



Priority medicines for mothers and children 2011

Improving maternal and child health is a global priority. An estimated 8.1 million children under the age of five die every year and an estimated 1 000 women – most of them in developing countries – die every day due to complications during pregnancy or childbirth.

Many of these deaths are due to conditions that could be prevented or treated with access to simple, affordable medicines. However, the availability of medicines at public-health facilities is often poor.

This list of Priority Medicines for Mothers and Children was developed by the World Health Organization, UNFPA and UNICEF to help countries and partners select and make available those medicines that will have the biggest impact on reducing maternal, newborn and child morbidity and mortality.

ENSURING
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Priority medicines for mothers

for major causes of reproductive and sexual health mortality and morbidity

Post-partum haemorrhage ^{1,2,3}

Obstetric haemorrhage is the world's leading cause of maternal mortality causing an estimated 127 000 maternal deaths annually. Postpartum haemorrhage is the most common type and studies suggest that it may cause up to 50% percent of all maternal deaths in developing countries.

Oxytocin: 10 IU in 1-ml ampoule
Sodium chloride: injectable solution 0.9% isotonic *or* Sodium lactate compound solution – injectable (Ringer's lactate)

Severe pre-eclampsia and eclampsia ^{4,5}

Pre-eclampsia and eclampsia are major health problems in developing countries. Every year, eclampsia is associated with an estimated 50 000 maternal deaths worldwide.

Calcium gluconate injection (for treatment of magnesium toxicity): 100 mg/ml in a 10-ml ampoule
Magnesium sulfate: injection 500 mg/ml in a 2-ml ampoule, 500 mg/ml in a 10-ml ampoule

Maternal sepsis ^{3,4,6,7}

Infection can follow an abortion or childbirth and is a major cause of death. Sepsis that is not related to unsafe abortion accounts for up to 15% of maternal deaths in developing countries. The majority of unsafe abortions take place in developing countries.

Ampicillin: powder for injection 500 mg; 1 g (as a sodium salt) in vial
Gentamicin: injection 10 mg; 40 mg /ml in a 2-ml vial
Metronidazole: injection 500 mg in a 100-ml vial
Misoprostol: tablet 200 µg

Sexually transmitted infections ⁸⁻¹¹

Nearly a million people acquire a sexually transmitted infection, including the human immunodeficiency virus (HIV), every day. After pregnancy-related causes, sexually transmitted infections are the second most important cause of healthy life lost in women. The results of infection include acute symptoms, chronic infection, and serious delayed consequences such as infertility, ectopic pregnancy, cervical cancer, and the untimely deaths of infants and adults. Many sexually transmitted infections affect the outcome of pregnancy and some are passed to unborn and newborn babies.

Uncomplicated genital chlamydial infections:
Azithromycin: capsule 250 mg; 500 mg or oral liquid 200 mg/5 ml

Gonococcal infection – uncomplicated anogenital infection:
Cefixime: capsule 400 mg

Syphilis:
Benzathine benzylpenicillin: powder for injection 900 mg benzylpenicillin in a 5-ml vial; 1.44 g benzylpenicillin in a 5-ml vial

Preterm birth ^{4,12-15}

The incidence of preterm birth is approximately 6-7% of all births. Preterm birth is the leading cause of neonatal mortality both in developed and developing countries, accounting for an estimated 24% of neonatal deaths.

Betamethasone: injection 5.7 mg/ml as betamethasone sodium phosphate 3.9 mg (in solution) or betamethasone acetate 3 mg (in suspension) in an aqueous vehicle *or* Dexamethasone – injection 4 mg dexamethasone phosphate (as disodium salt) in 1-ml ampoule
Nifedipine: immediate release capsule 10 mg

Maternal HIV/AIDS and malaria

See WHO guidelines^{16,17}

Note

The medicines on this list were chosen according to 1) the global burden of disease; 2) the evidence of efficacy and safety for preventing or treating major causes of sexual and reproductive, maternal, newborn and child mortality and morbidity. In addition, medicines were included for the prevention of pre-term birth and palliative care. All of the medicines listed are included in the current versions of the WHO Model List of Essential Medicines, the WHO Model List of Essential Medicines for Children 2009¹⁸ and WHO treatment guidelines. All medicines on the priority lists are or may be available in countries with the exception of those which require further research and development.

Priority medicines for children under five years of age

for major causes of mortality¹⁹ and morbidity, palliative care and child survival

Pneumonia ^{20–22}

Pneumonia is the single biggest cause of death in children, killing an estimated 1.6 million children under the age of five years annually and accounting for 18% of all deaths of children under five years old worldwide.

