Appendix to Gaudin S, Smith, P; Soucat, A, Yazbeck A. "Common Goods for Health: Economic Rationale and Tools for Prioritization"

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Table A1. Identifying Cost-Effective Common Goods for Health (CE- CGH) in the DCP3 List of Cost-Effective Interventions

#	DCP3 Intervention	Cost-Effectiveness Estimates (b)				Functional Class.		CGH Identification and Questions for Discussions			Conclusion
	(a)	Low (b)	High (b)	Geom mean (b)	Under threshold (c)	Disease categ. (d)	EPHO (e)	Public/ semi-public good (f)	Significant health externality	Notes/questions for discussion on CGH features	Finance as CE-CGH/ Qualifiers (g)
1	Blood pressure management, UMIC	0	0	0	All OK	NCD	05	Yes for the development of guidelines	Yes for general training	Guidelines for monitoring qualify as public good; actual follow up of patient is a form of treatment without significant externality	Yes for guidelines and training. No for treatment
2	Polypill for high absolute risk CVD, UMIC	0	0	0	All OK	NCD	05	No	No	This is mostly in terms of cost savings and prevention of catastrophic expenditure; the question is, if not done by the market, why (there must be a market failure) and how can the incentives be put in place?	No
3	ACE inhibitor vs no medication, heart failure, with access to treatment	*0*	0	0	All OK	NCD	05	No	No	See above item #2	No
4	Give female condom to sex workers, South Africa	0	0	0	All OK	CD	05	No	Yes, endemic countries	Larger externality in endemic countries but still potentially large in others. The issue is the adequacy of demand.	Yes if demand not sufficient; mostly endemic countries
5	Preventive chemotherapy for onchocerciasis	9	9	9	All OK	CD	05	No	Yes? Endemic countries	Size of externality depends on risk of transmission if not treated vs if treated	Yes, endemic countries

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	(a)	Low (b)	High (b)	Geom mean (b)	Under threshold (c)	Disease categ. (d)	EPHO (e)	Public/ semi-public good (f)	Significant health externality	Notes/questions for discussion on CGH features	Finance as CE-CGH/ Qualifiers (g)
6	Treat severe malaria with artesunate vs quinine	5	5	5	All OK	CD	03	No	Yes, endemic countries	Large externality assumes that treating Malaria contributes to limiting the spread of the disease. This will not be the case if the person treated is in a country where the vector is not present.	Yes, endemic countries
7	Salt reduction policy in food	0	45	0	All OK	NCD	03 04 05	Yes	Yes	The regulation part is a public good (non-rival). Less salty food would qualify under merit good. No incentive for companies to reduce salt as it is cheap and people prefer tasty foods.	Yes
8	Voluntary male circumcision	10	10	10	All OK	CD (mostly)	04 05	No	Yes? Endemic countries?	Needs case by case analysis	Maybe, in endemic countries
9	Add syphilis screen to HIV screen/treat, LIC	9	*140*	*35*	All OK	CD	04 05	No	Yes, endemic countries		Yes, endemic countries
10	Emergency obstetric care	15	15	15	All OK	MCH	Not EPHO	No	No?	UHC issue/ externalities outside of health sector	No
11	Pre-hospital ECG vs none, MIC	16	16	16	All OK	NCD	05	No	No	See above item#2	No
12	Screen/treat syphilis, LIC	17	17	17	All OK	CD	05	No	Yes, endemic countries		Yes, endemic countries
13	Detect and treat human African trypanosomiasis	22	83	43	All OK	CD	05 (screening only)	No	Yes, endemic countries	Sleeping sickness - human to vector to human transmission. Size of externality depends on risk of transmission if not treated vs if treated	Yes, endemic countries
14	Treatment smear positive TB with first-line drugs, LIC	6	49	17	All OK	CD	03 05	No	Yes	Smear positive TB is most infectious form , so the size of the externality is larger	Yes
15	Cataract surgery	6	70	20	All OK	NCD	05	No	No		No

