Supplementary web appendix 1:

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GLOBAL HEALTH 2035

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Table A1.1

World Bank regional and income level of countries, 2011

Country	WB region	Income level
Afghanistan	South Asia	Low income
Albania	Europe and Central Asia	Lower middle income
Algeria	Middle East and North Africa	Upper middle income
American Samoa	East Asia and Pacific	Upper middle income
Andorra	High income	High income
Angola	Sub-Saharan Africa	Upper middle income
Antigua and Barbuda	Latin America and Caribbean	Upper middle income
Argentina	Latin America and Caribbean	Upper middle income
Armenia	Europe and Central Asia	Lower middle income
Aruba	High income	High income
Australia	High income	High income
Austria	High income	High income
Azerbaijan	Europe and Central Asia	Upper middle income
Bahamas	High income	High income
Bahrain	High income	High income
Bangladesh	South Asia	Low income
Barbados	High income	High income
Belarus	Europe and Central Asia	Upper middle income
Belgium	High income	High income
Belize	Latin America and Caribbean	Lower middle income
Benin	Sub-Saharan Africa	Low income
Bermuda	High income	High income
Bhutan	South Asia	Lower middle income
Bolivia (Plurinational State of)	Latin America and Caribbean	Lower middle income
Bosnia and Herzegovina	Europe and Central Asia	Upper middle income
Botswana	Sub-Saharan Africa	Upper middle income
Brazil	Latin America and Caribbean	Upper middle income
Brunei Darussalam	High income	High income
Bulgaria	Europe and Central Asia	Upper middle income
Burkina Faso	Sub-Saharan Africa	Low income
Burundi	Sub-Saharan Africa	Low income
Cambodia	East Asia and Pacific	Low income
Cameroon	Sub-Saharan Africa	Lower middle income
Canada	High income	High income
Cape Verde	Sub-Saharan Africa	Lower middle income
Cayman Islands	High income	High income
Central African Republic	Sub-Saharan Africa	Low income
Chad	Sub-Saharan Africa	Low income
Channel Islands	High income	High income
Chile	Latin America and Caribbean	Upper middle income
China	East Asia and Pacific	Upper middle income

Country	WB region	Income level
Colombia	Latin America and Caribbean	Upper middle income
Comoros	Sub-Saharan Africa	Low income
Congo, Dem. Rep.	Sub-Saharan Africa	Low income
Congo, Rep.	Sub-Saharan Africa	Lower middle income
Costa Rica	Latin America and Caribbean	Upper middle income
Côte d'Ivoire	Sub-Saharan Africa	Lower middle income
Croatia	High income	High income
Cuba	Latin America and Caribbean	Upper middle income
Curaçao	High income	High income
Cyprus	High income	High income
Czech Republic	High income	High income
Democratic People's Republic of Korea	East Asia and Pacific	Low income
Denmark	High income	High income
Djibouti	Middle East and North Africa	Lower middle income
Dominica	Latin America and Caribbean	Upper middle income
Dominican Republic	Latin America and Caribbean	Upper middle income
Ecuador	Latin America and Caribbean	Upper middle income
Egypt	Middle East and North Africa	Lower middle income
El Salvador	Latin America and Caribbean	Lower middle income
Equatorial Guinea	Sub-Saharan Africa	High income
Eritrea	Sub-Saharan Africa	Low income
Estonia	High income	High income
Ethiopia	Sub-Saharan Africa	Low income
Faeroe Islands	High income	High income
Fiji	East Asia and Pacific	Lower middle income
Finland	High income	High income
France	High income	High income
French Polynesia	High income	High income
Gabon	Sub-Saharan Africa	Upper middle income
Gambia	Sub-Saharan Africa	Low income
Georgia	Europe and Central Asia	Lower middle income
Germany	High income	High income
Ghana	Sub-Saharan Africa	Lower middle income
Greece	High income	High income
Greenland	High income	High income
Grenada	Latin America and Caribbean	Upper middle income
Guam	High income	High income
Guatemala	Latin America and Caribbean	Lower middle income
Guinea	Sub-Saharan Africa	Low income
Guinea-Bissau	Sub-Saharan Africa	Low income
Guyana	Latin America and Caribbean	Lower middle income
Haiti	Latin America and Caribbean	Low income
Honduras	Latin America and Caribbean	Lower middle income
Hong Kong SAR, China	High income	High income

Country	WB region	Income level
Hungary	High income	High income
Iceland	High income	High income
India	South Asia	Lower middle income
Indonesia	East Asia and Pacific	Lower middle income
Iran (Islamic Republic of)	Middle East and North Africa	Upper middle income
Iraq	Middle East and North Africa	Lower middle income
Ireland	High income	High income
Isle of Man	High income	High income
Israel	High income	High income
Italy	High income	High income
Jamaica	Latin America and Caribbean	Upper middle income
Japan	High income	High income
Jordan	Middle East and North Africa	Upper middle income
Kazakhstan	Europe and Central Asia	Upper middle income
Kenya	Sub-Saharan Africa	Low income
Kiribati	East Asia and Pacific	Lower middle income
Kosovo	Europe and Central Asia	Lower middle income
Kuwait	High income	High income
Kyrgyzstan	Europe and Central Asia	Low income
Lao People's Democratic Republic	East Asia and Pacific	Lower middle income
Latvia	Europe and Central Asia	Upper middle income
Lebanon	Middle East and North Africa	Upper middle income
Lesotho	Sub-Saharan Africa	Lower middle income
Liberia	Sub-Saharan Africa	Low income
Libya	Middle East and North Africa	Upper middle income
Liechtenstein	High income	High income
Lithuania	Europe and Central Asia	Upper middle income
Luxembourg	High income	High income
Macao SAR, China	High income	High income
Madagascar	Sub-Saharan Africa	Low income
Malawi	Sub-Saharan Africa	Low income
Malaysia	East Asia and Pacific	Upper middle income
Maldives	South Asia	Upper middle income
Mali	Sub-Saharan Africa	Low income
Malta	High income	High income
Marshall Islands	East Asia and Pacific	Lower middle income
Mauritania	Sub-Saharan Africa	Low income
Mauritius	Sub-Saharan Africa	Upper middle income
Mexico	Latin America and Caribbean	Upper middle income
Micronesia (Federated States of)	East Asia and Pacific	Lower middle income
Monaco	High income	High income
Mongolia	East Asia and Pacific	Lower middle income
Montenegro	Europe and Central Asia	Upper middle income
Morocco	Middle East and North Africa	Lower middle income

Country	WB region	Income level
Mozambique	Sub-Saharan Africa	Low income
Myanmar	East Asia and Pacific	Low income
Namibia	Sub-Saharan Africa	Upper middle income
Nepal	South Asia	Low income
Netherlands	High income	High income
New Caledonia	High income	High income
New Zealand	High income	High income
Nicaragua	Latin America and Caribbean	Lower middle income
Niger	Sub-Saharan Africa	Low income
Nigeria	Sub-Saharan Africa	Lower middle income
Northern Mariana Islands	High income	High income
Norway	High income	High income
Oman	High income	High income
Pakistan	South Asia	Lower middle income
Palau	East Asia and Pacific	Upper middle income
Panama	Latin America and Caribbean	Upper middle income
Papua New Guinea	East Asia and Pacific	Lower middle income
Paraguay	Latin America and Caribbean	Lower middle income
Peru	Latin America and Caribbean	Upper middle income
Philippines	East Asia and Pacific	Lower middle income
Poland	High income	High income
Portugal	High income	High income
Puerto Rico	High income	High income
Qatar	High income	High income
Republic of Korea	High income	High income
Republic of Moldova	Europe and Central Asia	Lower middle income
Romania	Europe and Central Asia	Upper middle income
Russian Federation	Europe and Central Asia	Upper middle income
Rwanda	Sub-Saharan Africa	Low income
Saint Kitts and Nevis	High income	High income
Saint Lucia	Latin America and Caribbean	Upper middle income
Saint Vincent and the Grenadines	Latin America and Caribbean	Upper middle income
Samoa	East Asia and Pacific	Lower middle income
San Marino	High income	High income
Sao Tome and Principe	Sub-Saharan Africa	Lower middle income
Saudi Arabia	High income	High income
Senegal	Sub-Saharan Africa	Lower middle income
Serbia	Europe and Central Asia	Upper middle income
Seychelles	Sub-Saharan Africa	Upper middle income
Sierra Leone	Sub-Saharan Africa	Low income
Singapore	High income	High income
Sint Maarten (Dutch part)	High income	High income
Slovakia	High income	High income
Slovenia	High income	High income

Country	WB region	Income level
Solomon Islands	East Asia and Pacific	Lower middle income
Somalia	Sub-Saharan Africa	Low income
South Africa	Sub-Saharan Africa	Upper middle income
South Sudan	Sub-Saharan Africa	Lower middle income
Spain	High income	High income
Sri Lanka	South Asia	Lower middle income
St. Martin (French part)	High income	High income
Sudan	Sub-Saharan Africa	Lower middle income
Suriname	Latin America and Caribbean	Upper middle income
Swaziland	Sub-Saharan Africa	Lower middle income
Sweden	High income	High income
Switzerland	High income	High income
Syrian Arab Republic	Middle East and North Africa	Lower middle income
Taiwan, China	High income	High income
Tajikistan	Europe and Central Asia	Low income
Thailand	East Asia and Pacific	Upper middle income
The former Yugoslav Republic of Macedonia	Europe and Central Asia	Upper middle income
Timor-Leste	East Asia and Pacific	Lower middle income
Togo	Sub-Saharan Africa	Low income
Tonga	East Asia and Pacific	Lower middle income
Trinidad and Tobago	High income	High income
Tunisia	Middle East and North Africa	Upper middle income
Turkey	Europe and Central Asia	Upper middle income
Turkmenistan	Europe and Central Asia	Upper middle income
Turks and Caicos Islands	High income	High income
Tuvalu	East Asia and Pacific	Upper middle income
Uganda	Sub-Saharan Africa	Low income
Ukraine	Europe and Central Asia	Lower middle income
United Arab Emirates	High income	High income
United Kingdom	High income	High income
United Republic of Tanzania	Sub-Saharan Africa	Low income
United States of America	High income	High income
Uruguay	Latin America and Caribbean	Upper middle income
Uzbekistan	Europe and Central Asia	Lower middle income
Vanuatu	East Asia and Pacific	Lower middle income
Venezuela (Bolivarian Republic of)	Latin America and Caribbean	Upper middle income
Viet Nam	East Asia and Pacific	Lower middle income
Virgin Islands (U.S.)	High income	High income
West Bank and Gaza	Middle East and North Africa	Lower middle income
Yemen	Middle East and North Africa	Lower middle income
Zambia	Sub-Saharan Africa	Lower middle income
Zimbabwe	Sub-Saharan Africa	Low income

Note: Economies are divided according to 2011 GNI per capita. The groups are: low income, $1,005 or less; lower middle income, $1,006 - $3,975; upper middle income, $3,976- $12,275; and high income, $12,276 or more.

