in a pit fitted with a sealed cover and ventilation pipe, or high-temperature (850 degrees C) incineration. Special arrangements may be needed for disposing of placentas, according to local custom.

Steam sterilization prior to disposal, if available, is a preferred option for specific infectious waste such as blood samples, plastic syringes and laboratory tests, prior to disposal, as this avoids environmental pollution from incineration *(14)*. It is important to dedicate one specific autoclave for waste sterilization that is different from the one used for sterilization of medical devices within the laboratory. See WHO, 2013 and UNEP, 2012 for details of range of processes for treating infectious wastes.

Non-sharps non-infectious waste should preferably be recycled or can be buried in a pit or a landfill site. If space is limited, it could be incinerated. If this is not possible, it may be burned in a drum burner. In both cases, ashes and residues should be buried in a pit.

There are several kinds of **hazardous waste** and each requires specific treatment and disposal methods, which may include encapsulation, sterilization, burial, incineration and long-term storage. Some wastes, such as pharmaceutical wastes, cannot be disposed of safely in low-cost settings and should be sent to a large centre for storage and destruction or returned to the supplier. For guidance on treatment and disposal of hazardous wastes, see WHO Safe management of wasted from health-care activities, second edition, 2013 *(14)*. In all cases, national legislation should be followed.

Waste zone

Health-care waste is segregated at the point of generation according to its four types (sharps, non-sharps infectious waste, non-sharps non-infectious waste, hazardous waste) in colour-coded or labelled waste containers that are collected from all healthcare services and stored safely before treatment and/or disposal by safest feasible method available. Waste containers should be located a maximum of 5 metres from the point of waste generation. At least one set of waste containers should be provided per 20 beds. The health care facility should have a specific waste-disposal zone which is fenced off, has a water point with soap and/or disinfectant The waste-disposal zone should also be located at least 30 metres from groundwater sources. Where an incinerator is used, it should be located to allow effective operation with minimal local air pollution in the health centre, nearby housing and crops, and it should be large enough for extension if new pits or other facilities have to be built.

Wastewater drainage rainwater and surface run-off from health-care settings should be built and managed to avoid contamination of the health-care setting or the broader environment. Wastewater should be removed in standard waste drainage systems to off-site sewer or on-site disposal systems. All open wastewater drains should be covered. Small quantities of infectious liquid may be poured into sinks or toilets. Toxic wastes (e.g. from a laboratory) should be treated as health-care waste and not combined with wastewater. Where possible the health-care setting should be connected to properly built and functioning sewer system and treatment plant. Otherwise and on-site septic tank with effluent discharged into a soakaway pit or infiltration trench. Grey water may also be disposed in the septic tank or in soakaway pits or infiltration trenches equipped with grease traps. There should be at least 1.5 metres between the bottom of the infiltration system and the groundwater table (more in coarse sands, gravels and fissured formations), and the system should be at least 30 metres from any groundwater source to avoid contaminating groundwater. Septic tank sludges from healthcare settings should not be used for agricultural purposes, but should be buried following safe procedures.

Further reading

WHO Management of waste from injection activities at district level. Guidelines for District Health Managers. Geneva: World Health Organization; 2006 (http://www.who.int/water_sanitation_health/medicalwaste/mwinjections.pdf, accessed 22 May 2014).

Mercury and health, fact sheet no. 361. World Health Organization; 2013 (http://www.who.int/mediacentre/factsheets/fs361/en/, accessed 22 May 2014).

Replacement of mercury thermometers and sphygmomanometers in health care, Technical guidance. Geneva: World Health Organization; 2011 (http://whqlibdoc.who.int/publications/2011/9789241548182_eng.pdf, accessed 22 May 2014).

Natural Ventilation for Infection Control in Health-Care Settings. Carnberra: World Health Organization; 2009 (http://whqlibdoc.who.int/publications/2009/9789241547857_eng.pdf, accessed: 22 May 2014).

Sterilization manual for health centres. Washington D.C.: Pan American Health Organization; 2009 (http://www2.paho.org/hq/dmdocuments/2009/sterilization_manual_2009.pdf, accessed 22 May 2014).

WHO guidelines on Hand Hygiene in Healthcare: First Global Patient Safety Challenge Clean Care is Safer Care. Geneva: World Health Organization; 2009 (http://whqlibdoc.who.int/publications/2009/9789241597906_eng.pdf, accessed 22 May 2014).

Standard precautions in Health care. Geneva: World Health Organization; 2007 (http://www.who.int/csr/resources/publications/EPR_AM2_E7.pdf, accessed 22 May 2014).

Mercury in health care, Policy paper. Geneva: World Health Organization; 2005 (http://www.who.int/water_sanitation_health/medicalwaste/mercurypolpap230506.pdf, accessed 22 May 2014).

Infection control. Geneva: World Health Organization; 2004 (http://www.who.int/injection_safety/AM_InfectionControl_Final.pdf, accessed 22 May 2014).

Safe health-care waste management, Policy paper. Geneva: World Health Organization; 2004 (http://www.who.int/water_sanitation_health/medicalwaste/en/hcwmpolicye.pdf, accessed 22 May 2014).

Healthcare worker safety, aide-memoire. Geneva: World Health Organization; 2003 (http://www.who.int/injection_safety/toolbox/docs/en/AM_HCW_Safety.pdf, accessed 22 May 2014).

Safe health-care waste management, aide-memoire. Geneva: World Health Organization; 2003 (http://www.who.int/water_sanitation_health/medicalwaste/aidemem.pdf, accessed 22 May 2014).

UNEP Compendium of technoloiges for the treatment or destruction of healthcare waste. Nairobi: United Nations Environment Programme; 2012. (http://www.unep.org/ietc/Portals/136/News/Publication%20of%20Healthcare%20Waste%20compendium%20of%20technologies/Compendium_Technologies_for_Treatment_Destruction_of_Healthcare_Waste_2012.pdf, accessed 22 May 2014).

7.5 References

1. WHO Aide memoire on injection safety. Geneva: World Health Organization (http://www.who.int/injection_safety/about/country/en/AMENG.pdf, accessed 22 May 2014).
2. WHO Best Practices for injections and Related Procedures Toolkit. Geneva: World Health Organization; 2010 (http://www.who.int/injection_safety/toolbox/9789241599252/en/index.html, accessed 22 May 2014).
3. WHO Guiding principles to ensure injection device security. Geneva: World Health Organization; 2003 (http://www.who.int/entity/injection_safety/toolbox/docs/en/Guiding_Principle_Inj.pdf, accessed 22 May 2014).
4. WHO-UNICEF-UNFPA Joint statement on the use of auto-disable syringes in immunization services. Geneva: World Health Organization, United Nations Children's Fund, United Nations Population Fund; 1999 (http://www.who.int/entity/injection_safety/toolbox/en/Bundling.pdf, accessed 22 May 2014).
5. Safe Injection Global Network: Advocacy Booklet. Geneva: World Health Organization; 2011 (http://www.who.int/injection_safety/sign/advocacy_booklet/en/index.html, accessed 22 May 2014).
6. Safe Management of Wastes from Health-Care Activities. Geneva: World Health Organization; 1999 (http://www.who.int/entity/injection_safety/toolbox/docs/en/waste_management.pdf, accessed 22 May 2014)
7. A Guide for the Quality Assurance of Single Use Injection Equipment. Geneva: World Health Organization; 2003 (http://www.who.int/entity/injection_safety/toolbox/docs/en/InjEquQualityGuiden.pdf, accessed 22 May 2014).
8. Safety of Mass Immunization Campaigns. Geneva: World Health Organization; 2002 (http://www.who.int/entity/injection_safety/toolbox/en/AM_SafetyCampaigns.pdf, accessed 22 May 2014).
9. Pan American Health Organization. Sterilization Manual for Health Centers. Washington, D.C.: PAHO; 2009. (http://pdf.usaid.gov/pdf_docs/PNADT378.pdf, accessed 22 May 2014).
10. Best Practice in D&S Canada Best Practice Guidelines for Cleaning, Disinfection and Sterilization in Health Authorities. BC Ministry of Health; 2011 (http://www.health.gov.bc.ca/library/publications/year/2011/Best-practice-guidelines-cleaning.pdf, accessed 22 May 2014).
11. Health Estates. Decontamination in General Dental Practices DHSSPS General Dental Services Quality Improvement Scheme Technical Guidance. 2007. (http://www.dhsspsni.gov.uk/gdp_dg_2007_-_decontamination_guidance_nov_2007.pdf, accessed 22 May 2014).
12. Interagency list of essential medical devices for reproductive health. Geneva: World Health Organization, John Snow Inc., PATH, Population Action International, United Nations Population Fund and World Bank; 2008 (http://apps.who.int/medicinedocs/documents/s16440e/s16440e.pdf, accessed 22 May 2014).
13. WHO health-care waste web site. (http://www.who.int/topics/medical_waste/en/, accessed 22 May 2014).
14. Safe management of wastes from health-care activities, second edition. Geneva: World Health Organization; 2013 (http://apps.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf , accessed 22 May 2014)