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	(a)	Low (b)	High (b)	Geom mean (b)	Under threshold (c)	Disease categ. (d)	EPHO (e)	Public/ semi-public good (f)	Significant health externality	Notes/questions for discussion on CGH features	Finance as CE-CGH/ Qualifiers (g)
16	Detect and treat visceral Leishmaniasis	18	18	18	All OK	CD	05 (screening only)	No	Yes, endemic countries	Black fever . Size of externality depends on risk of transmission if not treated vs if treated. NTD control preferred as more CE	Yes, endemic countries
17	Treat malaria with ACT, Africa	18	34	25	All OK	CD	03	No	Yes, endemic countries	Treatment with ACT reduces probability of developing resistance. We assume for malaria that people who carry the disease put other people at risk in the presence of vector mosquito	Yes, endemic countries
18	PMTCT Option B HIV versus no treatment, Africa	26	26	26	All OK	CD/MCH	05	No	Yes, endemic countries		Yes, endemic countries
19	Cleft lip and palate repair	9	108	31	All OK	NCD	Not EPHO	No	No	UHC/equity criteria	No
20	Hernia repair	11	101	33	All OK	NCD	Not EPHO	No	No	Tertiary prevention	No
21	Intermittent preventive treatment malaria in infants, Africa	4	422	41	All OK	CD/MCH	05	No	Yes, endemic countries	Careful with CE as the high end is off the LDCs' range of acceptable CE	Yes, endemic countries; check CE
22	Preventive chemotherapy for trachoma	22	83	43	All OK	CD	05	No	Yes? Endemic countries	Size of externality depends on risk of transmission if not treated vs if treated	Yes, endemic countries
23	Intermittent preventive treatment malaria in pregnancy, Africa	4	591	49	All OK	CD/MCH	05	No	Yes, endemic countries	Careful with CE as the high end is off LDC range of acceptable CE	Yes, endemic countries; check CE
24	Detect and treat leprosy	50	50	50	All OK	CD	05 (screening only)	No	Yes? Endemic countries	Size of the externality: although leprosy not highly contagious, there are likely large external benefits beyond epidemiological factors due to social perceptions.	Yes, endemic countries

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25	Indoor Residual Spraying for malaria, Africa	26	112	54	All OK	CD	03/05	No	Yes, endemic countries;	Externality larger if indoor spraying affects the presence of malaria carrying mosquitoes outside the home. Size of externality is larger for outdoor spraying	Yes, in endemic countries, check size of the externality
26	Comprehensive management malaria (spray+nets+treat), Africa	28	117	57	All OK	CD	03/05	Yes for outdoor spraying	Yes, endemic countries	Case for spraying stronger than case for provision of nets and treatment, externality is larger (semi-public good)	Yes, endemic countries
27	Treatment smear negative TB first-line drugs, LIC	42	84	59	All OK	CD	03/05	No	Yes		Yes
28	Hepatitis B vaccination, LIC	47	97	68	All OK	CD	05	No	Yes, endemic countries		Yes, endemic countries
29	Add Xpert to smear to diagnose TB, LMIC	50	114	75	All OK	CD	03/05	No	Yes		Yes
30	Supply ITNs for malaria, Africa	61	94	76	All OK	CD	03	No	Yes, endemic countries	Information related market failure. This could be considered a private good but the information failure leads to large external effects.	Yes if private demand insufficient; endemic countries
31	Rural trauma hospital	87	87	87	All OK	NCD	Not EPHO	No	No	Is outreach an externality? Need discussion but would be stretching CGH definition. May be good for rural development but it's the job of the ministry of development to argue to the health sector. Financing would more likely be based on equity/access criteria	No
32	Home presumptive treatment malaria, Africa	93	93	93	All OK	CD	03	No	Yes, endemic countries	Also appears in DCP3 as intervention for children, same CE (b)	Yes, endemic countries