Table A1.2

United Nations classification of countries, 2012

More developed regions and countries	Europe, Northern America, Australia/New Zealand and Japan.
Less developed regions and countries	All regions of Africa, Asia (except Japan), Latin America and the Caribbean plus Melanesia, Micronesia and Polynesia.
Least developed regions and countries	Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, São Tomé and Príncipe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, Sudan, Timor-Leste, Togo, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Yemen and Zambia.

Table A1.3

US GDP deflator, 1990-2011

Year	US GDP deflator 2012=100	Year	US GDP deflator 2012=100
1990	63.75	2001	80.04
1991	66.01	2002	81.33
1992	67.57	2003	83.04
1993	69.06	2004	85.38
1994	70.52	2005	88.22
1995	71.99	2006	91.07
1996	73.36	2007	93.71
1997	74.65	2008	95.79
1998	75.50	2009	96.62
1999	76.61	2010	97.91
2000	78.27	2011	100.00

Data from reference 1.

Table A1.4

Disease burden by cause in 1990—estimates from WDR 1993 and GBD 2010 (in thousands of DALYs)

Disease	GBD 2010 (Original)	GBD 2010	WDR 1993	Percent change
Perinatal (neonatal in new GBD)	273,719	115,612	99,658	-16%
Lower respiratory infections	206,461	87,375	114,745	24%
Diarrheal diseases	183,543	81,546	99,111	18%
Malignant neoplasms	148,082	67,824	80,015	15%
Neuropsychiatric*	65,843	57,928	54,077	-7%
Ischemic heart disease	100,455	46,918	42,461	-10%
Cerebrovascular	86,012	38,240	42,983	11%
Motor vehicle	61,022	32,743	31,739	-3%
TB	61,256	31,833	46,450	31%
Malaria	69,141	31,313	35,728	12%
Diabetes mellitus	27,719	19,177	7,968	-141%
Self-inflicted	29,605	14,826	17,530	15%
Musculoskeletal**	13,793	13,373	15,675	15%
Maternal	21,577	11,828	29,713	60%
HIV/AIDS	18,118	9,555	30,207	68%

*Includes bipolar, psychoses, epilepsy, alcohol, Alzheimer's and other dementias, Parkinson's, MS, and drug dependence.
** Includes rheumatoid arthritis and osteoarthritis. Back and neck pain excluded from musculoskeletal.

Data from references 3-6.

Note: A primary difference between the calculation of DALYS in GBD 2010 and WDR 1993 is the absence of discounting and age-weighting in GBD 2010's estimates of YLLs. The resulting change in the meaning of a DALY is quantitatively highly significant: a child death in GBD 2010 results, for example, in over twice as many DALYs than it did in previous estimates of GBD including that of WDR 1993. WDR 1993's study of the global burden of disease, conversely, uses a 3 percent discount rate with age weights to calculate YLLs. These differences complicate comparisons between the two estimates. To adjust for this and make the results between GBD 2010 and WDR 1993 more nearly comparable, we recalculated YLLs from GBD 2010 using the appropriate discounting and weights. To that end, for each age grouping in GBD 2010 we multiplied the number of deaths from a given disease by the discounted YLLs per death using standard age weights. As the YLLs per death estimates from Mathers et al.2 are for select exact ages, appropriate averages were used for the groupings from GBD 2010. The resulting YLLs were then added to the GBD 2010 YLDs to obtain estimates, comparable to those of WDR 1993. Consequently, the presented DALY variation can be attributed to differences in overall death estimations as well as disability weights, not discounting and age weights.

Table A1.5

Excess under-5 mortality rates in girls from recent surveys

Country	Survey year	U5MR		Male/female ratio		Excess female deaths/1000
		Male	Female	Observed	Expected	
Albania	2008	27.3	16.1	1.7	1.28	-5.23
Armenia	2010	21.3	21.7	0.98	1.29	5.26
Azerbaijan	2006	64.3	49	1.31	1.25	-2.59
Bangladesh	2007	75	71.3	1.05	1.24	10.62
Benin	2006	138.8	132.1	1.05	1.19	15.21
Bolivia	2008	79.1	71.1	1.11	1.23	7.03
Brazil	1996	58.9	53.3	1.1	1.25	6.29
Burkina Faso	2010	152.6	141	1.08	1.18	11.48
Burundi	2010	134.1	116	1.16	1.19	3.33
Cambodia	2010	76	58.8	1.29	1.24	-2.64
Cameroon	2011	134.8	121.3	1.11	1.19	8.01
CAR	1994	165.3	152.6	1.08	1.17	11.4
Chad	2004	207.2	198.5	1.04	1.15	18.01
Colombia	2010	23.8	19.3	1.24	1.29	0.77
Comoros	1996	121.9	103.1	1.18	1.2	1.48
Congo (Brazzaville)	2005	128.4	118	1.09	1.19	10.55
Congo D.R.	2007	161.3	148.1	1.09	1.17	10.6
Cote dIvoire	1998	204.6	146.3	1.4	1.15	-31.83
Dominican Republic	2007	39.7	33.9	1.17	1.27	2.65
Egypt	2008	38.4	27.7	1.38	1.27	-2.43
Ethiopia	2011	120.8	97.4	1.24	1.2	-3.21
Gabon	2000	103.1	80.2	1.29	1.21	-4.71
Ghana	2008	93.2	74.9	1.24	1.22	-1.32
Guatemala	1998	63.7	65.2	0.98	1.25	14.18
Guinea	2005	198.9	173.6	1.15	1.15	0.92
Guyana	2009	40.6	39	1.04	1.27	6.98
Haiti	2005	104.6	98.9	1.06	1.21	12.62
Honduras	2005	38.8	34.4	1.13	1.27	3.9
India	2005	81.8	88.2	0.93	1.23	21.72
Indonesia	2007	55.3	45.9	1.21	1.26	1.85
Jordan	2007	21.7	23	0.94	1.29	6.23
Kazakhstan	1999	72.3	53.8	1.34	1.24	-4.54
Kenya	2008	89.9	77	1.17	1.22	3.62
Kyrgyz Republic	1997	81.6	69.3	1.18	1.23	3.03

Country	Survey year	U5MR		Male/female ratio		Excess female deaths/1000
		Male	Female	Observed	Expected	
Lesotho	2009	122.8	87.1	1.41	1.2	-15.32
Liberia	2007	147.1	131.4	1.12	1.18	6.99
Madagascar	2008	84.8	78	1.09	1.23	8.98
Malawi	2010	136.5	115.8	1.18	1.19	1.08
Maldives	2009	28.7	25	1.15	1.28	2.65
Mali	2006	221.7	206.3	1.07	1.14	11.97
Moldova	2005	32.5	19.7	1.65	1.28	-5.74
Morocco	2003	59.2	47.8	1.24	1.25	0.51
Mozambique	2003	179.8	175.9	1.02	1.16	21.15
Namibia	2006	79.7	57.9	1.38	1.23	-6.73
Nepal	2011	62.2	62.2	1	1.25	12.47
Nicaragua	2001	48.1	40.2	1.19	1.26	2.17
Niger	2006	220.2	213	1.03	1.14	20.16
Nigeria	2008	174.7	166.4	1.05	1.17	16.4
Pakistan	2006	93	93.5	0.99	1.22	17.41
Peru	2004	46.9	35.8	1.31	1.26	-1.27
Philippines	2008	40.6	33.6	1.21	1.27	1.64
Rwanda	2010	104.2	96	1.09	1.21	10.04
Sao Tome & Principe	2008	85.8	54.5	1.57	1.23	-15.33
Senegal	2010	89.5	81.9	1.09	1.23	8.88
Sierra Leone	2008	176	159.6	1.1	1.16	8.43
South Africa	2003	36.8	73.1	0.5	1.27	44.21
Swaziland	2006	108.7	103.9	1.05	1.21	13.99
Tanzania	2010	96.5	87.6	1.1	1.22	8.43
Timor-Leste	2009	83.4	75.8	1.1	1.23	8.08
Togo	1998	155.3	131.2	1.18	1.18	-0.77
Turkey	2003	48.2	44.8	1.08	1.26	6.55
Uganda	2011	113.5	97.4	1.17	1.21	3.21
Ukraine	2007	23.4	13.4	1.75	1.29	-4.77
Uzbekistan	1996	64.5	45.4	1.42	1.25	-6.32
Vietnam	2002	34.2	30.8	1.11	1.28	4.03
Zambia	2007	151	121.9	1.24	1.18	-6.17
Zimbabwe	2010	87.6	68.4	1.28	1.23	-2.99

Data from reference 7.

Note: This table shows under-5 mortality rate estimates for boys and girls in the most recent surveys, showing the observed male/female mortality ratio, the ratio that would be expected on the basis of the higher biological risk of boys, and the excess number of observed female deaths per thousand births relative to what be expected from the corresponding male mortality level.

Table A1.6

Rates of decline in child and adolescent mortality, by region, 1990-2010 (% per year)

	East Asia & Pacific	Europe & Central Asia	Latin America & Caribbean	Middle East & North America	South Asia	Sub-Saharan Africa
Age	**Male**					
0-4	4.6%	3.9%	4.3%	3.7%	3.0%	2.3%
5-9	2.3%	1.8%	5.4%	3.5%	3.2%	2.4%
10-14	1.1%	.077%	4.1%	2.7%	2.6%	1.5%
15-19	.057%	3.8%	0.056%	1.2%	1.4%	1.0%
	Female					
0-4	4.7%	4.0%	4.3%	3.9%	3.1%	2.3%
5-9	4.9%	3.7%	4.7%	4.7%	2.5%	2.2%
10-14	3.2%	1.0%	3.6%	5.5%	1.5%	1.5%
15-19	2.0%	2.8%	2.4%	4.1%	3.8%	1.9%
	Female: male ratio in rate of decline					
0-4	1.0	1.0	1.0	1.1	1.0	1.0
5-9	2.2	2.0	0.86	1.4	0.78	0.92
10-14	3.0	1.3	0.87	2.0	0.56	1.0
15-19	3.6	0.75	43	3.5	2.7	2.0

Data from reference 8.

Table A1.7

Adult mortality rate by gender, levels and rates of decline, 1992-2012

WB region/country	Female 1992	Female 2012	Male 1992	Male 2012	Female rate of decline, annual (f)	Male rate of decline, annual (m)	Male to female rate ratio (m:f)	Rate difference, annual (f-m)	Percent difference (% f > m)
Least developed countries	312	232	350	271	1.5%	1.3%	0.9	0.2%	15%
Less developed countries (excluding least developed countries)	167	123	232	182	1.5%	1.2%	0.8	0.3%	25%
More developed countries	88	75	201	166	0.8%	1.0%	1.2	-0.2%	-17%
China	121	76	169	103	2.3%	2.5%	1.1	-0.2%	-7%
India	232	158	288	239	1.9%	0.9%	0.5	1.0%	106%

Data from reference 9.