8.1 Regulations for Medical devices

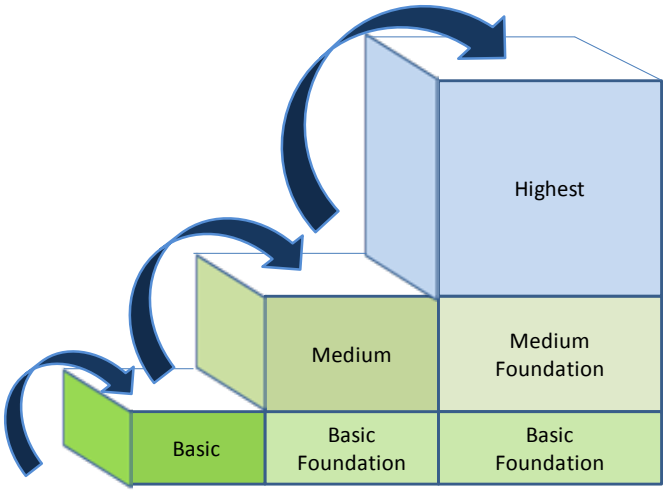
The regulations are established with each jurisdiction's Culture, History, Religion and Philosophy, especially Modern Medical regulations have a long struggled history with Complementary and Alternative Medicine. Generally, many jurisdictions established Food and Pharmaceutical regulations in the first and tried to consider Medical Device regulations in the next. The pharmaceutical professionals look hard to understand the conceptual difference between Pharmaceutical/Vaccine and Medical Device, because of their professional knowledge as quality, safety and efficacy. For example, International Organization for Standardization (ISO) issues Device-specific standards for Quality and Risk (see box 5), does not pharmaceutical one. So they may not have any interest in the viewpoint of standards.

We can recognize many kinds of medical devices as Active/Energy Supplies, Active Implants, Implants, Life Supporting/Monitoring Devices, Therapeutic Devices, Surgical Instruments, Diagnostic Imaging Devices, IVD, Contraceptive Devices, Healthcare Facilities, Hygiene Materials, Assistive Devices for Disabled Persons, Softwares... Legislators and regulatory authorities need to consider the appropriate regulations on these categorized devices for their (1) quality management system with risk management process and regulatory audit process, (2) pre-market evaluation of safety and performance, (3) post-market vigilance/surveillance throughout their life-cycle and (4) priority of procurement.

As pointed above, the global regulatory harmonization and convergence for Medical Device looks hard. However we need them, fundamentally to protect the public health, promote the public safety, decrease the cost of procurement and regulatory compliance and allow the earlier access to new technologies and treatments.

Global Harmonization Task Force (GHTF) encouraged medical device regulatory harmonization and convergence at the global level with many guidance documents in five areas; (1) Pre-market Evaluation, (2) Post-market Surveillance/Vigilance, (3) Quality Systems, (4) Auditing and (5) Clinical Safety/Performance (see Reference). Also GHTF showed the GHTF Regulatory Model (GRM) with the components of regulatory frameworks in a progressive manner, which shall be based on a comprehensive legislative and policy foundation.

Figure 6. Progressive Regulatory Framework



While the Basic Level Framework components is considered to be the minimum requirements for a regulatory framework, additional elements from the medium and high level ones may be considered, based on the need for regulatory oversight or resource availability. In efforts to establish the most robust framework possible, individual jurisdictions should consider the partnering with other jurisdictions. Similarly, all elements of the basic level framework should be presumed to be incorporated in the medium and highest level ones (Figure 6).

In the next, we need the conceptual understanding of key topics for medical devices.

Quality Assurance

Traditionally, GMP (Good Manufacturing Practice) is using to ensure the product quality in the manufacturing and testing process for Pharmaceuticals and Medical Devices. For example, the importer of Pharmaceuticals needs to assure the product quality by Laboratory testing with the sampling of each batch. Now we should require QMS (Quality management System) as ISO 13485 instead of GMP for Medical Devices. Generally medical devices consist of many parts including lots of raw materials. We can recognize one lot of medical device as sterilization lot, however this lot can't be recognized as a single quality product. The different concept is 'Management System' from 'Good Practice'. ISO 13485 doesn't show any practical procedure or criteria, because they shall be established by an organization throughout the lifecycle of a medical device including the design and development, production, storage and distribution, installation and servicing of medical devices, and the design, development, and provision of associated activities. So regulators need to trust a medical device manufacturer with their audit results.

'Risk'-based concept for Essential Principles

All kinds of regulation may be established with 'Risk-based' concept. GHTF founding members have 4 classes as Low, Low-Moderate, Moderate-High and High (Table 46).

Table 46. Risk-based Classifications for Medical Devices in Different Jurisdictions

Risk	GHTF	USA	Europe	Japan	Canada	Australia
Low	A	I	I	I	I	I
Low-Mod	B	II	IIa	II	II	IIa
Mod-High	C	II	IIb	III	III	IIb
High	D	III	III	IV	IV	III

However ISO 14971 shows the definition of 'Risk' is 'combination of the probability of occurrence of harm and the severity of that harm'. Customarily, a classification system of this type is referred to as a 'risk-based classification scheme' but this is a misnomer since the rules take account only of the hazard presented by a particular device and not the probability harm will occur. So GHTF guidance uses Class A, B, C, D instead of digits (1<2<3<4). This classification requires more and detailed (not higher) information in Essential Principles of medical devices from A to D with their hazard. For example, GHTF guidance Rule 17 shows class C on condoms, because the hazard associated with unwanted pregnancy if caused by mechanical failure of the device is significant. So the manufacturer of condom needs to comply with all kinds of technical standards for safety, performance and quality of their condom in R&D process. Regulator will audit and evaluate the manufacturer's QMS and application for approval or certification. Also post-market regulations are established with 'risk-based' concept. However condom shall be distributed /spread easily in the standing point to safeguard the public health. This purpose doesn't require Class C distribution practice.

In the conclusion, Pre or Post-market may require different class for some medical devices.

Nomenclature/Coding System

Human being can identify something with acknowledge by description. The nomenclatures of medical devices are also described with Term and Definition. However here are lots of languages, for example EU has 23 official languages, so we have 'Translation' issue in the global communication. If a certain country had introduced a western medicine from Dutch, this country should call 'Forceps'as 'Pincet'. So the term of medical devices are following the import of medical treatment in each jurisdiction's history.