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33	Preventive chemotherapy for schistosomiasis and STHs	114	114	114	All OK	CD	05	No	yes? Endemic countries	NTDs. Size of externality depends on risk of transmission if not treated vs if treated	Yes, endemic countries
34	Prevention of Mother-To-Child Transmission (PMTCT) Option B HIV vs Option A, Africa	65	251	128	LI: ?; Others OK	CD/ MCH	05	No	Yes, endemic countries		Yes, endemic countries
35	Primary prevention of ARF/RHD, children with GAS pharyngitis	135	135	135	All OK	NCD	05	No	No	Assume equivalent to treatment of pharyngitis to prevent ARF	No
36	Prevention of Mother-To-Child Transmission (PMTCT) Option A HIV vs no treatment, Africa and SEA (SEA added CE of 355, in range)	26	730	138	LI: ?; others OK	CD/ MCH	05	No	Yes	Option A less preferred compared to option B and B+ on CE grounds but the nature of the intervention is same	Yes, endemic countries, UMICs; check CE for LICs
37	Beta-blocker and ACE inhibitor vs no medic, heart failure	124	*279*	*186*	All OK	NCD	05	No	No	See above item #2	No
38	Scale up ART to all <350, or all infected, S Af	188	256	219	LI: ?; others OK	CD	05	No	Yes, endemic countries	HIV treatment reduces viral load	Yes, endemic countries, check CE for LICs
39	Treat breast cancer, MIC	230	230	230	LI: No; Others OK	NCD	Not EPHO	No	No	Financing needs to be based on welfare issues (catastrophic expenditure)	No
40	*HPV (Human Papillomavirus) vaccination @$50/girl, MIC	198	296	242	LI: ?; others OK	CD	05	No	Yes		Yes, check CE for LICs

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	(a)	Low (b)	High (b)	Geom mean (b)	Under threshold (c)	Disease categ. (d)	EPHO (e)	Public/ semi-public good (f)	Significant health externality	Notes/questions for discussion on CGH features	Finance as CE-CGH/ Qualifiers (g)
41	Trauma center	218	302	257	LI: No; Others OK	NCD	Not EPHO	No	No	Rural trauma hospital examined above (more CE) so this must be any or urban hospital - no outreach/rural development effect	No
42	Treat TB with second-line drugs MIC	264	264	264	LI: No; Others OK	CD	03 05	No	Yes		Yes for MICs
43	Screen/treat for syphilis *(PMTCT)* UMIC	200	369	272	LI: No; Others OK	CD/ MCH	05	No	Yes, endemic countries		Yes, endemic countries, MICs
44	Older anti-epileptic drug in primary care MIC	279	279	279	LI: No; Others OK	NCD	Not EPHO	No	Size is debatable. Some external costs of disease include accidents, security (due to unpredictability of event).	If not provided in primary care setting, need to examine why. A priori if cost effective, demand would be sufficient and intervention would need to be considered under equity rules	No? Debatable for MICs
45	Intrapartum care	211	*500*	325	LI: No; Others OK	MCH	Not EPHO	No if provision of care, Yes for guidelines/development of kits	No/yes for protocols & training material	Producing guidelines would be included; provision of intrapartum care not – Item to discuss	No, debatable
46	Eradicate yaws (detect and treat)	324	324	324	LI: No; Others OK	CD/MCH	05 (for screening)	No	Yes, endemic countries	NTD (treponematoses) Affects children.	Yes, endemic countries, MICs

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47	PMTCT (Elimination of Mother-To-Child Transmission) Option B+ HIV versus Option A, Africa	251	502	355	LI: No; Others OK	CD/MCH	05	No	Yes		Yes, MICs, but check CE
48	Non-price interventions for tobacco (not in DCP3Annex 7A)	*375*	*375*	*375*	LI: No; Others OK	NCD	04	Depends	Yes	Not clear if non-price interventions include primary health care cessation interventions. Assume only mass media communications	Yes, MICs
49	Treat colorectal cancer (CRC), LIC	430	430	430	LI: No; Others OK	NCD	Not EPHO	No	No		No
50	Maintenance psychosocial care for depression, primary care, UMIC	437	437	437	LI: No; Others OK	NCD	Not EPHO	No	No		No
51	Non-emergency orthopaedic conditions	359	540	440	LI: No LMI -? Others OK	NCD	Not EPHO	No	No		No
52	BCC plus regulation, sex establishments, LAC	557	570	563	LI: No; LMI: No Others OK	CD	03 04 05	Yes	Yes		Yes, UMICs only, check CE
53	Secondary prevention (medication) CVD vs no treatment	570	970	744	UMI and above only	NCD	05	No	No	See above item #2	No
54	HPV (Human PapillomaVirus) vaccination @$240+/girl	168	5168	932	Possibly. Check CE for all countries	CD	05	No	Yes		Yes, check CE for all
55	Primary prevention CVD abs risk >40% UMIC	1373	1373	1373	UMI and above only	NCD	05	No	No	See above item#2	No