Note: '1992' refers to estimates from the early 1990s; '2012' refers to estimates from 2000-2013; and rate of decline calculations are based on a 20 year difference between dates.

Table A1.8a World - deaths from selected causes, by age, 2000 (thousands)

Sex	Both sexes							
Age group	0-27 days	1-59 mos	5-14 yrs	15-29 yrs	30-49 yrs	50-69 yrs	70+ yrs	Total
All causes	3,670	5,951	1,735	3,359	6,375	12,408	18,996	52,494
I. Communicable, maternal, perinatal and nutritional conditions	3,357	4,959	1,003	1,165	2,049	1,684	2,040	16,259
A. Infectious and parasitic diseases	340	3,012	780	778	1,612	1,238	912	8,670
1. Tuberculosis		26	11	92	357	533	322	1,340
2. STDs excluding HIV	75	46	9	3	4	3	2	142
3. HIV/AIDS	2	212	50	292	871	180	6	1,614
4. Diarrhoeal diseases	96	1,113	257	165	167	279	368	2,445
5. Childhood-cluster diseases	127	625	147	21	8	6	4	937
a. Whooping cough	7	139	6	1				154
b. Diphtheria		2	2					4
c. Measles		483	128	14	2	1		627
d. Tetanus	120	1	11	5	5	5	3	152
6. Meningitis	10	176	73	59	43	41	27	429
10. Parasitic and vector diseases		682	154	70	61	50	24	1,041
Other I.A. (7-9, 11, 12)	28	131	80	77	102	146	158	722
B. Respiratory infections	327	1,406	156	116	171	367	988	3,530
C. Maternal conditions				215	206			421
D. Neonatal conditions	2,690	273						2,964
1. Preterm birth complications	1,236	158						1,394
2. Birth asphyxia and birth trauma	889	72						961
3. Neonatal sepsis and infections	432							432
4. Other neonatal conditions	134	43						177
E. Nutritional deficiencies		268	67	57	61	80	141	674
II. Noncommunicable diseases	293	612	336	832	3,012	9,878	16,320	31,283
A. Malignant neoplasms		35	55	145	894	2,714	2,660	6,502
C. Diabetes mellitus	1	5	6	22	92	391	500	1,016
E. Mental and behavioral disorders			2	24	74	58	35	194
1. Unipolar depressive disorders							2	3
2. Bipolar disorder								
3. Schizophrenia				2	8	7	6	24
Other II.E. (4-11)			2	22	65	51	26	166
F. Neurological conditions		43	51	91	93	123	423	824
H. Cardiovascular diseases	12	68	51	242	1,048	4,297	8,931	14,650
3. Ischaemic heart disease		11	9	74	453	1,834	3,513	5,895
4. Stroke	12	18	15	61	308	1,643	3,505	5,563
Other II.H. (1, 2, 5, 6)		39	27	106	287	819	1,913	3,193
I. Respiratory diseases		75	21	56	185	1,148	2,427	3,913
N. Congenital anomalies	277	254	38	27	14	12	14	636
Other II. (B, D, G, J, K, L, M, O)	2	131	111	225	612	1,136	1,330	3,548
III. Injuries	20	380	396	1,361	1,313	846	636	4,953
A. Unintentional injuries	17	366	345	785	816	595	513	3,438
1. Road injury	1	52	63	313	312	187	91	1,017
Other III. A. (2-7)	16	314	283	472	504	408	423	2,421
B. Intentional injuries	3	14	51	576	497	251	123	1,515
1. Self-harm			20	309	283	187	106	904
Other III.B. (2, 3)	3	14	31	267	214	64	17	610

See notes at end of table.

Table A1.8b Low income - deaths from selected causes, by age, 2000 (thousands)

Sex	Both sexes							
Age group	0-27 days	1-59 mos	5-14 yrs	15-29 yrs	30-49 yrs	50-69 yrs	70+ yrs	Total
All causes	940	2,084	587	794	1,207	1,215	1,164	7,991
I. Communicable, maternal, perinatal and nutritional conditions	888	1,847	408	445	795	431	341	5,154
A. Infectious and parasitic diseases	123	1,239	328	302	644	321	158	3,116
1. Tuberculosis		8	2	22	85	123	66	306
2. STDs excluding HIV	31	21	5	1	1			59
3. HIV/AIDS	1	116	35	147	452	96	4	852
4. Diarrhoeal diseases	21	408	100	56	50	52	59	746
5. Childhood-cluster diseases	64	224	68	7	2	1	1	366
a. Whooping cough	2	51	1					55
b. Diphtheria		1	1					2
c. Measles		171	63	6	1			241
d. Tetanus	62		2	1	1	1	1	68
6. Meningitis	3	67	27	21	14	13	7	151
10. Parasitic and vector diseases		358	71	29	22	14	6	500
Other I.A. (7-9, 11, 12)	3	37	21	19	19	21	15	136
B. Respiratory infections	70	418	43	38	45	77	139	831
C. Maternal conditions				77	78			155
D. Neonatal conditions	695	72						767
1. Preterm birth complications	342	39						381
2. Birth asphyxia and birth trauma	241	21						262
3. Neonatal sepsis and infections	92							92
4. Other neonatal conditions	20	11						32
E. Nutritional deficiencies		118	37	27	27	33	43	285
II. Noncommunicable diseases	51	132	88	132	278	710	776	2,168
A. Malignant neoplasms		7	9	19	73	162	76	345
C. Diabetes mellitus		1	2	4	10	40	43	99
E. Mental and behavioral disorders			1	2	3	2	1	8
1. Unipolar depressive disorders								
2. Bipolar disorder								
3. Schizophrenia					1	1		2
Other II.E. (4-11)			1	2	2	1	1	6
F. Neurological conditions		10	16	20	15	16	20	98
H. Cardiovascular diseases	1	13	12	29	82	286	400	823
3. Ischaemic heart disease		2	2	9	30	107	145	294
4. Stroke	1	4	4	8	28	127	186	357
Other II.H. (1, 2, 5, 6)		7	7	12	24	53	69	172
I. Respiratory diseases		19	7	13	21	82	130	273
N. Congenital anomalies	49	48	10	4	1	2	3	118
Other II. (B, D, G, J, K, L, M, O)		33	32	42	74	120	102	403
III. Injuries	1	104	91	217	134	74	47	668
A. Unintentional injuries	1	100	72	118	79	52	38	461
1. Road injury		12	9	38	26	17	8	110
Other III. A. (2-7)	1	87	64	80	53	35	30	351
B. Intentional injuries		5	18	99	55	22	9	208
1. Self-harm			4	30	17	12	7	71
Other III.B. (2, 3)		5	14	69	38	10	2	136

See notes at end of table.

Table A1.8c Lower middle income - deaths from selected causes, by age, 2000 (thousands)

Sex	Both sexes							
Age group	0-27 days	1-59 mos	5-14 yrs	15-29 yrs	30-49 yrs	50-69 yrs	70+ yrs	Total
All causes	2,018	3,016	899	1,552	2,550	4,549	4,534	19,120
I. Communicable, maternal, perinatal and nutritional conditions	1,866	2,555	535	574	881	898	905	8,214
A. Infectious and parasitic diseases	176	1,552	412	377	667	687	542	4,412
1. Tuberculosis		16	7	54	208	315	186	787
2. STDs excluding HIV	38	20	3	1	1	1	1	66
3. HIV/AIDS	1	63	12	103	247	46	1	473
4. Diarrhoeal diseases	66	607	143	95	101	210	280	1,503
5. Childhood-cluster diseases	59	390	76	13	5	4	2	550
a. Whooping cough	4	82	4	1				92
b. Diphtheria		1	1					2
c. Measles		306	62	8	1			378
d. Tetanus	55	1	8	4	4	4	2	77
6. Meningitis	6	78	41	31	23	22	14	216
10. Parasitic and vector diseases		305	77	34	33	26	12	486
Other I.A. (7-9, 11, 12)	5	72	53	44	49	63	46	332
B. Respiratory infections	219	731	98	55	80	179	316	1,679
C. Maternal conditions				120	109			229
D. Neonatal conditions	1,471	152						1,623
1. Preterm birth complications	656	93						748
2. Birth asphyxia and birth trauma	460	42						502
3. Neonatal sepsis and infections	294							294
4. Other neonatal conditions	61	17						78
E. Nutritional deficiencies		120	24	23	25	32	47	271
II. Noncommunicable diseases	149	284	167	401	1,187	3,338	3,412	8,938
A. Malignant neoplasms		16	20	54	246	569	299	1,203
C. Diabetes mellitus	1	3	3	11	43	157	143	361
E. Mental and behavioral disorders			1	4	11	9	3	29
1. Unipolar depressive disorders								
2. Bipolar disorder								
3. Schizophrenia					1	1	1	3
Other II.E. (4-11)			1	4	10	9	3	27
F. Neurological conditions		20	26	46	44	44	47	227
H. Cardiovascular diseases	4	31	26	127	450	1,532	1,945	4,115
3. Ischaemic heart disease		7	5	44	216	733	882	1,887
4. Stroke	4	9	7	32	121	558	804	1,535
Other II.H. (1, 2, 5, 6)		15	13	51	113	241	259	692
I. Respiratory diseases		37	10	27	99	546	621	1,340
N. Congenital anomalies	143	117	17	10	4	3	4	299
Other II. (B, D, G, J, K, L, M, O)	1	60	64	123	291	477	349	1,364
III. Injuries	3	177	198	577	482	314	217	1,968
A. Unintentional injuries	3	172	177	333	308	247	195	1,434
1. Road injury		24	28	114	103	67	28	365
Other III. A. (2-7)	3	147	149	219	204	180	166	1,069
B. Intentional injuries		5	21	245	175	66	22	534
1. Self-harm			10	165	106	44	16	341
Other III.B. (2, 3)		5	11	80	69	22	7	193

See notes at end of table.