In order to identify the medical devices, many jurisdictions established their own nomenclature system traditionally, for example, Product Code in US-FDA, UMDNS (Universal Medical Device Nomenclature System) by the US-ECRI, CND (Classificazione Nazionale Dispositivi Medici) in Italy, NKKN (Norsk Klassifisering Koding & Nomenklatur, Norwegian Nomenclature) in Norway and so on. CEN and ISO issued ISO 15225 and CEN had continued to establish the harmonize medical device nomenclature from 1997 as GMDN (Global Medical Device Nomenclature) including six existing nomenclatures;

1. CNMD Classification Names for Medical Devices and in Vitro Diagnostic Products. Developed by Food and Drug Administration (FDA) USA
2. EDMA European Diagnostic Manufacturers Association in vitro diagnostic product classification
3. ISO 9999 Technical Aids for Disabled Persons Classification
4. JFMDA Japanese Medical Device Nomenclature
5. NKKN Norsk Klassifisering Koding & Nomenklatur, Norwegian Nomenclature
6. UMDNS Universal Medical Device Nomenclature System Developed by ECRI

The purpose of GMDN is basically the usage for Data Exchange in Post-market vigilance and Inventory Control in the user facilities. So the flat structure is established instead of hierarchy one. This flat structure is very useful for Registration and Listing System, e.g. UDI (Unique Device Identifier) of each medical device. On the other hand, the hierarchy structure is very useful for regulation system on the group of specific medical devices, e.g. Conformity Assessment with their Essential Principle. On the other hand, another nomenclature may be used for Reimbursement System, based on the medical treatment categories. We should recognize these different concepts of nomenclature systems.

The 'Translation' issue should be solved by 'Coding' system. Each nomenclature system has their own coding system, as 5 digits, 8 digits and so on. We don't need to use specific term with their own languages, we need to use just codes with the translation in our background, for example we can find the code;16209 as 'Ophthalmic tissue forceps, reusable' in GMDN and we can still identify it is 'Reusable Ophthalmic Pincet' in our own traditional terms. The coding system is also forwarded in the post-market vigilance, e.g. Adverse Event Codes. We need to understand the importance of Coding System in the Global Communication.

Box 5. ISO Standards (http://www.iso.org/iso/home/standards.htm)

ISO 9000:2005	Quality management systems -- Fundamentals and vocabulary
ISO 13485:2003	Medical devices -- Quality management systems -- Requirements for regulatory purposes
ISO 14971:2007	Medical devices -- Application of risk management to medical devices
ISO 15225:2010	Medical devices -- Quality management -- Medical device nomenclature data structure

Box 6. GHTF Documents

All GHTF guidance is available in International Medical Device Regulators Forum (IMDRF) website (http://www.imdrf.org/documents/documents.asp)

GHTF/SC/N4 Definition and Glossary of Terms Used in GHTF Documents

GHTF/AHWG-GRM/N1 The GHTF Regulatory Model

GHTF/AHWG-UDI/N2 Unique Device Identification (UDI) System for Medical Devices

GHTF/SG1/N71 Definition of the Terms 'Medical Device' and 'In Vitro Diagnostic (IVD) Medical Device'

GHTF/SG1/N55 Definitions of the Terms Manufacturer, Authorised Representative, Distributor and Importer

GHTF/SG1/N78 Principles of Conformity Assessment for Medical Devices

GHTF/SG1/N77 Principles of Medical Devices Classification

GHTF/SG1/N68 Essential Principles of Safety and Performance of Medical Devices

GHTF/SG1/N63 Summary Technical Documentation (STED) for Demonstrating Conformity to the Essential Principles of Safety and Performance of In Vitro Diagnostic Medical Devices

GHTF/SG1/N44 Role of Standards in the Assessment of Medical Devices

GHTF/SG1/N70 Label and Instructions for Use for Medical Devices

GHTF/SG1/N65 Registration of Manufacturers and other Parties and Listing of Medical Devices

GHTF/SG2/N54 Global Guidance for Adverse Event Reporting for Medical Devices

GHTF/SG2/N33 Timing of Adverse Event Reports

GHTF/SG2/N32 Universal Data Set for Manufacturer Adverse Event Reports

GHTF/SG2/N36 Manufacturer's Trend Reporting of Adverse Events

GHTF/SG2/N57 Content of Field Safety Notices

GHTF/SG2/N31 Proposal for Reporting of Use Errors with Medical Devices by their Manufacturer or Authorized Representative

GHTF/SG2/N68 Summary of Current Requirements for Where to Send Adverse Event Reports

GHTF/SG2/N09 Global Medical Devices Competent Authority Report

GHTF/SG2/N79 National Competent Authority Report Exchange Criteria and Report Form

GHTF/SG3/N15 Implementation of risk management principles and activities within a Quality Management System

GHTF/SG3/N17 Quality Management System - Medical Devices - Guidance on the Control of Products and Services Obtained from Suppliers

GHTF/SG3/N18 Quality management system - Medical Devices - Guidance on corrective action and preventive action and related QMS processes

GHTF/SG3/N19 Quality management system - Medical devices - Nonconformity Grading System for Regulatory Purposes and Information Exchange

GHTF/SG3/N99 Quality Management Systems - Process Validation Guidance

GHTF/SG4/N28 Guidelines for Regulatory Auditing of Quality Management Systems of Medical Device Manufacturers - Part 1: General Requirements

GHTF/SG4/N30 Guidelines for Regulatory Auditing of Quality Management Systems of Medical Device Manufacturers - Part 2: Regulatory Auditing Strategy

GHTF/SG4/N33 Guidelines for Regulatory Auditing of Quality Management Systems of Medical Device Manufacturers - Part 3: Regulatory Audit Reports

GHTF/SG4/N83 Guidelines for Regulatory Auditing of Quality Management Systems of Medical Device Manufacturers - Part 4: Multiple Site Auditing

GHTF/SG4/N84 Guidelines for Regulatory Auditing of Quality Management Systems of Medical Device Manufacturers - Part 5: Audits of Manufacturer Control of Suppliers

GHTF/SG5/N1 Clinical Evidence - Key Definitions and Concepts

GHTF/SG5/N2 Clinical Evaluation

GHTF/SG5/N3 Clinical Investigations

GHTF/SG5/N4 Post-Market Clinical Follow-Up Studies

GHTF/SG5/N5 Reportable Events During Pre-Market Clinical Investigations

GHTF/SG5/N6 Clinical Evidence for IVD medical devices - Key Definitions and Concepts

GHTF/SG5/N7 Scientific Validity Determination and Performance Evaluation

Clinical Evidence for IVD medical devices - Scientific Validity Determination and Performance Evaluation

GHTF/SG5/N8 Clinical Evidence for IVD Medical Devices - Clinical Performance Studies for In Vitro Diagnostic Medical Devices

Acknowledgments:

This note was contributed by Mr Tom(omichi) NAKAZAKI, Visiting Professor, Department of Development Promotion, Clinical Research, Innovation and Education Center, Tohoku University Hospital (CRIETO).

8.2 Labels and instructions for use of medical devices

The primary purpose of labelling is to identify the medical device and its manufacturer, and communicate safety and performance related information to the user, professional or lay, or other person, as appropriate. Such information may appear on the device itself, on packaging or as instructions for use.

Definitions *(1, 2)*

Information supplied by the manufacturer: means 'Labelling'.

Labelling: the label, instructions for use, and any other information that is related to identification, technical description, intended purpose and proper use of the medical device, but excluding shipping documents.

Label: written, printed, or graphic information either appearing on the medical device itself, or on the packaging of each unit, or on the packaging of multiple devices.

Instructions for use: information provided by the manufacturer to inform the device user of the medical device's intended purpose and proper use and of any precautions to be taken.

Intended use / purpose: The objective intent of the manufacturer regarding the use of a product, process or service as reflected in the specifications, instructions and information provided by the manufacturer.