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56	Facility-based treatment of schizophrenia with drugs, MIC	1427	1574	1499	Possibly UMI and above	NCD	Not EPHO	No	No?	Effect on family normally internalized. Effect on society?	No, debatable
57	Telemedicine diabetic retinopathy screening, 1-2 times/lifetime MIC	1605	1605	1605	Possibly UMI and above	NCD	Not EPHO	No	No	DR is presented as a "global epidemic" in media/literature but there are no externalities associated with contagions. Regulation to prevent DR, such as lower sugar contents in food would qualify as CGH. Telemedicine to treat CD has important external benefits beyond health but not a-priori CGH. Regulation to facilitate telemedicine may be CGH.	No
58	Treatment of depression in primary care with drugs, MIC	1312	2041	1636	Possibly UMI and above	NCD	Not EPHO	No	No		No
59	Screen and treat breast cancer	1838	*3579*	2565	Possibly UMI and above	NCD	05 (screening)	No	No	Prevention of catastrophic expenditure. Note that the CE estimate for UMICs is better than the one for LICs.	No
60	Primary prevention CVD with four drugs MIC	1070	3207	1852	Possibly UMI and above	NCD	05	No	No	For common good criteria; see above item#2	No
61	Vector control for dengue	2500	3000	2739	Possibly UMI and above	CD	03	Yes	Yes, endemic countries	Much less CE than control of other NTDs	Yes, endemic countries, UMICs only
62	Online sex education to prevent sexually transmitted infections	1180	10256	3479	Possibly UMI and above	CD	03 04 05	Yes	Yes	Cannot use as CE intervention in view of high end estimate way off CE acceptability range	Yes for UMICs, check CE
63	PMTCT Option A (with mass screening) versus no treatment, Latin America/Car.	3082	7924	4942	Possibly UMI and above	CD/MCH	05	No	Yes		Yes for UMICs, check CE

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64	Regular Food Ads/Labels, MIC (not in DCP3Annex 7A)	*0*	*5160*	--	Possibly UMI and above	NCD	03 04 05	Yes	Yes	Regulation. Food labeling beyond providing information increases awareness of consumers and encourages consumption of healthy products.	Yes/Maybe, check CE
65	PrEP-ARV for for non-infected partner, serodiscordant couples	0	6468	--	Possibly UMI and above	CD	05	No	Yes, high HIV areas		Yes, in high HIV areas, check CE for all
	Interventions for children (new CE ranking)										
66	Zinc added to oral rehydration therapy	10	50	22	Possibly. Check CE for all countries	CD/MCH	Not EPHO	Yes for the production of guidelines/research; No for delivery	No	Here Zinc is used as treatment, not so much as prevention. Guidelines would qualify but not the intervention itself	No? Check externality
67	Community management severe-acute malnutrition	25	40	32	All OK	MCH	05	No	Yes	The question is does community management generate large benefits beyond case by case interventions? We assume it does.	Yes
68	Maternal and neonatal care at home	13	126	40	All OK	MCH	Not EPHO	No	No?	UHC issue. Outreach; Other externalities outside of health sector	No
69	Micronutrient interventions (biofortification, fortification, supplementation)	20	100	45	All OK	MCH	05?	Yes for regulation and knowledge	Check	Individual interventions would qualify under UHC issue/ Equity but not Common good. Interventions related to training or regulation would qualify	Yes? Check size of externality
70	Management of obstructed labor	77	77	77	All OK	MCH	Not EPHO	No	No	Check	No

