

Annex 7A. Details of Interventions Included in Figures 7.1, 7.2, 7.3, and 7.4 4, by Increasing Cost per DALY Averted

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Intervention	Cost-effectiveness US \$ of 2012/DALY	Brief summary of details (unless otherwise specified, comparator is "usual care")
Figure 1		
Blood pressure management, ¹ UMIC	Cost-saving	A customized, guideline-oriented training program for primary healthcare providers was conducted in four community health centres in China, 140 hypertensive patients were recruited and followed-up for 12 months (urban, rural)
Polypill for high absolute risk CVD ² , UMIC	Cost-saving	Treatment with four drugs for people with an absolute cardiovascular risk of more than 20% at 10 years in Argentina
ACE inhibitor vs no medication, heart failure, with access to treatment ³	Cost-saving	Regimen consisting of a calcium-channel blocker, and an ACE-inhibitor was given to patients older than 55 years without a history of CVD to prevent CVD, with access to treatment
Give female condom to sex workers ⁴ , South Africa	Cost-saving	Distribute female condoms among commercial sex workers and their clients in South Africa
Preventive chemotherapy for onchocerciasis ^{5,6}	9	Annual ivermectin treatment
Treat severe malaria with artesunate vs quinine ^{7,8}	5	Use of parenteral artesunate to treat children with severe malaria in Africa and south-east Asia versus refer
Salt reduction policy in food ^{2,9,10}	Cost-saving to 45	Reduce salt content in processed and home-prepared food
Voluntary male circumcision ¹¹⁻¹³	10	Adult male circumcision program in sub-Saharan Africa
Add syphilis screen to HIV screen/treat, ¹⁴ LIC	9	Rapid test with immediate results and treatment vs syndromic surveillance for pregnant women
Emergency obstetric care ¹⁵	15	Estimates from a small hospital in Bangladesh over 3 months; used judgement to compare to outcome with no treatment; 62% of DALYs from obstetric care
Pre-hospital ECG vs none, ¹⁶ MIC	16	Prehospital Electrocardiogram (ECG) by general practitioners in India

Screen/treat syphilis, ¹⁷ LIC	17	ICS syphilis screening, penicillin treatment in 43 countries in Sub-Saharan Africa
Detect and treat human African trypanosomiasis ¹⁸	22–83	Literature review on interventions to reduce, control or eliminate Human African Trypanosomiasis
Treatment smear positive TB with first-line drugs, ¹⁹ LIC	6–49	Literature review: Conventional health facility-based approaches to care and increased decentralization, and involvement of communities in care provision for tuberculosis (TB)
Cataract surgery ²⁰	6–70	Survey of other studies: use results from nine low and lower-middle income countries
Detect and treat visceral leishmaniasis ²¹	18	Compare chemotherapy to no intervention
Treat malaria with ACT, ²² Africa	18–34	Modelled to estimate the incremental cost-effectiveness of using artemisinin-based combination therapies to address antimalarial resistance
PMTCT Option B HIV versus no treatment, ²³ Africa	26	Use of HAART approach for prevention of mother-to child transmission in two health centers in Malawi
ACE inhibitor versus no medication, ³ heart failure, no access to treatment	28	Regimen consisted of a calcium-channel blocker, and an ACE-inhibitor was given to patients older than 55 years without a history of CVD to prevent CVD
Cleft lip and palate repair ^{24–26}	9–108	Corlew: study of one year’s worth of patients at Kathmandu hospital; Magee: study of eight surgical missions to four countries in one year. Moon: study of four years of surgical missions to Vietnam. Both studies: compared to no intervention.
Hernia repair ^{27,28}	11–101	Tension-free inguinal hernia repair, four hospitals in western Ghana; expert opinion used to compare to no treatment (2010 study). Same method applied to surgical mission to small hospital in rural Ecuador (2012 study)
Intermittent preventive treatment malaria in infants, Africa ^{29,30}	4–422	Analysis of data for delivery of intermittent preventive treatment of malaria in infants in sub-Saharan Africa
Preventive chemotherapy for trachoma ^{31,32}	22–83	Trichiasis surgery to control trachoma in sub-Saharan Africa
Intermittent preventive treatment malaria in pregnancy, ³³ Africa	4–591	Community-based delivery of intermittent preventive treatment with sulfadoxine-pyrimethamine to pregnant women
Detect and treat leprosy ³⁴	50	Interventions to prevent disability due to leprosy
Indoor Residual Spraying for malaria, ³⁵ Africa	26–112	Two Indoor Residual Spraying programs operating on a national scale in South Africa and Mozambique
Comprehensive management malaria (spray+nets+treat), ³⁶ Africa	28–117	Malaria Control measures consisted of vegetation clearance, modification of river boundaries, draining swamps, oil application to open water bodies and house screening