User: the person, either professional or lay, who uses a medical device. The patient may be the user.

Lay person: individual that does not have formal training in a relevant field or discipline.

ISO & EN Standards: Symbols used in Medical device label *(3, 4)*

Selected ISO 15223 and EN 980 Medical Device Symbols

- **ISO 15223**, Medical Devices - Symbols to be used with medical devices label, labelling and information to be supplied
- **EN 980**, Graphical symbols for use in the labelling of medical devices

The following chart displays the symbols with their definitions (Table 43).

Table 43. Medical devices - symbols with their definitions

Symbol	Used for	Symbol	Used for
	Do not reuse		Use by YYYY-MM-DD or YYYY-MM
	Batch code		Serial number
	Date of manufacture		Sterile
	Sterilized using ethylene oxide		Sterilized using irradiation
	Sterilized using steam or dry heat		Catalog number
	Caution, consult accompanying documents		Sterilized using aseptic processing technique
	Manufacturer		Authorized representative in the European Community
	Contains sufficient for < n > tests		For IVD Performance Evaluation only
	In vitro diagnostic medical device		Upper limit of temperature
	Lower limit of temperature		Temperature limitation
	Consult instructions for use		Biological risks
	Control		Negative control
	Positive control		Graphic symbols

8.3 Units and biomaterials used for medical devices

Systems used to specify the outside diameter for medical devices

The **Stubs Iron Wire Gauge** system (also known as the **Birmingham wire gauge**) is used to specify thickness or diameter of metal wire, strip, and tube products. The Stubs system was the first wire gauge recognized as a standard in 1884.

In medical, this **wire gauge** system is used to specify the outside diameter of hypodermic needles, catheters and suture wires. It is abbreviated as **G, Ga, Gg or g.**

Another system; the **French scale** or **French gauge** system is commonly used to measure the outside diameter of catheters, tubes & drains. It is abbreviated as **FG, Fr or F**. It is also abbreviated as **CH or Ch** (for Charrière, its inventor) in French speaking countries.

Units

The different units (symbols) used to express outside diameter (O.D.) in medical devices are listed below:

THE STUBS IRON WIRE GAUGE SYSTEM

Gauge = G, Ga, Gg or g

Synonym: Birmingham wire gauge

Definition: Unit which indicates the outside diameter (O.D.: Outer Ø) of the product, in a range, from 8G to 30G, corresponding respectively: 4 mm to 0.3 mm

The higher is the gauge, the smaller is the outside diameter. The gauge gives the outside diameter, but does not take into account thickness of the wall, so it will not indicate the internal diameter.

e.g.: 25G = 0.020 Inches - 0.514 mm

e.g.: 21G = 0.032 Inches - 0.819 mm

e.g.: 19G = 0.042 Inches – 1.067 mm

Field of use: IV short catheters, needles, scalp veins

Note: The gauge/mm correspondence may vary, due to figures being rounded off in conversion from inches to millimetres (Reference made to conversion table between fractional and/or decimal inches and metric millimetres)

Inch = In or ”

Synonym: in French « pouce »

Definition: Unit used to express the outside diameter (O.D.: Outer Ø) of guides for catheters

1 Inch = 25.4 mm

1 mm = 0.0394 Inch or 0.0394”

Field of use: Guides for catheters

Table 47. Sterile single-use hypodermic needles: equivalence Gauge / mm and colour coding for identification (EN-ISO 6009) *(3, 5, 6)*

Size in Gauge	Nominal O.D. in mm	Colour code
29 G	0.3 mm	-
27 G	0.4 mm	Grey
26 G	0.45 mm	Brown
25 G	0.5 mm	Orange
23 G	0.6 mm	Blue
22 G	0.7 mm	Black
21 G	0.8 mm	Dark green
20 G	0.9 mm	Yellow
19 G	1.0 mm	Cream
18 G	1.2 mm	Pink
17 G	1.5 mm	Red-violet
16 G	1.6 mm	White
15 G	1.8 mm	Grey-blue
14 G	2.1 mm	Light green
13 G	2.4 mm	-

Table 48. Sterile, single-use intravascular catheters: equivalence Gauge / mm and colour coding for identification (EN ISO 10555) *(3, 4, 5)*

Size in Gauge	Nominal O.D. in mm	Colour code
26 G	0.6 mm	Violet
24 G	0.7 mm	Yellow
22 G	0.8;0.9 mm	Blue
20 G	1.0;1.1 mm	Pink
18 G	1.2;1.3 mm	Green
17 G	1.4;1.5 mm	White
16 G	1.6;1.7;1.8 mm	Grey
14 G	1.9;2.0;2.1;2.2 mm	Orange

THE FRENCH SCALE OR FRENCH GAUGE SYSTEM

French gauge = FG, Fr or F

Synonym: French size, Charrière

Definition: Unit which indicates the outside diameter (O.D.: Outer Ø) of the product, each unit corresponds to ⅓ mm

The smaller is the French size, the larger is the outside diameter. The French size gives the outside diameter, but does not take into account thickness of the wall, so it will not indicate the internal diameter.

1FG = CH01 = ⅓ mm

e.g.: 8 FG = CH08 = 2.7 mm (0.105 Inch)

e.g.: 14 FG = CH14 = 4.7 mm (0.184 Inch)

Field of use: Exploratory catheters, tubes and drains

Note: Some manufacturers offer catheters in Inches

Charrière = CH or Ch

Synonym: French gauge, French size

Definition: Unit which indicates the outside diameter (O.D.: Outer Ø) of the product, each unit corresponds to ⅓ mm

CH01 = 1FG = ⅓ mm

e.g.: CH08 = 8 FG = 2.7 mm (0.105 Inch)

e.g.: CH14 = 14 FG = 4.7 mm (0.184 Inch)

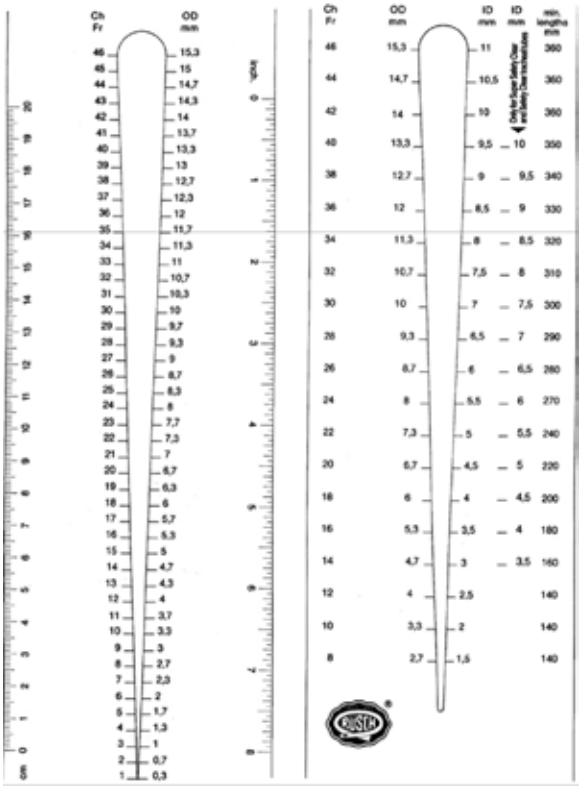
Field of use: Tubes and drains

GENERAL NOTE:

An increasing French size corresponds to a larger outside diameter catheter. This is contrary to needle-gauge size, where an increasing gauge corresponds to a smaller diameter catheter.

Figure 7. Equivalence Charrière / mm

Catheters and drains Endotracheal tubes



NB: OD = Outer Ø, ID = Inner Ø

Biomaterials

Biomaterials are materials (synthetic and natural; solid and sometimes liquid) that are used in medical devices or in contact with biological systems.