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71	Clean delivery kit and train TBAs	82	82	82	All OK	MCH	05 07	Yes for knowledge devlpt. aspect	Yes for development of kits and training (No for individual use of kits)	Design of the kits and training would be considered as CGH but not the distribution of kits to individuals.	Yes
72	Education programs on nutrition/WASH	95	95	95	All OK	MCH	04	Yes? (knowledge devlpt.)	Yes? (dissemination part, see note)	Argue motivation for financing. All education could be important for health. Identify the large externality. Could possibly fit under merit good. Producing material to be shared would qualify under public good/knowledge externality	Yes
73	Original EPI-6 (Expanded Program of Immunization with six vaccines) plus Hepatitis B	103	103	103	All OK	CD	05	No	Yes but varies by country for different types of vaccination	Some prioritization in vaccines may be necessary depending on the country. CE may be country specific, cost/benefit of adding HiB to EPI-6 not examined here	Yes, depends on country-specific epidemiology
74	Pneumococcus and rotavirus, LIC	103	103	103	All OK	CD	05	No	Yes, endemic countries	Evidence that systematically delivering these vaccines would overwhelm the system; this should be included in the CE calculation but was it?	Yes, endemic countries, check CE
75	Handwashing BCC (behavior change communications)	90	225	142	Check CE for LI, others OK	MCH	04	Yes	Yes in epidemic situation or occupation specific		Yes, endemic situations, occupation-specific?
76	Oral rehydration therapy	153	153	153	All OK	CD/MCH	Not EPHO	Yes for training; No for treatment	No?	Training to promote the CE technique but not the treatment itself. Treatment would qualify under the UHC/poverty criteria	No for treatment (but yes if this concerns the development of guidelines/protocol/training)

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77	Household water treatment, LIC	190	190	190	All OK	CD	03 04	No	Yes in emergency response activities	This is chlorination for safe drinking water, not anti-malaria activities. The public good/large externality would be the community water system. Personal water system can only be used by one person/family at a time. Private good, financing on poverty/equity grounds	Yes in emergency/response situations?
78	Access to modern contraceptives	150	300	212	Check CE for LI, others OK	CD/MCH	04 05	Depends	Yes, in high HIV areas		Yes, in high HIV areas
79	Quality improvement **protocol** newborns in hospital	305	305	305	LI: No; Others OK	MCH	07 10 ?	Yes (protocol devlpt. and disseminatio n)	Yes, not including Health Care delivery aspect	Not clear if the intervention is the application of the protocol or the development, dissemination of protocol and training of health workers. The development, dissemination and training aspects qualify under common good. The application of the protocol (health care) would not qualify	Yes, relative to protocol only, not health care
80	Comprehensive nutrition package (all interventions Lancet 2013)	353	353	353	LI: No; Others OK	MCH	04	Yes for development of package, no for its production/delivery	Yes/No?	Likely depend on the type of intervention.	Maybe