Treatment smear negative TB first-line drugs, ¹⁹ LIC	42–84	Literature review
Hepatitis B vaccination, ^{37–39} LIC	47–97	Hepatitis B vaccination, three doses Hepatitis B vaccine @\$1.08 per dose
Add Xpert to smear to diagnose TB, ⁴⁰ LMIC	50–114	Introduction of Xpert for TB care, compared to a base case of smear microscopy and clinical diagnosis in India, South Africa and Uganda
Supply ITNs for malaria, ^{41–43} Africa	61–94	Adding insecticide-treated nets in Democratic Republic of Congo, western Kenya and Tanzania
Rural trauma hospital ⁴⁴	87	Modelled based on costs and estimated DALYs saved for all admissions over a three-month period for a trauma hospital in Cambodia, excluding outpatients
Home presumptive treatment malaria, ⁴⁵ Africa	93	Treating fever at home with artesunate and amodiaquine
Figure 2		
Preventive chemotherapy for schistosomiasis and STHs ⁴⁶	114	Integrated Mass Drug Administration for schistosomiasis and soil-transmitted helminthiasis in four Communities in Cote d’Ivoire
Prevention of Mother-To-Child Transmission (PMTCT) Option B HIV vs Option A, ^{47,48} Africa	65–251	Long-course ART prophylaxis for pregnant women in Nigeria and Uganda.
Primary prevention of ARF/RHD, children with GAS pharyngitis ⁴⁹	135	Treatment with intramuscular penicillin for South African children presenting with CDR score higher than two
Prevention of Mother-To-Child Transmission (PMTCT) Option A HIV vs no treatment, ^{50–53} Africa	26–730	Short-course PMTCT program versus no treatment
Add syphilis screen to HIV screen/treat, ⁵⁴ UMIC	140	Adding syphilis screen and treat to HIV screen and treat program in China
Beta-blocker and ACE inhibitor vs no medication, heart failure, access to treatment ³	124–219	Regimen consisted of a beta-blocker and an ACE-inhibitor was given to patients with a history of CVD to prevent CVD, with access to treatment
Scale up ART to all <350, or all infected, ^{55,56} S Af	188–256	Scaling up access to antiretroviral therapy (ART) for all identified HIV-infected individuals in South Africa
Treat breast cancer MIC ⁵⁷	230	Treat (vs not treat) cancer at any stage in Mexico
*HPV (Human Papillomavirus) vaccination @\$50/girl MIC ^{58,59}	198–296	HPV vaccine of young girls in Brazil, 70% vaccine coverage. Converted from QALY’s.
Trauma center ⁶⁰	218–302	Modelled based on costs and estimated DALYs saved associated with all admissions for a trauma hospital over a three-month period. A higher proportion in Nigeria was life-saving surgery; Haiti includes burns.