Polymers

A polymer is a large molecule (macromolecule) composed of repeating structural units (building block of a polymer chain). These sub-units are typically connected by covalentchemical bonds*. Although the term polymer is sometimes taken to refer to plastics, it actually encompasses a large class of compounds comprising both natural and synthetic materials with a wide variety of properties.

***A chemical bond** is an attraction between atoms that allows the formation of chemical substances that contain two or more atoms. *A covalent bond is a form of chemical bonding that is characterized by the sharing of pairs of electrons between atoms.

Major Polymer Classifications/Categories:

- Thermoplastic
- Thermoset
- Elastomer (or rubber)
- Thermoplastic elastomer (TEP)

Polymer nomenclature: There are multiple conventions for naming polymer substances. Many commonly used polymers are referred to by a common or trivial name. The trivial name is assigned based on historical precedent or popular usage rather than a standardized naming convention. Both the American Chemical Society (ACS)*(7)* and the International Union of Pure and Applied Chemistry (IUPAC)*(8)* have proposed standardized naming conventions; the ACS and IUPAC conventions are similar but not identical.

Medical Devices Polymers

A large range of polymer types are used in the field of Medical devices. Most of them are thermoplastic polymers.

Medical devices polymers are subject to strict selection criteria and strong regulations from the raw material to the finish product as a lot of them are intended for implanting in the human body for a fairly extended period.

Table 49. Common Medical Devices Polymers – Glossary

Acronym	Polymer type
ABS	Acrylonitrile butadiene styrene
EVA	Ethylene vinyl acetate
FEP	Fluorinated ethyl polypropylene
PA 6/6 or Nylon 6/6	Polyamide 6/6 or Nylon 6/6
PC	Polycarbonate
PES	Polyether sulfone
PE	Polyethylene
HDPE	High density polyethylene
LDPE	Low density polyethylene
PET	Poly(ethylene tetraphthalate)
PGA	Polyglycolide or Polyglycolic acid
PLA	Polylactic acid
PMMA	Poly(methyl methacrylate)
POM	Polyoxymethylene, Polyacetal
PP	Polypropylene
PSU	Polysulfone
PTFE	Polytetrafluoroethylene
PUR	Cross-linked Polyurethane
PVC	Polyvinyl chloride
TPU	Thermoplastic Polyurethane
Latex	Natural latex rubber; particularly for non-vulcanized rubber
NR	Natural rubber (elastomer) (an elastic polymer)
SI	Silicone elastomer

8.4 Textiles used for linen and clothing in health-care facilities

Protection from infection and safety for patients and healthcare workers are major concerns.

Occupational Safety and Health Administration (OSHA)*(10)* is a division of the Department of Labor and was established in 1971 to save lives, prevent injury, and protect workers' health. OSHA recommends that appropriate *protectiveclothing must be worn to form an effective *barrier when an employee has a potential for exposure on the job (OSHA, 1989). The type of clothing and linen needed depends upon the occupational task and the degree of potential exposure. If the clothes are potentially soiled from blood or other potentially infectious materials, protective clothing must be worn to prevent the employees underlying clothing from contamination. Fluid-resistant clothing must be worn when workers could become contaminated through splashing or spraying of blood or other potentially infectious materials. Because a larger volume of blood and other potentially infectious materials are associated with the work of the healthcare workers, a specific protective type of barrier clothing is needed.

* Personal Protective Equipment: "specialized clothing or equipment worn by an employee for protection against infectious materials"(OSHA)*(11)*

* Barrier material: a material that minimizes or retards the penetration of microorganisms, particulates and fluids. *(12, 13)*

Linen and clothing for medical applications are subject to regulations, governed by a large range of norms/ standards (EN/ISO) *(14, 15)* according to level of expected protection.

Linen and Clothing used in healthcare facilities: patient bed sheet, patient gowns, lab coats, surgical suits, surgical gowns, surgical drapes, isolation gowns, coveralls, caps, face masks, shoes covers, boots covers.

Linen and clothing used for patients and healthcare workers can be manufactured from either single-use fabrics or multiple use fabrics

The characteristics of single-use fabrics or multiple use fabrics are dependent on fiber type, and expected level of barrier performance bacteria and liquid barrier performances of the products

Reusable fabrics can be used over 50 times after laundering and sterilization; whereas, single-use fabrics are used only once before being discarded.

There are several factors to consider in determining the most appropriate textile to use in healthcare facilities. These will vary according to procedure and local priorities and are likely to include:

- The type of procedure and the assessed level of risk involved
- A priority of properties desired, for example: wet and dry bacterial barrier properties, fluid resistance, liquid absorption, strength etc.
- Disposable or reusable
- Processing requirements, for example: ability to be sterilized, rinse finishes in laundry
- Cost
- Expected life

Single-use nonwoven textiles

Nonwovens are principally produced in three stages: web formation, bonding and finishing treatments. Nonwoven manufacturing starts by the arrangement of fibers in a sheet or web. The fibers can be staple fibers or filaments extruded from molten polymer granules. Basic methods are used to form a web, and nonwovens are usually referred to by one of these methods: drylaid; spunlaid; wetlaid.

Nonwoven can be made of natural materials such as cotton, linen, wood pulp, and paper, or man-made materials such as polyester, polypropylene, polyimide, and polytetrafluoroethylene (PTFE).

Spunbond nonwoven: fabric made of different fibers: polypropylene (PP), polyethylene (PE) etc.

- Nonwoven textiles for basic protection
- Lightweight, breathable fabric, which consists of continuous filament, with good tensile strength and elongation.
- Standard fabric, low-cost solution for protecting workers

Meltblown nonwoven:fabric made of very high density web of polypropylene fibers

- Nonwoven textiles for high protection
- Meltblowns often are used as high-degree filter media for air, liquid and particles.

Spunbonded Meltblown Spunbonded (SMS) nonwoven: fabric made of high density of polypropylene fibers, comprising layers of spunbond polypropylene, meltblown polypropylene, and spunbond polypropylene. Spunbond layer is with good tensile strength and elongation, meltblown layer consists of continuous micro fiber. Different types exist: SMMS – SMMMS according to expected level of protection.

- Nonwoven textiles for high protection
- Fluid and particulate barrier.
- Lightweight and resistant to tears and punctures
- Strong and durable, yet offer outstanding comfort, breathability, softness, and wearability

Reusable woven textiles

Woven material: fabric constructed from yarns made of natural or synthetic fibers or filaments that are woven together to form a web in a repeated interlocking pattern.

Reusable linen and clothing are often made of cotton, polyester, or cotton and polyester blend woven fabrics with a plain weave

Cotton

Cotton is a natural and staple length fiber. The polymer structure of cotton fiber is composed of over 90% cellulose polymers.

Cotton is a durable fiber. The problem associated with cotton use for linen and clothing is its ineffectiveness in protection of healthcare workers against bacterial penetration and transmission. In addition, the hydrophilic nature of cotton allows for seepage and penetration when cotton linen and clothing are splashed with liquids (e.g., blood, body fluids).

Note: Cotton fabrics can be treated by chemicals for antimicrobial finishing and by adding a water-repellent finish.

Polyester

Polyester is a synthetic fiber, which is usually a transparent white or off-white color. Linen and clothing made of polyester are very durable due to the strength of the fibers. Polyester is a hydrophobic fiber, which means that it is non-polar and, therefore, does not attract water. The hydrophobicity of polyester can create a fabric environment that becomes uncomfortable if the wearer perspires. The polyester fibers would not be able to wick the perspiration or moisture away from the body, due to lack of hydrogen bonding in comparison to the structure and wicking properties of cotton. In addition, because of the hydrophobic characteristic of polyester, if the garment becomes contaminated, stains will become difficult to remove through laundering.