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81	Mother's groups to improve maternal/neonatal health	150	1000	387	UMI and above OK; for lower income levels check CE	MCH	04	Yes for training material	Yes if we argue ability of women in group to transmit knowledge to other women in the lifetime;	Private demand may be sufficient (outside of poverty issues) as there is a private incentive to participate in such groups before childbirth. The CGH criteria may however apply if we consider interventions that facilitate the formation of such groups or the training of community workers to lead the groups	Yes with selection of beneficiaries
82	HiB and rubella added to EPI, LI	368	768	532	LI: No; LMI: ?; UMI and above OK	CD/MCH	05	No (guidelines ok)	Yes, possibly targeting high risk population	size of externality depends on the targeted population	Yes, in MICs, targeted to high risk pop, check CE
83	Region specific vaccines (Yellow fever, Japanese encephalitis, meningitis A)	368	768	532	LI: No; LMI: ?; UMI and above OK	CD	05	No	Yes, endemic countries	Examine in conjunction with other vaccination programs	Yes, endemic countries, in MICs, check CE LMIC
84	Cholera and typhoid vaccination	2018	2018	2018	Possibly UMI and above	CD	05	No	Yes, high risk areas/emergency situations	Emergency response, market failure here often linked to the emergency situation. Preventive measures related to water sanitation in non emergency situations;	Yes, high risk areas; or emergency situations, UMICs only, check CE
85	C-section, all LMI	1600	2600	2040	Possibly UMI and above	MCH	Not EPHO	No	No		No
86	Rural water supply/sanitation, LIC	2200	2200	2200	Possibly UMI and above	CD/MCH	03	Yes	Case by case analysis needed	Coordination infrastructure development/ Environment./ rural development	Yes, case by case, UMICs
87	Urban water supply/sanitation, LIC	2900	2900	2900	Possibly UMI and above	CD/MCH	03	Yes	Case by case analysis needed	Coordination infrastructure development/ Environment	Yes, case by case, UMICs

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88	Microfinance/gender training for intimate partner violence *(from description, also includes HIV)*	2910	2910	2910	Possibly UMI and above	CD/MCH	03 04 05 09	Yes for development of training materials	Case by case analysis needed; applies for the HIV training	The large externality applies for the HIV training	Yes, case by case, UMICs

(a) Interventions listed in figures 7.1 to 7.4 in DCP3 Vol. 9 Chapter 7 (ref. 35). Specific interventions for children (from figure 7.4 in DCP3) are listed starting from item #66. This effectively starts a new CE ranking as done in DCP3. Interventions for children that were the same as listed in the adult category and with same CE estimate (item #6, 32, and 45) are not repeated. In prioritizing these interventions, one needs to consider that similar CE estimates may be associated with larger benefit values depending on the target population (for example DALY of children are typically valued higher than DALY of adults).

(b) CE estimates are obtained from Annex 7A of DCP3 volume 9 except for items #48 and 64 that are approximated from reading the Figures in references 34 and 35 (the information is missing in annex). The geometric mean is calculated as $\sqrt{(ab)}$ where a and b are respectively the low and high estimates from the literature; this is the value effectively used in DCP3 to establish cost-effectiveness categories and ranking. All references used for these estimates are listed in Annex 7A of DCP3 (A total of 149 references that were all checked to identify sample restrictions).

(c) "?" stands for "maybe" generally indicating that the range of estimates is large. The thresholds are taken from DCP3 (ref. 26); they are USD 200 for Low Income (LI) countries, USD 500 for Lower Middle Income (LMI) countries. No threshold is given for Upper Middle Income (UMI) countries but we marked CE results≤2000 as feasible and >2000 as "possibly" feasible for UMI countries. Income groups are determined based on World Bank categories at the time of publication of the CEA study (references in DCP3 Annex 7A, ref 35). For 2019 the cutoffs in USD per capita (GNI Atlas method) are LICs<996; LMICs: from 996 to 3,896; UMICs from 3,896 to 12,056.

(d) Communicable Diseases (CD), Non Communicable Diseases (NCD), Mother and Child Health (MCH). MCH was added to a category when the intervention appeared in both the adult and children tables.

(e) Essential Public Health Operations from WHO Europe (ref.36). EPHO-01 – Surveillance; EPHO-02 – Monitoring, Preparedness & Response; EPHO-03 – Protection; EPHO-04 – Promotion; EPHO-05 – Disease Prevention; EPHO-06 – Governance; EPHO-07 – Workforce; EPHO-08 – Funding; EPHO-09 – Communication; EPHO-10 - Research.

(f) Public goods are defined in the text of the article. We include semi-public goods that are mostly non rival and/or mostly non-excludable, thus yielding some significant market failure.

(g) Qualifiers (conditions under which the intervention qualifies as CGH) may be based on the nature of the intervention/service but more often concern context such as disease prevalence and the country income level.

References for Table A1 (numbers as in main text):

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