Amoxicillin: dispersible, scored tablets 250 mg and 500 mg or equivalent flexible oral solid dosage form, in blister packs of 10

Ampicillin: powder for injection 500 mg and 1 g

Ceftriaxone: powder for injection 250 mg and 1 g

Gentamicin: injection 20 mg/ml

Oxygen: medicinal gas

Procaine benzylpenicillin: powder for injection 1 g and 3 g

Diarrhoea ^{23,24}

Diarrhoeal disease is the second leading cause of death and a leading cause of malnutrition in children under five years old, killing more than 1.3 million children every year.

Oral Rehydration Salts (ORS): sachets of 200 ml; 500 ml and 1 litre, appropriate flavour

Zinc: 20 mg scored dispersible tablet or equivalent flexible oral solid dosage form

Malaria ¹⁶

Every 45 seconds a child dies of malaria in Africa. In 2008, there were 247 million cases of malaria and nearly one million deaths – mostly among children living in Africa.

Artemisinin combination therapy (ACT): strengths and combinations according to WHO treatment guidelines 2010, dispersible tablet or flexible oral solid dosage form and dose optimized

Artesunate: rectal and injection dosage forms 50–200 mg

Neonatal sepsis ²⁰

One quarter of the estimated 3.6 million neonatal deaths around the world each year are caused by severe infections, and around 528 000 of those are due to neonatal sepsis alone.

Ceftriaxone: powder for injection 250 mg and 1 g

Gentamicin: injection 20 mg/ml

Procaine benzylpenicillin: powder for injection 1 g and 3 g

HIV ^{25–27}

An estimated 2.1 million children were living with HIV at the end of 2008, 1.8 million of them in sub-Saharan Africa. Most infections are the result of transmission from mother to child. Without effective treatment, an estimated one third of infected infants will have died by one year of age, and about half will have died by two years of age.

Standard regimen for first-line anti-retroviral treatment:

1 non-nucleoside reverse transcriptase inhibitor plus 2 nucleoside reverse transcriptase inhibitors such as the fixed dose combination of lamivudine + nevirapine + zidovudine - tablet 30 mg + 50 mg + 60 mg; 150 mg+ 200 mg + 300 mg

For treatment of specific populations, see the latest WHO treatment guidelines

Vitamin A deficiency ²⁸

Vitamin A deficiency is a recognized risk factor for severe measles. An estimated 164 000 people died from measles in 2008 – mostly children under the age of five.

Vitamin A: capsule 100 000 IU strength; 200 000 IU strength

Palliative care and pain ²⁹

Although means to relieve severe pain are widely available, their use in children is often limited.

Morphine: granules 20 mg, 30 mg, 60 mg, 100 mg, 200 mg, injection 10 mg/ml, oral liquid 10 mg/5 ml, variable flexible oral solid dosage forms

Paracetamol: variable flexible oral solid dosage forms

Priority medicines required for child health and survival, but for which further research and development is needed

Tuberculosis

Development of a product that will deliver these doses when given in 0.5 to 2.0 'tablets' per day over the weight range 5-30kg. For example, a fixed dose combination containing rifampicin 250 mg, isoniazid 150 mg, pyrazinamide 400 mg and ethambutol 250 mg.

Ethambutol: 20 mg/kg/day (15 mg to 25 mg/kg/day)
Rifampicin: 15 mg/kg/day (10 to 20 mg/kg/day)
Isoniazid: 10 mg/kg/day (10 to 15 mg/kg/day)
Pyrazinamide: 35 mg/kg/day (30 to 40 mg/kg/day)

HIV, TB prophylaxis, *Pneumocystis carinii* pneumonia

Development of a fixed dose combination product of appropriate strength.

Isoniazid/co-trimoxazole

Neonatal care

Apnoea

Availability of a fully commercialized quality product in more countries; determination of the regulatory pathway; and dissemination of information on use.

Caffeine citrate: liquid 20mg/ml

Cord care

Availability of a fully commercialized quality product in more countries; determination of the regulatory pathway; establishment of optimal product types.

Chlorhexidine digluconate: solution, 4%

Vitamin K deficiency

Identification of optimal dose and strength of injection.