Polyester and cotton blend

A fabric with a polyester and cotton blend fiber (65%-35%) content is the most common fabric type used for linen and clothing. One of the reasons is their combined properties of comfort from cotton fibers and durability from polyester fibers .Fabrics containing a polyester and cotton blend are stronger than fabrics made of 100% cotton and are more absorbent than fabrics made only of 100% polyester.

Note: Polyester/cotton fabrics can be treated by chemicals for antimicrobial finishing and by adding a water-repellent finish.

As general overview, reusable woven surgical gowns and drapes are made of a cotton/polyester blend or 100% polyester.

New generation of woven fabrics

Microfilament fabrics

The yarn in microfilament fabrics is made of fine, continuous polyester filaments. Conductive carbon fibers are generally also woven into the material to guarantee permanent antistatic qualities. These fabrics are highly resistant to tearing and rubbing and release practically no particles when used. Because of the fluorocarbon component, the materials are fluid-repellent, which means that high-quality materials can be reprocessed up to 80 times.

Laminates

A trilaminate (three-layer construction) is a membrane sandwiched between an upper and lower layer. Selecting suitable surface materials produces liquid-absorbing or repellent effects as desired. The membranes can be designed to prevent bacteria or viruses from penetrating together with liquids. The membrane is not a barrier for water vapor molecules. Human perspiration can therefore escape in the form of moisture vapor, thus maintaining natural thermoregulation.

Furthermore, trilaminates are impervious to liquids even under high pressure and absorb high volumes of fluid on the surface and are therefore used in surgical areas (high performance)*(16)*.

General note:

The discussion continues about single-use, disposable materials versus reusable fabrics for linen and clothing in healthcare facility.

Protection from infection and safety for patients and healthcare professionals are major concerns. Cost, regulations and the environment are also concerns for healthcare facility administrators.

Multiple factors must be weighed when making a decision to purchase linen and clothing for healthcare professionals and patients including:

- Required level of barrier protection from fluids, particulates and micro-organisms to reduce risk of infections.
- Material breathability and garment construction for physical comfort and ability to remain focused during medical/surgical procedures.
- Appropriate and safe disposal and proper waste management for minimal impact on the environment.

Over the last two decades, many studies have been conducted comparing the advantages and disadvantages of woven and non-woven materials used for linen and clothing in healthcare facility.

The need for improving the level of protection has increased with the rise in infectious diseases. This need is greater in countries where economic factors come in to play and seriously inhibit good healthcare and infection control practices.

Useful links

- Association for the Advancement of Medical Instrumentation (AAMI). Arlington: Association for the Advancement of Medical Instrumentation (http://www.aami.org/, accessed 22 May 2014)
- American Society for Testing Materials (ASTM). West Conshohocken: American Society for Testing Materials (http://www.astm.org/, accessed 22 May 2014)
- International Organization for Standardization (ISO). Geneva: International Organization for Standardization (http://www.iso.org/iso/home/standards.htm, accessed 22 May 2014)
- Committee for European Normalisation (CEN). Brussels: Committee for European Normalisation (http://www.cen.eu/cen/Sectors/Sectors/Healthcare/Pages/default.aspx, accessed 22 May 2014)
- American College of Surgeons (ACS) Committee on the Operating Room Environment (CORE). Chicago: American College of Surgeons (http://www.facs.org/, accessed 22 May 2014)
- Association of peri Operative Registered Nurses (AORN) . Denver: Association of peri Operative Registered Nurses (http://www.aorn.org/, accessed 22 May 2014)

8.5 Health Technology Management

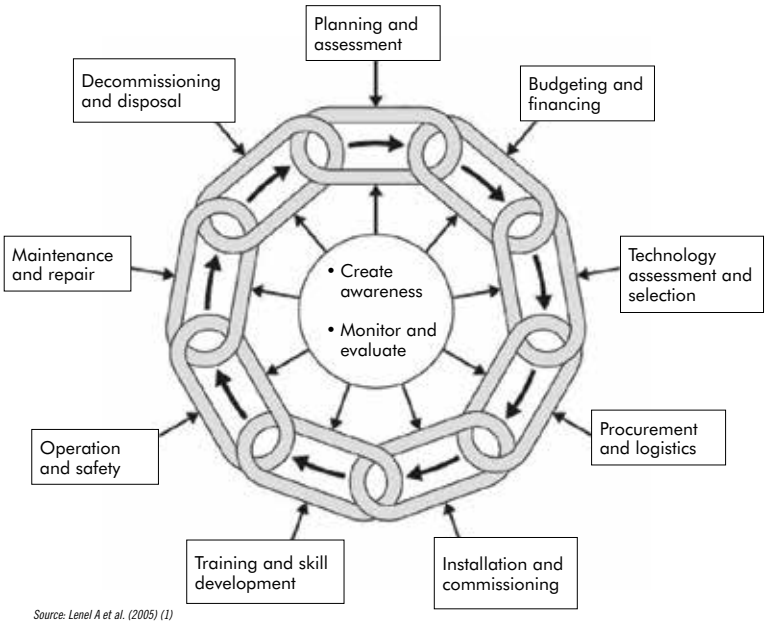
What is medical equipment?

Medical equipment is a subset of medical devices that require calibration, maintenance, repair, user training, and decommissioning — activities usually managed by clinical engineers. Medical equipment is used for the specific purposes of diagnosis and treatment of disease or rehabilitation following disease or injury; it can be used either alone or in combination with any accessory, consumable, or other piece of medical equipment. Medical equipment excludes implantable, disposable or single-use medical devices *(17)*.

What is medical equipment management?

Medical equipment management (MEM) encompasses all activities performed across the life cycle of the equipment to ensure it contributes most effectively to patient care:

Figure 8: The Medical Equipment Management Life Cycle *(18)*



Source: Lenel A et al. (2005) (1)

This includes both engineering and managerial skills to:

- Assess the equipment needs and plan for them effectively
- Allocate appropriate funds to them
- Select appropriate models with the right accessories and consumables
- Select appropriate maintenance materials such as spare parts
- Negotiate the terms of the service contract, and for training for maintenance staff
- Procure the equipment and manage delivery logistics
- Oversee the incoming inspection, installation and commissioning of the equipment
- Train the equipment users to operate it safely and effectively
- Train the maintenance team to service it properly
- Support the safe and effective operation of the equipment
- Manage the equipment inventory program and information about the equipment
- Manage the maintenance program, including preventive and corrective maintenance
- Decommission the equipment and dispose of it properly

MEM activities require skills and expertise in medical equipment, financial management, purchasing and supply chain management, workshop management and staff development.

Why is medical equipment management important?

Medical equipment management is essential to prolong the useful lifespan of the equipment and make good use of scarce resources. Without an effective MEM system in place, costly equipment expenditures have a very low return on investment.

The Swiss Centre for International Health found that equipment lost 30% of its value before even being place in service when it was procured improperly, or more sophisticated than necessary. Once put in to service, improper use and inadequate maintenance (both preventive and corrective) devalued it even further – until it was worth only 10% of the initial financial investment *(19)*.