Table A1.8d Upper middle income - deaths from selected causes, by age, 2000 (thousands)

Sex	Both sexes							
Age group	0-27 days	1-59 mos	5-14 yrs	15-29 yrs	30-49 yrs	50-69 yrs	70+ yrs	Total
All causes	661	810	225	871	2,072	4,730	7,524	16,893
I. Communicable, maternal, perinatal and nutritional conditions	567	546	57	138	334	287	394	2,324
A. Infectious and parasitic diseases	37	217	38	92	270	193	130	978
1. Tuberculosis		2	1	15	62	90	60	229
2. STDs excluding HIV	6	5	1	1	1	1	1	16
3. HIV/AIDS		33	2	38	153	33	1	261
4. Diarrhoeal diseases	9	97	14	14	15	16	24	189
5. Childhood-cluster diseases	4	11	4	1	1	1	1	21
a. Whooping cough		5						6
b. Diphtheria								
c. Measles		5	3					9
d. Tetanus	3				1	1	1	6
6. Meningitis	1	31	5	6	6	5	4	57
10. Parasitic and vector diseases		18	7	6	7	9	7	55
Other I.A. (7-9, 11, 12)	17	20	5	12	25	38	33	150
B. Respiratory infections	37	254	14	21	38	80	230	674
C. Maternal conditions				18	18			36
D. Neonatal conditions	493	45						538
1. Preterm birth complications	219	23						241
2. Birth asphyxia and birth trauma	182	8						190
3. Neonatal sepsis and infections	43							43
4. Other neonatal conditions	49	15						64
E. Nutritional deficiencies		30	5	7	9	13	34	98
II. Noncommunicable diseases	79	173	70	255	1,176	4,100	6,913	12,766
A. Malignant neoplasms		10	22	60	432	1,205	1,032	2,761
C. Diabetes mellitus		1	1	6	30	142	165	345
E. Mental and behavioral disorders			1	12	37	28	14	92
1. Unipolar depressive disorders								
2. Bipolar disorder								
3. Schizophrenia				1	6	5	4	17
Other II.E. (4-11)			1	11	31	23	9	75
F. Neurological conditions		10	8	21	22	27	84	172
H. Cardiovascular diseases	7	22	12	76	407	1,892	3,902	6,318
3. Ischaemic heart disease		2	1	20	157	675	1,303	2,159
4. Stroke	7	5	3	20	135	828	1,776	2,774
Other II.H. (1, 2, 5, 6)		15	7	37	114	388	824	1,385
I. Respiratory diseases		18	4	14	55	436	1,301	1,828
N. Congenital anomalies	70	77	10	11	5	3	3	180
Other II. (B, D, G, J, K, L, M, O)	1	35	13	54	186	367	412	1,069
III. Injuries	15	91	98	478	562	343	216	1,803
A. Unintentional injuries	13	88	87	277	356	226	149	1,197
1. Road injury	1	14	22	118	142	73	33	402
Other III. A. (2-7)	12	75	66	159	213	153	117	795
B. Intentional injuries	2	3	11	201	206	117	67	606
1. Self-harm			5	92	110	88	59	353
Other III.B. (2, 3)	2	3	6	109	97	29	7	253

See notes at end of table.

Table A1.8e High income - deaths from selected causes, by age, 2000 (thousands)

Sex	Both sexes							
Age group	0-27 days	1-59 mos	5-14 yrs	15-29 yrs	30-49 yrs	50-69 yrs	70+ yrs	Total
All causes	51	41	23	141	545	1,914	5,775	8,490
I. Communicable, maternal, perinatal and nutritional conditions	36	11	2	9	40	69	400	567
A. Infectious and parasitic diseases	4	4	1	7	31	36	83	164
1. Tuberculosis					2	5	11	18
2. STDs excluding HIV								1
3. HIV/AIDS				4	19	5		28
4. Diarrhoeal diseases		1				1	5	7
5. Childhood-cluster diseases								
a. Whooping cough								
b. Diphtheria								
c. Measles								
d. Tetanus								
6. Meningitis		1			1	1	1	5
10. Parasitic and vector diseases								1
Other I.A. (7-9, 11, 12)	3	1		1	9	25	64	104
B. Respiratory infections		3	1	2	7	31	302	346
C. Maternal conditions				1	1			1
D. Neonatal conditions	32	4						35
1. Preterm birth complications	20	3						22
2. Birth asphyxia and birth trauma	6	1						7
3. Neonatal sepsis and infections	3							3
4. Other neonatal conditions	3							3
E. Nutritional deficiencies					1	2	16	19
II. Noncommunicable diseases	15	23	11	43	371	1,730	5,218	7,410
A. Malignant neoplasms		2	4	12	144	777	1,254	2,193
C. Diabetes mellitus				1	9	52	149	211
E. Mental and behavioral disorders				6	23	19	17	64
1. Unipolar depressive disorders							2	3
2. Bipolar disorder								
3. Schizophrenia						1	1	3
Other II.E. (4-11)				6	22	17	13	58
F. Neurological conditions		3	2	4	12	36	271	327
H. Cardiovascular diseases		3	2	10	109	587	2,683	3,394
3. Ischaemic heart disease				2	49	320	1,183	1,554
4. Stroke		1		2	24	131	739	897
Other II.H. (1, 2, 5, 6)		2	1	6	36	137	761	943
I. Respiratory diseases		1	1	2	10	84	374	472
N. Congenital anomalies	14	11	1	2	3	4	4	39
Other II. (B, D, G, J, K, L, M, O)		3	2	6	61	172	467	712
III. Injuries		7	10	89	135	115	156	513
A. Unintentional injuries		7	9	57	74	69	131	346
1. Road injury		2	5	42	40	29	22	140
Other III. A. (2-7)		4	4	15	33	40	109	206
B. Intentional injuries		1	1	32	61	46	25	167
1. Self-harm			1	22	51	42	23	139
Other III.B. (2, 3)		1	1	10	11	4	1	28

See notes at end of table.

Data from reference 10.

Table A1.8 notes:

1. A blank cell indicates that fewer than 500 deaths are attributable to the specific cause.
2. The number in parenthesis in the 'other' category refer to specific conditions in the expanded version of this table appearing in WHO (2013), reference 10.
3. Conditions in Other I.A include encephalitis, acute hepatitis B, acute hepatitis C, intestinal nematode infections, other infectious diseases.
4. Conditions in Other II.E include alcohol use disorders, drug use disorders, anxiety disorders, eating disorders, pervasive developmental disorders, childhood behavioral disorders, idiopathic intellectual disability, and other mental and behavioral disorders.
5. Conditions in Other II.H include rheumatic heart disease, hypertensive heart disease, cardiomyopathy, myocarditis, endocarditis, other circulatory diseases.
6. Conditions in Other II include other neoplasms, endocrine, blood, and immune disorders, sense organ disorders, digestive disorders, genitourinary diseases, skin disorders, musculoskeletal diseases, oral conditions.
7. Conditions in Other III.A include poisonings, falls, fire, heat, and hot substances, drowning, exposure to forces of nature, and other unintentional injuries.
8. Conditions in Other III.B include interpersonal violence, collective violence and legal intervention.

Table A1.9a **World - deaths from selected causes, by age, 2011 (thousands)**

Sex	Both Sexes							
Age group	0-27 days	1-59 mos	5-14 yrs	15-29 yrs	30-49 yrs	50-69 yrs	70+ yrs	Total
All causes	2,952	3,989	1,397	2,962	6,123	13,414	23,754	54,591
I. Communicable, maternal, perinatal and nutritional conditions	2,657	3,107	777	933	1,902	1,589	2,426	13,392
A. Infectious and parasitic diseases	194	1,730	607	637	1,547	1,135	1,021	6,871
1. Tuberculosis		12	5	61	254	391	252	976
2. STDs excluding HIV	44	34	6	2	3	2	2	94
3. HIV/AIDS	1	117	100	239	939	207	8	1,612
4. Diarrhoeal diseases	53	592	229	150	150	257	462	1,893
5. Childhood-cluster diseases	65	214	37	6	3	4	2	331
a. Whooping cough	4	80	3	1				89
b. Diphtheria		1	1					3
c. Measles		131	30	3	1	1		167
d. Tetanus	61	1	3	2	2	3	2	73
6. Meningitis	9	143	68	59	46	46	35	405
10. Parasitic and vector diseases		501	103	45	47	44	26	767
Other I.A. (7-9, 11, 12)	22	118	59	73	105	184	232	794
B. Respiratory infections	323	893	110	105	158	377	1,240	3,206
C. Maternal conditions				139	139			279
D. Neonatal conditions	2,140	280						2,420
1. Preterm birth complications	1,006	168						1,174
2. Birth asphyxia and birth trauma	707	79						785
3. Neonatal sepsis and infections	317							317
4. Other neonatal conditions	111	34						145
E. Nutritional deficiencies		204	60	52	58	77	164	616
II. Noncommunicable diseases	282	570	316	813	2,966	10,846	20,447	36,241
A. Malignant neoplasms		36	47	147	918	3,249	3,470	7,869
C. Diabetes mellitus	2	5	6	22	103	510	743	1,391
E. Mental and behavioral disorders			3	30	76	85	44	238
1. Unipolar depressive disorders						1	3	4
2. Bipolar disorder								1
3. Schizophrenia				1	6	6	6	20
Other II.E. (4-11)			3	28	70	77	35	214
F. Neurological conditions		52	58	102	111	185	888	1,396
H. Cardiovascular diseases	11	54	41	211	970	4,421	10,866	16,574
3. Ischaemic heart disease		10	7	70	425	1,982	4,527	7,022
4. Stroke	11	15	12	55	292	1,658	4,198	6,241
Other II.H. (1, 2, 5, 6)		30	21	85	254	781	2,141	3,311
I. Respiratory diseases		53	16	44	149	1,027	2,588	3,877
N. Congenital anomalies	266	241	31	27	15	16	20	615
Other II. (B, D, G, J, K, L, M, O)	3	129	114	230	623	1,353	1,828	4,280
III. Injuries	13	311	304	1,216	1,256	978	881	4,959
A. Unintentional injuries	11	297	262	719	809	736	759	3,594
1. Road injury	1	51	53	349	387	285	133	1,260
Other III. A. (2-7)	11	246	209	370	422	451	626	2,333
B. Intentional injuries	2	14	42	497	446	243	122	1,365
1. Selfharm			15	251	246	178	104	795
Other III.B. (2, 3)	2	14	27	245	200	64	17	570

See notes at end of table.