Treat TB with second-line drugs MIC ⁶¹	264	Systematic review of treatment for Multidrug-Resistance Tuberculosis (TB)
Screen/treat for syphilis UMIC ^{62,54}	200–369	Program for preventing mother-to-child transmission of syphilis in China
Beta-blocker and ACE inhibitor vs no med, heart failure, no access to treatment ³	274	Regimen consisted of a beta-blocker and an ACE-inhibitor was given to patients with a history of CVD to prevent CVD, without access to treatment
Older anti-epileptic drug in primary care MIC ⁶³	279	Older anti-epileptic drug in primary care in Nigeria: 50% coverage
Intrapartum care ^{64–66}	211–492	Maternal health policy model used to evaluate a package of care that includes safe abortion and surgical treatment of emergency obstetric care
Eradicate yaws (detect and treat) ⁶⁷	324	Four yaws eradication pilot sites and other mass treatment campaigns in 12 endemic countries in 2015-2020
PMTCT Option A HIV vs no treatment, ⁵⁰ SE Asia	355	Prophylaxis provided to mothers and to child, if delivered in a healthcare facility Prevention of Mother-To-Child Transmission: option A is single-drug regimen provided to mother during pregnancy and lactation
PMTCT (Elimination of Mother-To-Child Transmission) Option B+ HIV versus Option A, ^{68,48} Africa	251–502	Lifetime multi-drug antiretroviral therapy for pregnant women
Treat colorectal cancer (CRC), ⁶⁹ LIC	430	Treat CRC in WHO region AFR-E, 95% coverage
Maintenance psychosocial care for depression, primary care, ⁷⁰ UMIC	437	Maintenance treatment with fluoxetine and cognitive behavioural therapy for major depression in Thailand over five years
Non-emergency orthopaedic conditions ^{71,72}	359–540	Volunteer surgical missions in Dominican Republic and Nicaragua, (knee osteoarthritis, fractures, dislocations, amputations, injured nerves and congenital malformations)
BCC plus regulation, sex establishments, ⁷³ LAC	557–570	Interventions include community mobilization, promotional media, interpersonal communication and counseling, implemented in female sex establishments in the Dominican Republic
Secondary prevention (medication) CVD vs no treatment ⁷⁴	570–970	Secondary prevention consists of giving aspirin, statin and a calcium-channel blocker to patients with a history of CVD
Episodic psychosocial care for depression, primary care, ⁷⁰ UMIC	914	Episodic treatment with fluoxetine and cognitive behavioural therapy for major depression in Thailand
Figure 3		
HPV (Human PapillomaVirus) vaccination @\$240+/girl ^{75–77}	168–5168	HPV vaccination at age 12 in Thailand, 100% compliance; uses QALYs

Use Xpert to diagnose TB, MIC ⁷⁸	810–1316	Implementation of Xpert for Tuberculosis diagnosis in five southern African countries, compared to current diagnostic strategy of sputum smear
BCC (Behavior Change Communications) alone, sex establishments, ⁷³ LAC	1186	Interventions include community mobilization, promotional media, interpersonal communication and counseling, implemented in female sex establishments in the Dominican Republic
Primary prevention CVD abs risk >40% UMIC ³	1373	Antihypertensive therapy was given to individuals in South Africa having an absolute risk of CVD over the next ten years of 40%
Facility-based treatment of schizophrenia with drugs, MIC ^{63,79}	1427–1574	Treat schizophrenia with anti-psychotic and psychosocial treatment in psychosocial care center
Telemedicine diabetic retinopathy screening, 1-2 times/lifetime MIC ⁸⁰	1605	Screening once or twice a lifetime versus no screening
Treatment of depression in primary care with drugs, MIC ^{63,70}	1312–2048	Treatment with anti-depressant and cognitive behavioural therapy in primary healthcare
Screen and treat breast cancer MIC ⁵⁷	1838	Mammography and treat (vs neither) in Mexico
Primary prevention CVD with four drugs MIC ^{74,81}	1070–3207	Patients without a history of CVD were given aspirin and statin, vs no medication
Vector control for dengue ⁸²	2500–3000	43 insecticide-based vector control strategies including larval and adult control for a five-year period
Online sex education to prevent sexually transmitted infections ⁸³	1180–10256	Online sexual-health education course targeting ninth-grade students in Colombian urban public secondary schools
Screen and treat breast cancer LIC ⁸⁴	3578	Biennial mammography for women aged 40-69 + treat all (vs not) in Ghana
PMTCT Option A (with mass screening) versus no treatment, ⁸⁵ LAC	3092–7924	Prevention of Mother-To-Child Transmission (Counselling pre and post test, and nevirapine for mother and child if accepted)
PrEP-ARV for for non-infected partner, serodiscordant couples ⁸⁶	Cost-saving to 6468	PrEP-ARV (pre-exposure prophylaxis with antiretrovirals) for non-infected partner, serodiscordant couples
Figure 4		
Treat severe malaria with artesunate versus quinine, ^{7,8} Africa & Southeast Asia	5	Use of parenteral artesunate to treat children with severe malaria in Africa and Southeast Asia
Zinc added to oral rehydration therapy ⁸⁷	10–50	Used zinc as adjunct therapy to standard treatment of acute childhood diarrhea
Community management severe-acute malnutrition ^{97–99}	25–40	Community-based therapeutic care: Diagnosis, RUTF (Ready-to-Use-Therapeutic Food), supplements, in-patient treatments, out-patient visits, weekly follow ups