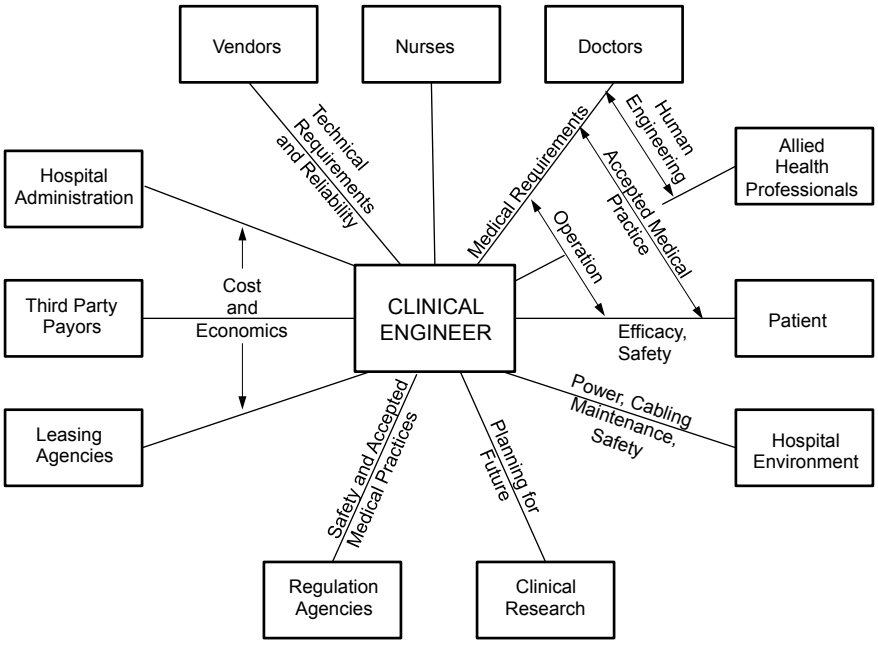
Who is involved in medical equipment management?

MEM activities are typically led by a medical engineer (sometimes called a clinical or biomedical engineer[1]), with support from a team of medical engineering professionals of varying skill levels. These professionals may be craftspeople, technicians or technologists who are responsible for medical equipment maintenance and support the MEM activities.

Depending on the size of the health facility and the structure of the health system, this team may work within a larger department such as the 'facilities', 'maintenance' or 'hospital engineering' department, or they may exist as their own department called 'medical', 'clinical' or 'biomedical' engineering.

Regardless of the structure, the team will need to interact with a variety of stakeholders, both within their health facility and external to it, to perform the MEM activities:

Figure 9. Clinical Engineer Interactions with Stakeholders for MEM Activities *(20)*



Input from the medical engineering team is essential during the whole MEM process.

1 Biomedical engineers belong to Unit Group 2149 "Engineering Professionals Not Elsewhere Classified" under the International Standard Classification of Occupations produced by the International Labour Organization. From this classification: "It should be noted that, while they are appropriately classified in this unit group with other engineering professionals, biomedical engineers are considered to be an integral part of the health workforce alongside those occupations classified in Sub-major Group 22: Health Professionals, and others classified in a number of other unit groups in Major Group 2: Professionals." The full classification can be found at http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf (accessed 17 October 2013)

What resources are available for health technology management?

The WHO's Medical Device Technical Series provides guidance on MEM activities that can be used to develop and improve MEM systems to ensure the best use is made of medical equipment investment. These include resources for:

- Needs Assessment
- Procurement Process Resource Guide
- Donation
- Inventory Management
- Maintenance
- Computerized Maintenance Management System

The 'How To Manage' Series for Healthcare Technology Series provides guidance on setting up and running a healthcare technology management (which includes MEM) system for:

- How to Organize a System of Healthcare Technology Management
- How to Plan and Budget for Healthcare Technology
- How to Procure and Commission your Healthcare Technology
- How to Operate your Healthcare Technology Effectively and Safely
- How to Organize the Maintenance of your Healthcare Technology
- How to Manage the Finances of your Healthcare Technology Management Team

Managing medical equipment donations can be particularly challenging for low-resource health facilities that may rely significantly on them. Further resources that complement the WHO Medical device donations: considerations for solicitation and provision include:

- Resource centre (HUMATEM)
- MAKING IT WORK: A Toolkit for Medical Equipment Donations to Low-Resource Settings (THET)
- Medical Surplus Recovery – good practice resources (CHAUSA)

To join a global discussion on MEM, please visit the INFRATECH website (http://listserv.paho.org/scripts/wa.exe?A0=INFRATECH) is the Internet Discussion group created by WHO, PAHO and American College of Clinical Engineering (ACCE) providing a forum for global networking and exchange of information on various issues of common concern on clinical engineering and health technology management. To join further discussion groups topics related to medical devices, please visit the EHEALTH website (http://listserv.paho.org/scripts/wa.exe?A0=EHEALTH) on e-health, the MED-DEVICES website (http://listserv.paho.org/scripts/wa.exe?A0=MED-DEVICES) on regulatory issues and the HTA website (http://listserv.paho.org/scripts/wa.exe?A0=HTA) on Health Technology Assessment.

8.6 References

1. The International Medical Device Regulators Forum (IMDRF) (http://www.imdrf.org/, accessed 22 May 2014)
2. Label and Instructions for Use for Medical Devices. GHTF/SG1/N70:2011. Tokyo: Global Harmonization Task Force; 2011 (http://www.imdrf.org/docs/ghtf/final/sg1/technical-docs/ghtf-sg1-n70-2011-label-instruction-use-medical-devices-110916.pdf, accessed 22 May 2014)
3. International Organization for Standardization (ISO). Geneva: International Organization for Standardization (http://www.iso.org/iso/home/standards.htm, accessed 22 May 2014)
4. Medical devices. Directive 93/42/EEC. Brussels : European Commission - European standards (EN) ; 1993 (http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/medical-devices/index_en.htm, accessed 22 May 2014)
5. Medical devices. Directive 93/42/EEC. Brussels : European Commission - European standards (EN) ; 1993 (http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/medical-devices/index_en.htm, accessed 22 May 2014)
6. Committee for European Normalisation (CEN). Brussels: Committee for European Normalisation (http://www.cen.eu/cen/Sectors/Sectors/Healthcare/Pages/default.aspx, accessed 22 May 2014)
7. American Chemical Society (ACS). Wachington, DC: American Chemical Society (http://www.acs.org/content/acs/en.html, accessed 22 May 2014)
8. International Union of Pure and Applied Chemistry (IUPAC). Reseach Triangle Park: International Union of Pure and Applied CHemistry (http://www.iupac.org, accessed 22 May 2014)
10. Occupational Safety and Health Administration (OSHA). Washington, DC: United States Department of Labor (http://www.osha.gov/, accessed 22 May 2014)
11. Personal Protective Equipment. Washington, DC: OSHA United States Department of Labor; 2003 (http://www.osha.gov/Publications/osha3151.pdf, accessed 22 May 2014)
12. Liquid barrier performance and classification of protective apparel and drapes intended for use in health care facilities. ANSI/AAMI PB70:2003. Arlington: Association for the Advancement of Medical Instrumentation; 2003 (http://marketplace.aami.org/eseries/scriptcontent/docs/Preview%20Files/pb700310preview.pdf, accessed 22 may 2014)
13. Selection and use of protective apparel and surgical drapes in Health Care Facilities
AAMI TIR11. Arlington: Association for the Advancement of Medical Instrumentation; 2005 (http://marketplace.aami.org/eseries/scriptcontent/docs/Preview%20Files/TIR110511preview.pdf, accessed 22 May 2014)
14. Personal protective equipment. Directive 89/686/EEC. Brussels: European Commission - European standards (EN) ;1989 (http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/personal-protective-equipment/index_en.htm, accessed 22 May 2014)
15. Guidelines on the application of Council Directive 89/686/EEC of 21 DECEMBER 1989 on the approximation of the laws of the member states relating to Personal Protective Equipment. Version12 April 2010. Brussels: European Commission - European standards (EN) ; 2010 (http://ec.europa.eu/enterprise/sectors/mechanical/files/ppe/ppe-guidelines_en.pdf, accessed 22 May 2014)
16. EN 13795:2012 Surgical drapes, gowns and clean air suits, used as medical devices for patients, clinical staff and equipment - General requirements for manufacturers, processors and products, test methods, performance requirements and performance levels
17. WHO Medical Device Technical Series. Geneva: World Health Organization; 2011 (http://www.who.int/medical_devices/management_use/en/, accessed 22 May 2014)
18. How To Manage Series for Healthcare Technology Guide 1: How to Organize a System of Healthcare Technology Management. East Sussex: Ziken International Ltd; 2005 (http://www.healthpartners-int.co.uk/our_expertise/HCTGuide1.pdf, accessed 22 May 2014)
19. Technical discussions: The role of medical devices and equipment in contemporary health care systems and services. Cairo: Regional Office for Eastern Mediterranean, World Health Organization; 2007 (http://gis.emro.who.int/HealthSystemObservatory/PDF/TechnicalandDiscussionPapers/The%20role%20of%20medical%20devices%20and%20equipment%20in.pdf, accessed 22 May 2014)
20. Dyro J. Clinical Engineering Handbook. Elsevier; 2004.