Table A1.9b Low income - deaths from selected causes, by age, 2011 (thousands)

Sex	Both sexes							
Age group	0-27 days	1-59 mos	5-14 yrs	15-29 yrs	30-49 yrs	50-69 yrs	70+ yrs	Total
All causes	849	1,544	548	735	1,116	1,345	1,547	7,685
I. Communicable, maternal, perinatal and nutritional conditions	796	1,278	353	355	621	376	389	4,168
A. Infectious and parasitic diseases	72	755	278	234	492	262	162	2,255
1. Tuberculosis		4	1	18	72	107	62	264
2. STDs excluding HIV	23	18	4	1	1			47
3. HIV/AIDS	1	57	60	90	312	53	2	575
4. Diarrhoeal diseases	13	235	99	58	49	46	60	560
5. Childhood-cluster diseases	29	82	14	1	1			128
a. Whooping cough	2	31	1					34
b. Diphtheria		1						1
c. Measles		51	12	1				64
d. Tetanus	28							29
6. Meningitis	3	51	29	24	17	15	9	148
10. Parasitic and vector diseases		269	49	19	17	13	6	374
Other I.A. (7-9, 11, 12)	3	39	22	23	24	27	22	159
B. Respiratory infections	77	337	39	39	47	81	178	800
C. Maternal conditions				54	54			107
D. Neonatal conditions	646	75						722
1. Preterm birth complications	307	41						348
2. Birth asphyxia and birth trauma	222	23						245
3. Neonatal sepsis and infections	97							97
4. Other neonatal conditions	20	12						32
E. Nutritional deficiencies		110	36	28	28	32	50	284
II. Noncommunicable diseases	52	164	105	163	349	878	1,090	2,802
A. Malignant neoplasms		8	10	23	101	218	111	471
C. Diabetes mellitus		2	2	5	13	54	63	139
E. Mental and behavioral disorders			1	3	4	3	2	13
1. Unipolar depressive disorders								
2. Bipolar disorder								
3. Schizophrenia					1	1		2
Other II.E. (4-11)			1	3	3	2	1	11
F. Neurological conditions		16	21	28	22	24	34	145
H. Cardiovascular diseases	1	15	12	30	92	340	560	1,051
3. Ischaemic heart disease		3	2	9	32	128	205	379
4. Stroke	1	4	4	8	33	147	256	455
Other II.H. (1, 2, 5, 6)		8	6	13	27	65	98	218
I. Respiratory diseases		18	6	12	20	84	166	307
N. Congenital anomalies	50	57	10	5	2	2	5	131
Other II. (B, D, G, J, K, L, M, O)								545
III. Injuries	1	102	90	217	146	91	68	715
A. Unintentional injuries	1	98	76	131	96	70	56	528
1. Road injury		14	9	45	36	27	14	146
Other III. A. (2-7)	1	84	66	86	60	42	43	383
B. Intentional injuries		5	14	85	49	22	12	187
1. Self-harm			5	34	21	15	10	86
Other III.B. (2, 3)		5	9	51	28	6	1	101

See notes at end of table.

Table A1.9c Lower middle income - deaths from selected causes, by age, 2011 (thousands)

Sex	Both sexes							
Age group	0-27 days	1-59 mos	5-14 yrs	15-29 yrs	30-49 yrs	50-69 yrs	70+ yrs	Total
All causes	1,700	2,056	697	1,378	2,682	5,216	6,383	20,111
I. Communicable, maternal, perinatal and nutritional conditions	1,543	1,610	382	454	867	844	1,101	6,802
A. Infectious and parasitic diseases	99	888	299	313	696	627	610	3,531
1. Tuberculosis		7	4	35	146	224	143	558
2. STDs excluding HIV	18	14	2	1	1	1	1	38
3. HIV/AIDS	1	49	32	94	347	74	2	598
4. Diarrhoeal diseases	35	322	114	83	91	194	353	1,191
5. Childhood-cluster diseases	34	128	22	4	3	3	2	196
a. Whooping cough	2	47	2	1				53
b. Diphtheria		1	1					1
c. Measles		79	18	2	1	1		101
d. Tetanus	32		2	1	2	2	2	41
6. Meningitis	6	80	35	30	25	25	20	220
10. Parasitic and vector diseases		217	51	23	26	24	14	355
Other I.A. (7-9, 11, 12)	5	70	38	42	57	83	77	374
B. Respiratory infections	228	468	64	48	76	186	435	1,506
C. Maternal conditions				74	73			148
D. Neonatal conditions	1,216	176						1,392
1. Preterm birth complications	570	112						682
2. Birth asphyxia and birth trauma	406	48						455
3. Neonatal sepsis and infections	192							192
4. Other neonatal conditions	47	16						63
E. Nutritional deficiencies		78	20	19	22	31	56	225
II. Noncommunicable diseases	154	293	155	388	1,293	3,989	4,954	11,225
A. Malignant neoplasms		16	20	62	311	754	429	1,593
C. Diabetes mellitus	1	3	3	11	52	216	226	513
E. Mental and behavioral disorders			1	6	13	13	6	39
1. Unipolar depressive disorders								
2. Bipolar disorder								
3. Schizophrenia					1	1	1	3
Other II.E. (4-11)			1	6	12	12	5	36
F. Neurological conditions		27	28	52	57	71	87	322
H. Cardiovascular diseases	4	27	20	105	445	1,732	2,741	5,075
3. Ischaemic heart disease		6	4	38	211	832	1,253	2,345
4. Stroke	4	8	6	27	121	612	1,104	1,882
Other II.H. (1, 2, 5, 6)		13	10	40	113	287	383	847
I. Respiratory diseases		27	8	21	90	596	897	1,639
N. Congenital anomalies	148	130	14	10	4	4	7	317
Other II. (B, D, G, J, K, L, M, O)	1	62	60	120	319	603	561	1,727
III. Injuries	3	154	160	537	521	382	327	2,085
A. Unintentional injuries	3	148	140	310	332	305	300	1,537
1. Road injury		25	27	138	143	102	45	481
Other III. A. (2-7)	3	122	114	172	189	203	255	1,056
B. Intentional injuries		6	20	227	190	78	27	548
1. Self-harm			8	144	116	52	19	338
Other III.B. (2, 3)		6	12	83	74	26	8	210

See notes at end of table.

Table A1.9d Upper middle income - deaths from selected causes, by age, 2011 (thousands)

Sex	Both sexes							
Age group	0-27 days	1-59 mos	5-14 yrs	15-29 yrs	30-49 yrs	50-69 yrs	70+ yrs	Total
All causes	362	354	135	729	1,871	4,906	9,222	17,578
I. Communicable, maternal, perinatal and nutritional conditions	291	212	40	116	380	287	476	1,803
A. Infectious and parasitic diseases	20	85	29	85	334	196	115	864
1. Tuberculosis		1		9	34	58	39	141
2. STDs excluding HIV	3	2			1	1	1	8
3. HIV/AIDS		11	8	51	264	73	3	412
4. Diarrhoeal diseases	4	34	11	10	10	14	21	104
5. Childhood-cluster diseases	1	3						6
a. Whooping cough		2						2
b. Diphtheria								
c. Measles		1						2
d. Tetanus	1							2
6. Meningitis	1	11	3	4	4	5	5	32
10. Parasitic and vector diseases		14	3	3	4	7	6	37
Other I.A. (7-9, 11, 12)	10	8	3	7	17	38	40	123
B. Respiratory infections	17	86	6	16	28	79	321	552
C. Maternal conditions				10	12			22
D. Neonatal conditions	254	26						280
1. Preterm birth complications	114	13						127
2. Birth asphyxia and birth trauma	74	7						81
3. Neonatal sepsis and infections	26							26
4. Other neonatal conditions	40	6						46
E. Nutritional deficiencies		16	4	6	7	12	40	85
II. Noncommunicable diseases	63	96	47	221	1,019	4,250	8,474	14,170
A. Malignant neoplasms		9	15	51	393	1,463	1,412	3,344
C. Diabetes mellitus	1		1	5	30	190	285	512
E. Mental and behavioral disorders			1	12	32	37	18	101
1. Unipolar depressive disorders								1
2. Bipolar disorder								
3. Schizophrenia				1	3	4	3	11
Other II.E. (4-11)			1	11	29	33	15	88
F. Neurological conditions		6	7	18	20	37	143	231
H. Cardiovascular diseases	5	10	7	67	347	1,861	5,038	7,335
3. Ischaemic heart disease		1	1	22	145	766	2,063	2,998
4. Stroke	5	2	2	19	121	800	2,205	3,154
Other II.H. (1, 2, 5, 6)		7	4	26	82	296	769	1,183
I. Respiratory diseases		7	2	10	30	253	1,057	1,359
N. Congenital anomalies	56	45	5	11	6	5	5	133
Other II. (B, D, G, J, K, L, M, O)	1	17	10	47	160	404	517	1,155
III. Injuries	7	46	48	391	472	368	272	1,605
A. Unintentional injuries	6	44	41	238	324	281	218	1,153
1. Road injury		11	15	141	182	131	56	537
Other III. A. (2-7)	6	33	26	97	142	150	162	616
B. Intentional injuries	1	2	7	153	148	87	54	452
1. Self-harm			2	53	59	59	48	220
Other III.B. (2, 3)	1	2	5	101	89	28	6	232

See notes at end of table.

Table A1.9e High income - deaths from selected causes, by age, 2011 (thousands)

Sex	Both sexes							
Age group	0-27 days	1-59 mos	5-14 yrs	15-29 yrs	30-49 yrs	50-69 yrs	70+ yrs	Total
All causes	41	34	17	120	455	1,948	6,602	9,217
I. Communicable, maternal, perinatal and nutritional conditions	27	7	2	8	33	82	459	618
A. Infectious and parasitic diseases	3	2	1	5	25	49	134	220
1. Tuberculosis					1	3	9	13
2. STDs excluding HIV								1
3. HIV/AIDS				3	16	6	1	27
4. Diarrhoeal diseases						3	29	33
5. Childhood-cluster diseases								
a. Whooping cough								
b. Diphtheria								
c. Measles								
d. Tetanus								
6. Meningitis		1				1	1	4
10. Parasitic and vector diseases								1
Other I.A. (7-9, 11, 12)	3	1		1	7	36	94	142
B. Respiratory infections		2	1	2	6	31	306	348
C. Maternal conditions				1	1			2
D. Neonatal conditions	24	3						27
1. Preterm birth complications	15	2						17
2. Birth asphyxia and birth trauma	4	1						4
3. Neonatal sepsis and infections	2							2
4. Other neonatal conditions	3							3
E. Nutritional deficiencies						2	19	21
II. Noncommunicable diseases	13	18	9	41	305	1,729	5,929	8,044
A. Malignant neoplasms		2	3	10	114	814	1,518	2,461
C. Diabetes mellitus				1	8	51	168	228
E. Mental and behavioral disorders				9	27	32	18	86
1. Unipolar depressive disorders							2	3
2. Bipolar disorder								1
3. Schizophrenia						1	2	3
Other II.E. (4-11)				9	27	30	14	79
F. Neurological conditions		2	1	4	12	54	624	697
H. Cardiovascular diseases		2	1	8	86	488	2,528	3,113
3. Ischaemic heart disease				2	36	256	1,006	1,299
4. Stroke				2	17	99	632	751
Other II.H. (1, 2, 5, 6)		1	1	5	32	133	890	1,063
I. Respiratory diseases		1		1	8	93	468	572
N. Congenital anomalies	12	8	1	2	3	5	3	33
Other II. (B, D, G, J, K, L, M, O)		3	2	6	48	193	601	853
III. Injuries	1	9	6	71	116	137	214	554
A. Unintentional injuries	1	7	5	40	57	80	185	376
1. Road injury		2	2	25	26	24	19	98
Other III. A. (2-7)	1	6	3	15	31	56	166	278
B. Intentional injuries		2	1	31	59	56	29	178
1. Self-harm			1	21	50	52	27	151
Other III.B. (2, 3)		2	1	10	9	4	2	27

See notes at end of table.