Maternal and neonatal care at home ⁸⁸	13–126	Maternal and neonatal services delivered at home, with community mobilization and health system strengthening
Micronutrient interventions (biofortification, fortification, supplementation) ^{89–96}	20–100	Vitamin A supplementation, fortification and biofortification, zinc supplementation and fortification, and iron, folic acid and Vitamin B12 fortification
Management of obstructed labour ¹⁰⁰	77	Skilled attendance at birth, offering first level maternal and neonatal care around childbirth, emergency obstetric and neonatal care around and after birth
Clean delivery kit and train TBAs ⁸⁸	82	Training traditional birth attendants (TBAs) to perform interventions targeting birth asphyxia, hypothermia and neonatal sepsis
Education programmes on nutrition/WASH ¹⁰¹	95	Health facility-based nutrition/water and sanitation education program targeting children under 2 years; converted from deaths-averted
Home management of fever with antimalarials versus referral ⁴⁵	96	Treat fever with artesunate-amodiaquine
Original EPI-6 (Expanded Program of Immunization with six vaccines) plus Hepatitis B ^{103,37–39}	103	Infant immunization
Pneumococcus and rotavirus, ^{104–116} LIC	103	Implementing pneumococcus and rotavirus vaccination program; low income countries are eligible to procure vaccines from Gavi at low prices
Handwashing BCC (behavior change communications) ¹⁰²	90–225	Increase hand-washing after handling child stool and disposal of stool in latrines
Oral rehydration therapy ⁸⁷	153	Standard case management of acute childhood diarrhea with oral rehydration salts
Household water treatment, LIC ¹²⁰	190	Household chlorination
Access to modern contraceptives ¹¹⁹	150–300	Universal access to modern contraceptives
Quality improvement protocol newborns in hospital ⁸⁸	305	Used facility data to monitor indicators of common technical interventions. Staff worked collaboratively to identify strategies to overcome service delivery barriers and improve facility care
Intrapartum care in Latin America and the Caribbean ⁶⁴	310	Intrapartum care and comprehensive emergency obstetric care
Intrapartum care, ^{65,66,121} LICs*	200–500	Facility-based birth with Traditional Birth Attendants, transport from home to referral facility, transport from facility to emergency obstetrical care or from basic to comprehensive emergency obstetric care,

		availability of quality emergency obstetric care and facility expedient quality care
Comprehensive nutrition package (all interventions Lancet 2013)	353	Interventions addressing undernutrition and micronutrient deficiencies in women and children in 34 countries
*Mother's groups to improve maternal/neonatal health ^{117,118}	150–1000	Mother's group to improve maternal and neonatal health in Bangladesh and India; converted from LYS
HiB and rubella added to EPI, ^{105,123–128} LICs	368–768	Introduction of HiB and rubella into DPT-Hepatitis B program
Region specific vaccines (Yellow fever, Japanese encephalitis, meningitis A) ^{129–131}	368–768	Japanese encephalitis vaccination program for 9 month olds (routine immunization) (at US\$0.30 per dose), reactive meningococcal vaccination (at US\$0.64 per dose),
Pneumococcus and rotavirus (market price, lower-mid income countries) ^{104,105,111,113,132–140}	368–768	Add two vaccines to national vaccination program
Cholera and typhoid vaccination ^{141,142}	2018	School-based vaccination program targeting school children (5-14 years)
Pneumococcus and rotavirus (market price, upper-mid IC) ^{113,114,133,135,143–146}	2018	Adding pneumococcus and rotavirus vaccination to standard vaccinations
C-section, all LMICs ¹⁴⁷	1600–2600	Treating obstructed labor with Caesarean delivery in 49 countries, across multiple regions, identified by the WHO
Rural water supply/sanitation, LIC ¹⁴⁸	2200	Piped water supply and sewer connection, 98% coverage
Urban water supply/sanitation, LIC ¹⁴⁸	2900	Piped water supply and sewer connection, 98% coverage
Microfinance/gender training for intimate partner violence ¹⁴⁹	2910	Microfinance with gender and HIV training in four villages in South Africa

Note: CVD = cardiovascular disease; LIC = low income country/countries; MIC = middle income country/countries; LMIC = low and middle income country/countries; UMIC = upper-middle income country/countries

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