9. Other health products

If possible, health-care facilities should be equipped with sterilization and pathology facilities, a pharmacy and nutrition counselling to complement the reproductive, maternal, newborn and child health priority intervention services. Equipment guidelines should be reviewed before implementation of these additional services *(1)*.

9.1 Building services equipment

Optimal implementation of medical devices requires proper planning of the entire medical unit. Adequacy of sources of energy, water and medical gases for the optimal function of medical devices should be evaluated.

Equipment for communication and emergency patient transportation to the referral level should also be considered.

Some of the supplies in previous lists could be part of the immunization supply chain and logistics. The cold chain, however, should be designed around national programmes.

Some general services have different supply specifications according to the level of health-care facility. For example, the cleaning area, laundry, clothing, security, waste management, stationary supplies and office furniture should be stocked continually for the proper functioning of the medical area *(1)*.

9.2 Health counselling, education and promotion

Health counselling, education and promotion are very important issues across the continuum of care, and there must be a continuous effort to provide them in the health-care facility (see Boxes 2–6). WHO has published several guidelines for health counselling to optimize the clinical practice of health workers and the role of a patient's relatives in situations with varying levels of complexity. Health counselling may involve, for example, continuous vocational training for health workers and professional help for the patient's family. Education on standard precautions such as hand hygiene and the provision of supplies for implementing such programmes must be accomplished in the health-care facilities *(2)*. Health products that are not classified as medical devices and not listed in the previous tables may be used in the proper practice of priority interventions; for example, bednets can be used to prevent malaria, thermal care of newborns may require the use of hats, towels and kangaroo care wraps, and neonatal resuscitation may require mannequins and other training equipment.

Box 7. Topics for health counselling, education and promotion in family planning and reproductive health

- Information on contraceptive methods
- Sexual and reproductive education: prevention and follow-up of risk factors
- Nutritional management (undernutrition, obesity, micronutrient deficiencies)
- Prevention of sexually transmitted infections
- Management of mental health disorders
- Counselling for breast examination
- Counselling for gender-based violence
- Counselling for infertile couples
- Counselling for post-abortion
- Bereavement assessment

Further reading

Family planning: a global handbook for providers 2011. Geneva: World Health Organization and Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs; 2011 (http://www.who.int/reproductivehealth/publications/family_planning/9780978856304/en/, accessed 22 May 2014).

Reproductive choices and family planning for people living with HIV: counselling tool. Geneva: World Health Organization; 2006 (http://www.who.int/reproductivehealth/publications/family_planning/9241595132/en/index.html, accessed 22 May 2014).

Clinical management of rape survivors: developing protocols for use with refugees and internally displaced persons. Revised edition. Geneva: World Health Organization; 2004 (http://whqlibdoc.who.int/publications/2004/924159263X.pdf, accessed 22 May 2014).

Counselling for maternal and newborn health care: a handbook for building skills. Geneva: World Health Organization; 2013 (http://apps.who.int/iris/bitstream/10665/44016/1/9789241547628_eng.pdf, accessed 22 May 2014).

Box 8. Topics for health counselling, education and promotion in pregnancy

- Prevention of sexually transmitted infections
- Nutritional management (undernutrition, obesity, micronutrient deficiencies)
- Interventions for smoking cessation during pregnancy
- Counselling on birth and emergency preparedness
- Counselling on post-abortion
- Bereavement assessment
- Management of mental health disorders
- Counselling of gender-based violence

Further reading

Counselling for maternal and newborn health care: a handbook for building skills. Geneva: World Health Organization; 2013 (http://apps.who.int/iris/bitstream/10665/44016/1/9789241547628_eng.pdf, accessed 22 May 2014).

Safe abortion: technical and policy guidance for health systems. Second edition. Geneva: World Health Organization; 2012 (http://apps.who.int/iris/bitstream/10665/70914/1/9789241548434_eng.pdf, accessed 22 May 2014).

Box 9. Topics for health counselling, education and promotion in postnatal mothers

- Support for breastfeeding
- Advice in family planning
- Management of postpartum depression
- Prevention of sexually transmitted infections
- Nutritional management (undernutrition, obesity, micronutrient deficiencies)
- Counselling for gender-based violence
- Bereavement assessment
- Advice in family planning
- Sexual and reproductive education
- Management of mental health disorders

Further reading

Counselling for maternal and newborn health care: a handbook for building skills. Geneva: World Health Organization; 2013 (http://apps.who.int/iris/bitstream/10665/44016/1/9789241547628_eng.pdf, accessed 22 May 2014).

Box 10. Topics for health counselling, education and promotion for postnatal babies (newborns)

- Promotion and provision of thermal care (immediate drying, warming, skin-to-skin – kangaroo mother care, delayed bathing)
- promotion and support for early initiation of and exclusive breastfeeding
- Detection of abnormal state of nutrition (obesity, undernutrition)
- Promotion and provision of hygienic cord and skin care
- Newborn stimulation and play
- Birth registration

Further reading

Counselling for maternal and newborn health care: a handbook for building skills. Geneva: World Health Organization; 2013 (http://apps.who.int/iris/bitstream/10665/44016/1/9789241547628_eng.pdf, accessed 22 May 2014).

Caring for the newborn at home: a training course for community health workers. Geneva: World Health Organization; 2012 (http://www.who.int/maternal_child_adolescent/documents/caring_for_newborn/en/index.html, accessed 22 May 2014).

Home visits for the newborn child: a strategy to improve survival. Geneva: World Health Organization; 2009 (http://whqlibdoc.who.int/hq/2009/WHO_FCH_CAH_09.02_eng.pdf, accessed 22 May 2014).

Box 11. Topics for health counselling, education and promotion in infancy and childhood

- Monitoring of early childhood development
- Detection of abnormal state of nutrition (obesity, undernutrition)
- Assessment of breastfeeding and supplementary feeding programme
- Teaching mother to give oral drugs at home
- Teaching mother to treat local infections at home
- Identification of emergency signs
- Advise of immunization status of mother and children
- Counselling on family planning and reproductive health
- Human immunodeficiency virus (HIV) counselling
- Toys and play therapy

Further reading

Counselling for maternal and newborn health care: a handbook for building skills. Geneva: World Health Organization; 2013 (http://apps.who.int/iris/bitstream/10665/44016/1/9789241547628_eng.pdf, accessed 22 May 2014).

Pocket book of hospital care for children: guidelines for the management of common illnesses, second edition 2013 (http://www.who.int/maternal_child_adolescent/documents/child_hospital_care/en/index.html, accessed 22 May 2014).

9.3 References

1. Lenel A, Temple-Bird C, Kawohl W, Kaur M. How to organize a system of healthcare technology management. Geneva: World Health Organization; 2005 (http://www.who.int/management/organize_system_%20healthcare.pdf, accessed 22 May 2014).
2. Standard precautions in health care. Geneva: World Health Organization; 2007 (http://www.who.int/csr/resources/publications/EPR_AM2_E7.pdf, accessed 22 May 2014).

World Health Organization

UNFPA

unicef

Interagency list of medical devices for essential interventions for reproductive, maternal, newborn and child health

ISBN 978 92 4 156502 8