Data from reference 10.

Table A1.9 notes:

1. A blank cell indicates that fewer than 500 deaths are attributable to the specific cause.
2. The number in parenthesis in the 'other' category refer to specific conditions in the expanded version of this table appearing in WHO (2013), reference 10.
3. Conditions in Other I.A include encephalitis, acute hepatitis B, acute hepatitis C, intestinal nematode infections, other infectious diseases.
4. Conditions in Other II.E include alcohol use disorders, drug use disorders, anxiety disorders, eating disorders, pervasive developmental disorders, childhood behavioral disorders, idiopathic intellectual disability, and other mental and behavioral disorders.
5. Conditions in Other II.H include rheumatic heart disease, hypertensive heart disease, cardiomyopathy, myocarditis, endocarditis, other circulatory diseases.
6. Conditions in Other II include other neoplasms, endocrine, blood, and immune disorders, sense organ disorders, digestive disorders, genitourinary diseases, skin disorders, musculoskeletal diseases, oral conditions.
7. Conditions in Other III.A include poisonings, falls, fire, heat, and hot substances, drowning, exposure to forces of nature, and other unintentional injuries.
8. Conditions in Other III.B include interpersonal violence, collective violence and legal intervention.

Table A1.10

Additional cost-effective clinical interventions for NCDs and injuries

Condition	Intervention	Avoidable burden in low and middle income countries	Cost-effectiveness	Implementation cost (US$ per head of population)	Feasibility of scale-up
Cervical cancer	Screening with HPV DNA test	Single test (at age 35 years) reduces lifetime cancer risk by 25-36%; additional 40% reduction with 2 screenings (at ages 35 and 40 years)	Very cost effective	Cost estimate for a 2-visit HPV DNA screening program conducted 3 times per lifetime at ages 35, 40 and 45 years in 21 LMICs ranges from $0.12 in Viet-nam (Hanoi) to $2.16 in South Africa	Feasible in primary care
Breast cancer	Treatment of stage I disease	4% of global cancer burden	Quite cost effective	> US$ 1	Not feasible in primary care
	Mammography and treatment of all stages	19% of global cancer burden	Quite cost effective	> US$ 1	Not feasible in primary care
Colorectal cancer	Screening at age 50 years and treatment	9% of global cancer burden	Quite cost effective	< US$ 1	Not feasible in primary care
Oral cancer	Early detection and treatment	Not established globally	Not assessed globally	Not assessed globally	Not feasible in primary care
Chronic lung disease	Inhaled corticosteroids and ß -2 agonists	Not established globally	Quite cost effective	< US$ 0.50	Feasible in primary care
Mental health and neurological conditions	Package of "best buys": epilepsy: anti-epileptic drugs; depression: anti-depressants, brief psychotherapy; psycho-sis: antipsychotic drugs, lithium, psychosocial support	Not established globally	500-1000 healthy years of life for every US $1 million invested in package	$US 3-4 for sub-Saharan Africa and SE Asia	Mostly feasible in primary care (hospital-based treatment is less cost-effective)
Chronic pain	Oral morphine	Incremental number of pain-days per year avoid-ed (millions): Chile:0.9 Romania:1.9 Uganda:3.6	Incremental cost per year of pain-free life added ranges from $216-420 in these three LMICs	Chile: $0.06, Uganda: $0.18, Romania: $0.10	Can be delivered in a community setting
Injuries	Basic surgical care	DCP2 estimates that 11% of the global burden of disease can be prevented or treated by surgery	US$212-US$241 per life year gained by surgical services at a community health center; $US 33-94 per life year gained by surgical services at a district hospital	Not assessed globally	Many procedures can be performed at first-referral level health facil-ities; surgical task shifting is under evaluation
	Training of lay first responders (e.g. taxi drivers)	Not established globally; trained lay responders may improve injury outcomes	Not established	Not established	Highly feasible in resource-limited settings

Data on avoidable burden of cervical cancer from screening with HPV DNA tests, and on the cost effectiveness of such screening, are from reference 15. Detailed methods for estimating implementation costs, and individual country results, can be found in reference 16.

The specific interventions included in the package of "best buys" for mental health and neurological conditions, and the cost effectiveness of the package, are from reference 17. The implementation costs of the package are from reference 18.

Data on the incremental number of pain-days per year avoided by use of morphine for chronic pain, and on the cost-effectiveness and implementation costs of this intervention, are from reference 19.

Data on avoidable burden of disease from providing basic surgical care, and on the cost effectiveness of such care, are from reference 20.

All other data from reference 11.

Table A1.10 notes:

1. The avoidable burden in low- and middle-income countries (column 3) assumes 80% intervention coverage in all low- and middle-income countries by 2025, unless otherwise indicated.
2. Very cost effective means cost < GDP per capita per life year gained; quite cost-effective means cost < 3 X GDP per person per life year gained11.
3. The implementation cost for the mental health and neurological package assumes a target coverage of 50% for depression and bipolar disorder and 80% for epilepsy and schizophrenia. The cost includes scaling up population-based alcohol reduction approaches (e.g. taxation, advertising bans) to 30% coverage.
4. Basic surgical care means treatment of bruises, simple cuts requiring suturing, foreign body removal, drainage of abscesses, basic burn treatment, normal deliveries, and simple trauma.
5. For more information on the specific surgical procedures that can be performed at first-referral level health facilities, see reference 12.
6. For more information on surgical task shifting and on training of lay responders to provide first aid in cases of injury, see reference 13.
7. For more information on feasibility of scale-up of basic surgical care, see reference 14.

Table A1.11

GDP and GDP per capita, estimates for 2011 and projections to 2035, by income category

	Estimates	Projections					Annual growth rate
GDP per capita	2011	2015	2020	2025	2030	2035	2011-35
High Income	$42,000	$44,000	$49,000	$53,000	$58,000	$62,000	1.6%
Low Income	$600	$700	$870	$1,000	$1,100	$1,100	2.7%
Lower-Middle	$1,900	$2,200	$2,800	$3,500	$3,800	$4,000	3.1%
Upper-Middle	$7,300	$8,900	$12,000	$15,000	$17,000	$19,000	3.9%
GDP (billions)							
High Income	$46,000	$49,000	$55,000	$62,000	$68,000	$74,000	2.0%
Low Income	$470	$590	$800	$1,100	$1,300	$1,400	4.5%
Lower-Middle	$4,800	$5,900	$8,000	$10,000	$12,000	$13,000	4.3%
Upper-Middle	$18,000	$23,000	$30,000	$39,000	$45,000	$50,000	4.2%

Data from references 1, 9, 21

Data notes:

1. IMF World Economic Outlook April 2013 for GDP projections in real terms 2012-2018. For period 2019-23, annual average from 2012-2018 used. If this average was negative, then a zero growth was assumed. For 2024-26, annual average from 2019-23 was continued, unless it was above 5%, then it was replaced with 5%. For 2027-29, previous annual average used, unless it was 5%, then it was replaced with 3%. For period 2030-35, previous annual average used, unless it was 3%, then it was dropped to 2%.
2. UN World Population Prospects, 2012 Revision for Population Projections, accessed June 26, 2013. Medium variant.
3. 2011 GDP from World Bank, World Development Indicators, accessed June 26, 2013.
4. Countries in the income categories are held constant, based on the World Bank's income classifications as of July 1, 2012.

Table A1.12

Life expectancy losses from smoking, air pollution, and obesity: selected cases

Risk factor	Life expectancy losses	Population	Notes
Smoking	Smokers lose at least 10 years of life expectancy compared to nonsmokers. Cessation can reduce the risks greatly. Cessation before the age of 40, for example, is estimated to decrease the risk of death associated with continued smoking by about 90%.	U.S. adults	Hazard rates adjusted for age, educational levels, adiposity, and alcohol consumption
Air pollution	Comparing cities in China with good air quality versus moderately polluted cities, the authors find losses in life expectancy of almost 4 years for women at age 65, and almost 1 year for men at that age	Older Chinese adults	Controlled for socio-demographic factors.
Obesity	For both sexes, at age 60, life expectancy losses of 1-2 years for BMI 27-30; 2-4 years for BMI 30-35; and 8-10 years for BMI 40-50 (measured in kg/m2)	57 prospective studies of 900,000 adults	Controlled for age, sex, smoking status, and study

Data for smoking from reference 22.

Data for air pollution from reference 23.

Data for obesity from reference 24.

Table A1.13

Private and public shares of health expenditure, selected countries, 2010

	Share of total spending on health					
	a	b	c	d	e	f
	Public spending as % of THE	Private spending as % of THE	PVI as % of PvtHE	PVI as % of THE	OOP as % of THE	Other Private Spending as % of THE
Liberia	19%	81%	1%	1%		
India	28%	72%	5%	3%	62%	7%
Singapore	31%	69%	10%	7%		
Indonesia	36%	64%	4%	2%		
Philippines	36%	64%	11%	7%		
USA	48%	52%	64%	33%	12%	7%
Mexico (2009)	48%	52%	8%	4%	48%	0%
Tunisia	54%	46%	10%	5%	40%	1%
Switzerland	65%	35%	23%	9%	25%	1%
France	77%	23%	59%	14%	7%	2%
Sweden	81%	19%	1%	0%*	17%	2%
United Kingdom	83%	17%	19%	3%	9%	5%

Data from reference 25.