Vitamin K



make medicines **child size**

REFERENCES

1. WHO recommendations for the prevention of postpartum haemorrhage. Geneva, World Health Organization, 2007.
2. WHO guidelines for the management of postpartum haemorrhage and retained placenta. Geneva, World Health Organization, 2009.
3. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PFA. WHO analysis of causes of maternal death: a systematic review. *Lancet*, 2006, 367:1066-1074.
4. *Managing complications in pregnancy and childbirth: a guide for midwives and doctors*. Geneva, World Health Organization, 2007 (Integrated management of pregnancy and childbirth).
5. Duley L. Maternal mortality associated with hypertensive disorders of pregnancy in Africa, Asia, Latin America and the Caribbean. *British Journal of Obstetrics and Gynaecology*, 1992, 99:547-553.
6. Kulier R, Gülmezoglu AM, Hofmeyr GJ, Cheng LN, Campana A. Medical methods for first trimester abortion. *Cochrane Database of Systematic Reviews*, 2007, Issue 4. Art. No.: CD002855. DOI: 10.1002/14651858.CD002855.pub3.
7. Unsafe abortion. Global and regional estimates of incidence of unsafe abortion and associated mortality in 2003. Fifth edition. Geneva, World Health Organization, 2007.
8. Global strategy for the prevention and control of sexually transmitted infections: 2006-2015: breaking the chain of transmission. Geneva, World Health Organization 2007.
9. Glasier A, Gülmezoglu AM, Schmid GP, Moreno CG, Van look PF. Sexual and reproductive health: a matter of life and death. *Lancet*, 2006, 367: 1595-607.
10. *Guidelines for the management of sexually transmitted infections*. Geneva, World Health Organization, 2003.
11. Delport SD, Pattinson RC. Congenital and perinatal infections: prevention, diagnosis and treatment. Syphilis: prevention, diagnosis and management during pregnancy and infancy. In: Newell M-L, McIntyre J. Eds. *Cambridge, UK, Cambridge University Press* 2000;258-275
12. King JF, Flenady VJ, Papatsonis DNM, Dekker GA, Carbone B. Calcium channel blockers for inhibiting preterm labour (Cochrane Review). In: *The Cochrane Library*, Issue 2, 2004. Chichester: John Wiley & Sons.
13. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM, Sutton PD. Births: final data for 2001. *National Statistics Report*, 2002, 51(2):1-104.
14. Abu-Rashid N, Al-Jirf S, Bashour H. Causes of death among Syrian children using verbal autopsy. World Health Organization Regional Office for Eastern Mediterranean.
15. Darmstadt GL, Lawn JE, Costello A. Advancing the state of the world's newborns. *Bulletin of the World Health Organization*, 2003, 81:224-225.
16. *Guidelines for the treatment of malaria*. 2nd ed. Geneva, World Health Organization, 2010.
17. *Rapid advice: use of antiretroviral drugs for treating pregnant women and preventing HIV infection in infants*. Version 2. Geneva, World Health Organization 2010.
18. *Technical Report series; 958. The selection and use of essential medicines: report of the WHO Expert Committee, March 2009 (including the 16th WHO model list of essential medicines and the 2nd WHO model list of essential medicines for children)*. Geneva, World Health Organization, 2009.
19. Black R, Cousens S, Johnson H, et al. Global, regional, and national causes of child mortality in 2008: a systematic analysis *Lancet* 2010;375: 1969-1987.
20. Pocket book of hospital care for children: guidelines for the management of common illnesses with limited resources. Geneva, World Health Organization, 2005.
21. *Technical updates of the guidelines on the Integrated Management of Childhood Illness (IMCI): evidence and recommendations for further adaptations*, Geneva, World Health Organization, 2005.
22. Theodoratou E et al. The effect of case management on childhood pneumonia mortality in developing countries. *Int. J. Epi.* 2010, 39(suppl 1):1155-1171.
23. *Treatment of diarrhoea: a manual for physicians and other senior health care workers*. Geneva, World Health Organization, 2005.
24. Munos M, Fischer Walker CL, Black RE. The effect of Oral Rehydration Solution and Recommended Home Fluids on diarrhea mortality. *Int J Epi.* 2010, 39;i75-i87.
25. *Antiretroviral therapy for HIV infection in infants and children: towards universal access: recommendations for a public health approach*. Geneva, World Health Organization, 2010.
26. *Rapid advice: use of antiretroviral drugs for treating pregnant women and preventing HIV infection in infants*. Version 2. Geneva, World Health Organization, 2010.
27. *HIV diagnosis and treatment in infants and children*. Geneva, World Health Organization, 2010.
28. Yang HM, Mao M, Wan CM Vitamin A for treating measles in children (Review). *Cochrane Review*, 2009 (3).
29. *WHO guidelines on the pharmacological treatment of persisting pain in children with medical illnesses*, Geneva, World Health Organization (in press), Geneva, World Health Organization (in press).

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