Notes:

1. Definitions: THE: total health expenditure; PVI: private voluntary insurance; PvtHE: private sector expenditure on health; OOP: out-of-pocket spending
2. There is a very small amount of PVI in Sweden, but the amount is close to zero, so we have rounded down.
3. All data refer to 2010 except for Mexico which refers to 2009. Public and private spending add up to 100%.
4. PVI and OOP do not add up to 100% because private health spending has other components, such as spending on health by private firms and NGOs.
5. Empty cells are due to data gaps.
6. Calculations:
   d=(c/100)*b
   f=b-(d+e)

Table A1.14

Heath expenditures per capita in high-income regions, 2010

			Public sector health expenditure		Health expenditure ($2011)	
	GDP per capita ($2010)	Health Expenditure (% of GDP 2010)	% of total health expenditure (2010)	% of GDP (2010)	Total	Public
Australia	46,200	8.7	68.0	6.0	4019	2733
Austria	47,030	11.0	77.5	8.5	5173	4009
Belgium	45,840	10.7	74.7	8.0	4905	3664
Canada	43,250	11.3	70.5	8.0	4887	3445
Czech Republic	17,890	7.9	83.7	6.6	1413	1183
Denmark	59,400	11.4	85.1	9.7	6772	5763
Estonia	14,460	6.0	78.7	4.7	867	682
Finland	47,570	9.0	75.1	6.8	4281	3215
France	42,370	11.9	77.8	9.3	5042	3923
Germany	43,070	11.6	77.1	8.9	4996	3852
Greece	26,950	10.2	59.4	6.1	2749	1633
Hungary	12,860	7.3	69.4	5.1	939	652
Ireland	41,820	9.2	69.2	6.4	3846	2661
Israel	27,180	7.6	60.3	4.6	2066	1246
Italy	35,700	9.5	77.6	7.4	3392	2632
Japan	41,850	9.5	82.5	7.8	3976	3280
Netherlands	49,030	11.9	79.2	9.4	5835	4621
New Zealand	28,770	10.1	83.2	8.4	2906	2418
Norway	87,350	9.5	83.9	8.0	8298	6962
Poland	12,440	7.5	72.6	5.4	933	677
Portugal	21,870	11.0	68.1	7.5	2406	1638
Slovak Republic	16,840	8.8	65.9	5.8	1482	977
Slovenia	23,900	9.4	73.7	6.9	2247	1656
Spain	31,750	9.5	73.8	7.0	3016	2226
Sweden	50,100	9.6	81.1	7.8	4810	3901
Switzerland	71,520	11.5	59.0	6.8	8225	4853
United Kingdom	38,200	9.6	83.9	8.1	3667	3077
United States	47,340	17.9	53.1	9.5	8474	4500
Euro Area	38,565	10.8	76.2	8.2	4165	3162

Data from reference 21.

Note: Korea and Iceland were not included due to insufficient data

Table A1.15

Examples of how international collective action can support national health investments

	Achieving a grand convergence	Curbing NCDs and injuries	UHC and avoiding unproductive cost escalation
Leadership and stewardship	▪ Advocacy for girls in India and China who are disproportionately affected by infectious, newborn, and child health conditions	▪ Advocacy for the WHO's "4 by 4" approach ▪ Advocacy and technical assistance for taxation, trade, and subsidy policies that can curb NCDs and injuries (e.g. tobacco taxation)	▪ Advocacy for progressive universalist pathways towards UHC
Provision of global public goods	▪ Discovery, development, and delivery of new tools for infections and RMNCH conditions, including implementation research ▪ Pandemic preparedness ▪ Market shaping (e.g. to reduce prices of diagnostics, drugs, and vaccines)	▪ Research on the population burden of risk factors and diseases ▪ Expanding the menu of cost-effective population-based and clinical interventions ▪ Surveillance on implementing the WHO Framework Convention on Tobacco Control, including the six "MPOWER measures" to support country-level implementation	▪ Population, policy, and implementation research (PPIR) ▪ Knowledge sharing
Managing externalities	▪ Action on global antibiotic resistance and on counterfeit and substandard medicines	▪ Regional collaboration to prevent tobacco smuggling	▪ Support for UHC to reduce the negative spillovers of poor health from individuals to the community and from poor countries to rich countries
Direct country assistance	▪ DAH to low-income and selected lower middle-income countries ▪ Modernize supply chain: use digital tools for analysis, measurement, and surveillance	▪ DAH to the lowest income countries to support selected NCD and injury interventions (e.g. HPV and hepatitis B vaccines)	▪ Technical cooperation and DAH to support UHC (e.g. Global Fund support for community-based health insurance in Rwanda)

Data on the population burden of risk factors and disease from reference 26.

Data on support for UHC to reduce the negative spillovers of poor health from reference 27.

Notes:

1. The 4 by 4 approach refers to the WHO's framework for tackling 4 diseases (cardiovascular disease, diabetes, cancer, chronic respiratory disease) that have 4 shared risk factors (diet, smoking, alcohol, lack of exercise)
2. The 6 MPOWER measures are: Monitoring tobacco use and prevention policies, Protecting people from tobacco smoke, Offering help to quit tobacco use, Warning about the dangers of tobacco, Enforcing bans on tobacco advertising, promotion, and sponsorship, and Raising taxes on tobacco

Figure A1.1

Disease burden by cause in 1990—estimates from WDR 1993 and GBD 2010

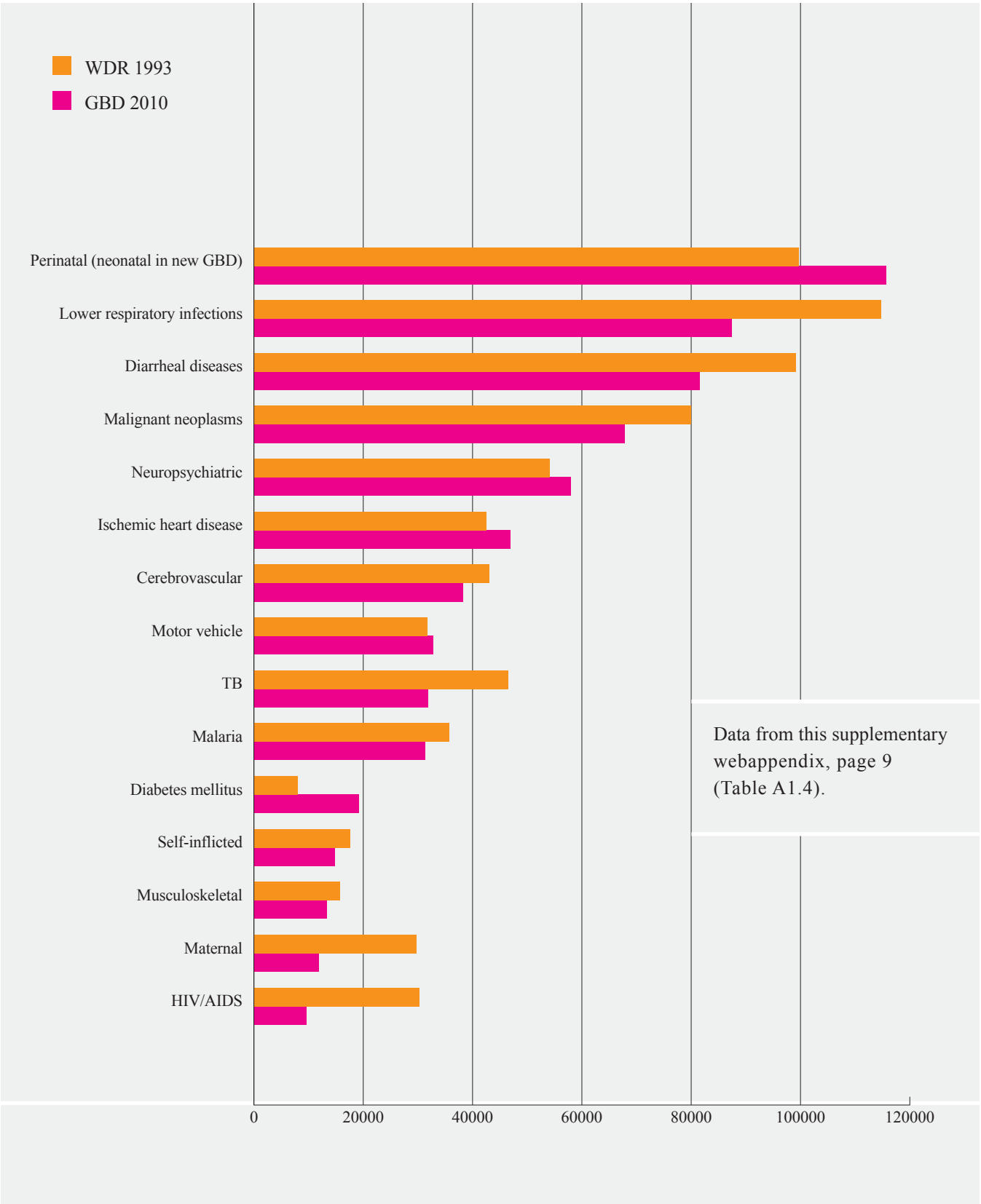
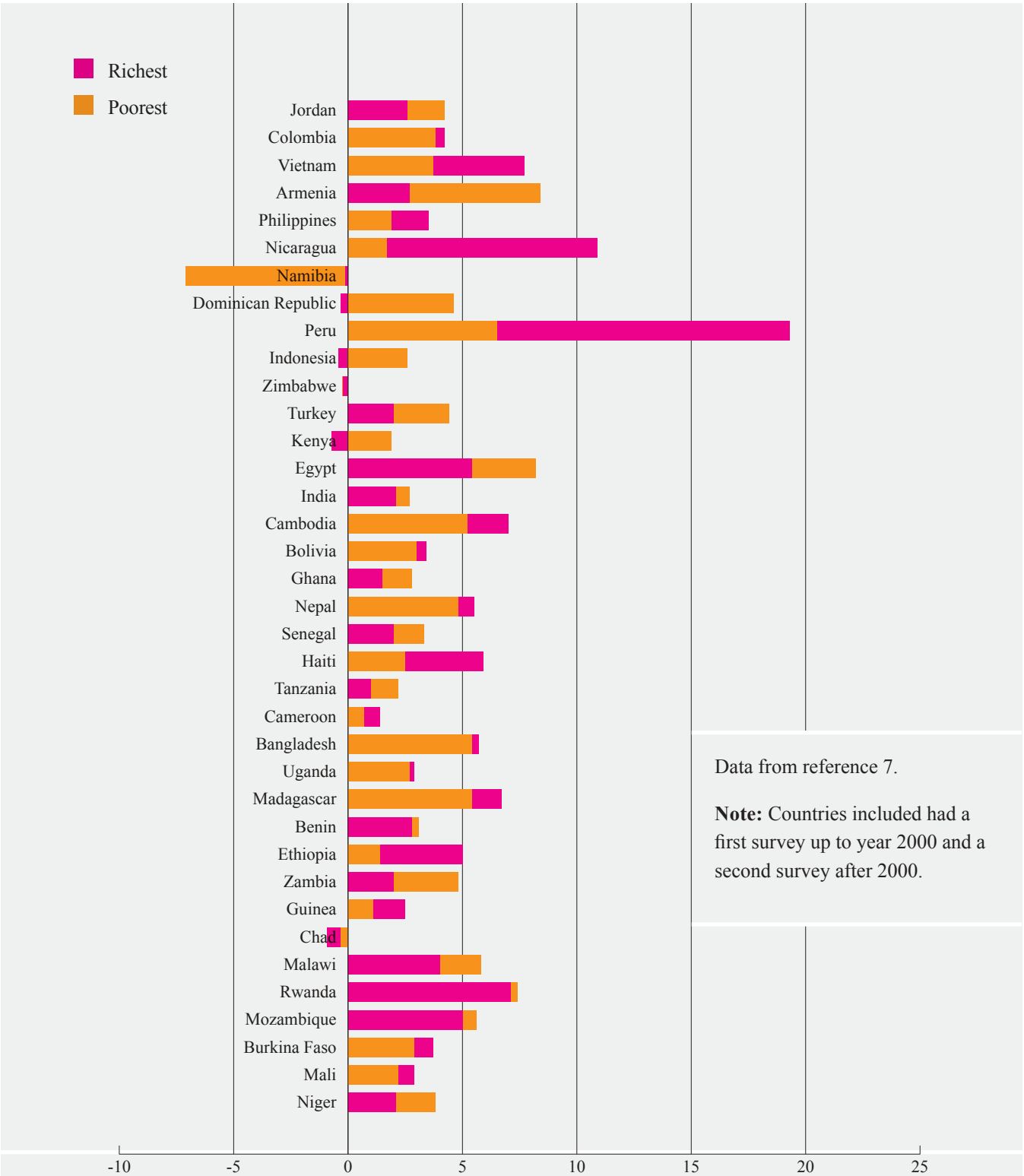


Figure A1.2

Annual rates of reduction in under-5 mortality, by income quintile, selected countries

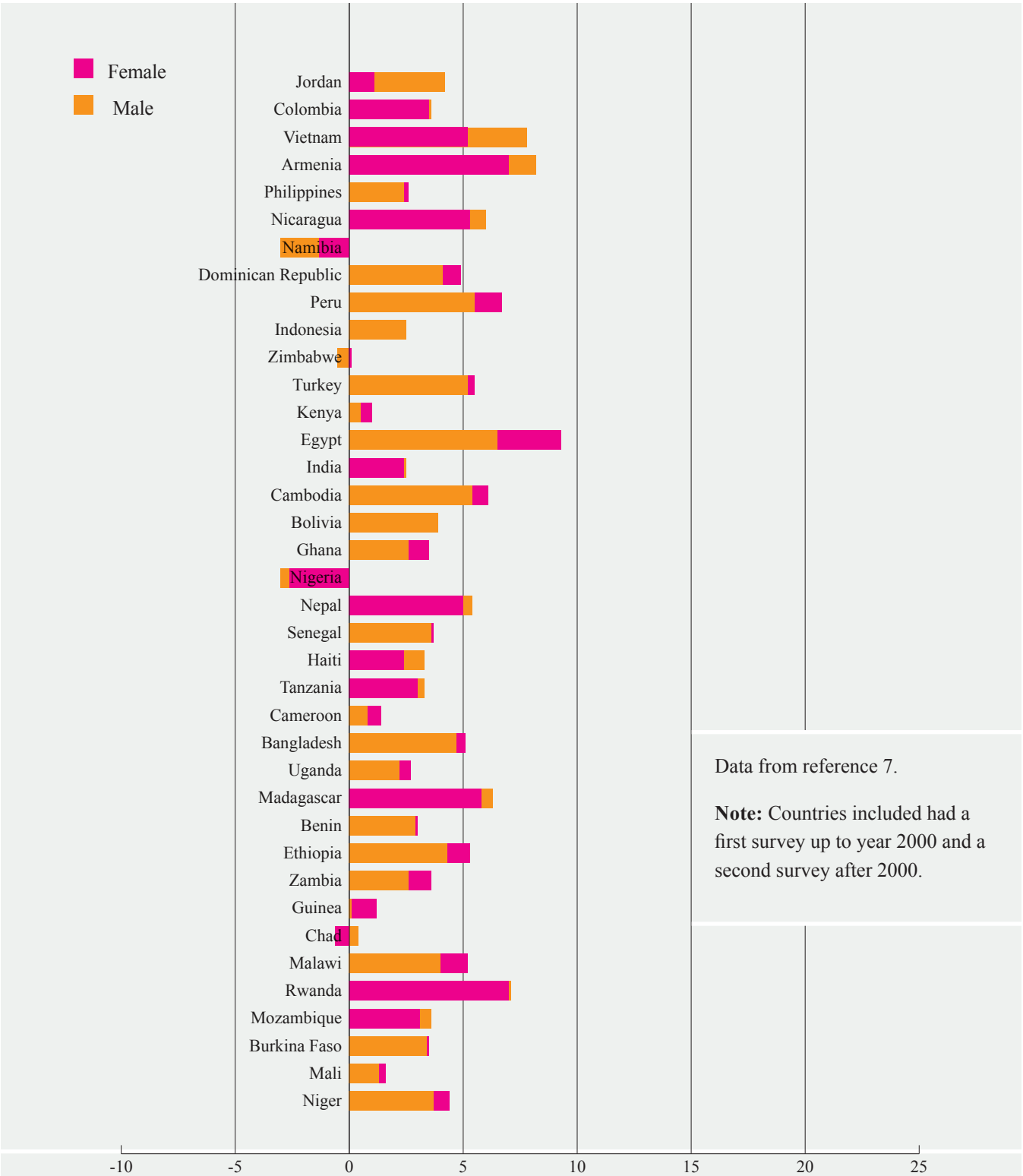


Data from reference 7.

Note: Countries included had a first survey up to year 2000 and a second survey after 2000.

Figure A1.3

Annual rates of reduction in under-5 mortality for females and males, selected countries

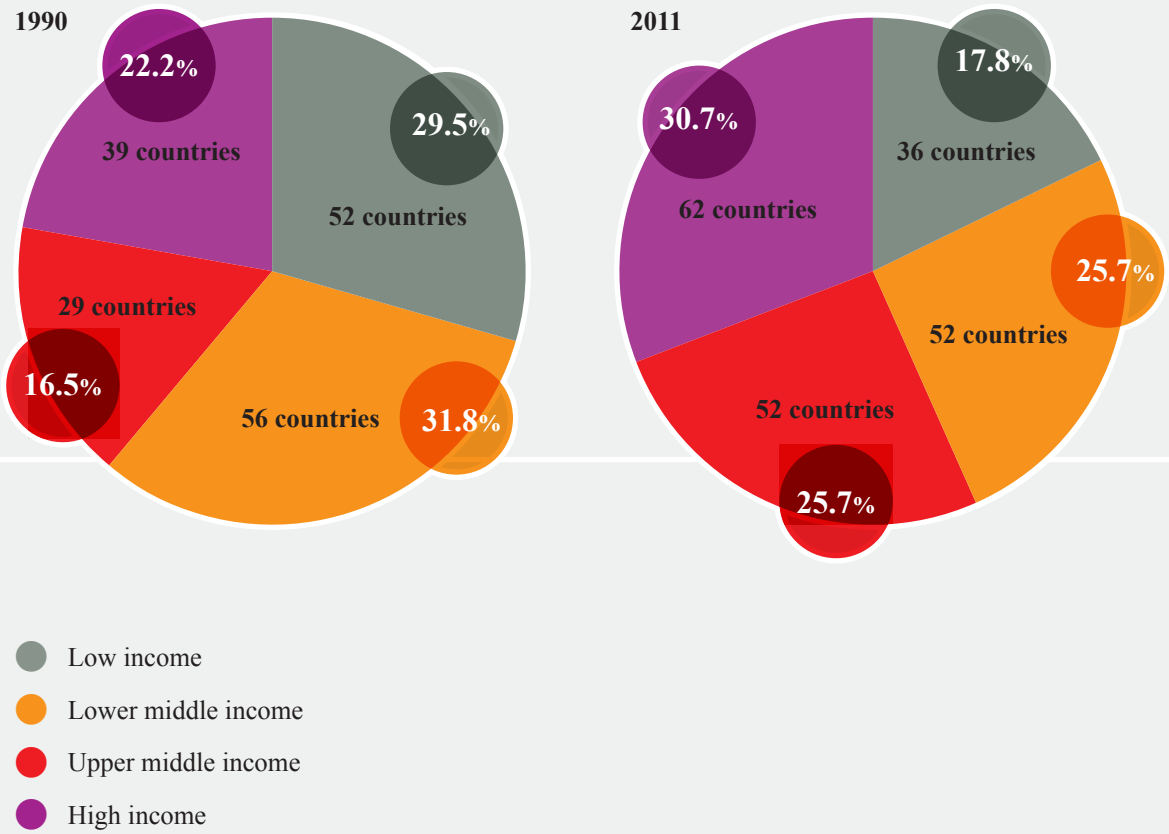


Data from reference 7.

Note: Countries included had a first survey up to year 2000 and a second survey after 2000.

Figure A1.4

The distribution of countries by income level, 1990 and 2011



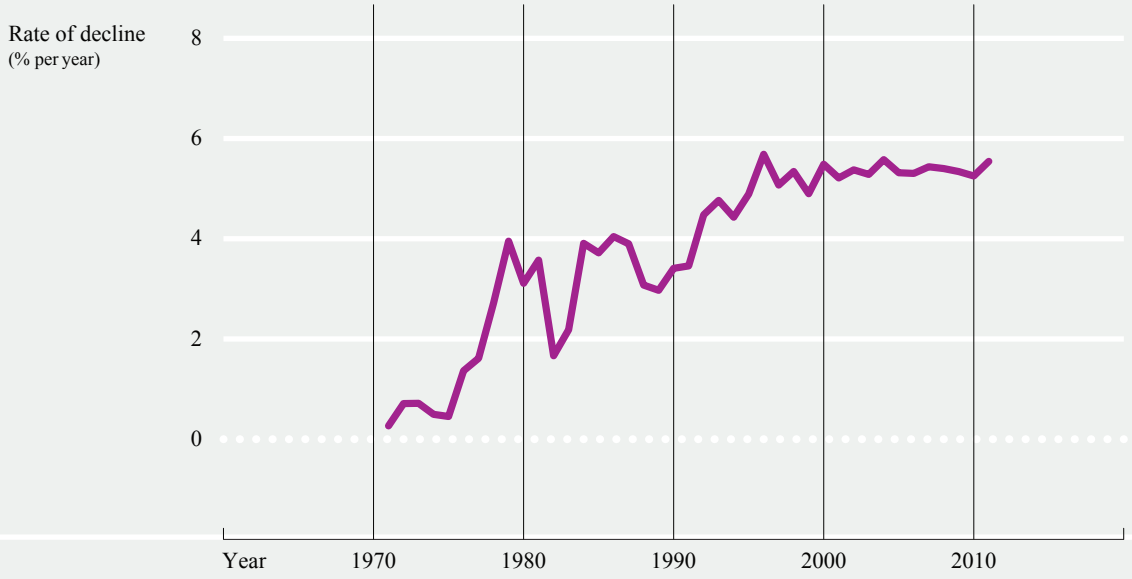
Data from reference 21.

Note: The World Bank did not classify all countries into income categories. Countries that were unclassified in either 1990 or 2011 were removed from the calculations. Data refer to classifications based on 1990 and 2011 GNI per capita that were the basis for the World Bank's lending classifications for its FY92 and FY13, respectively.

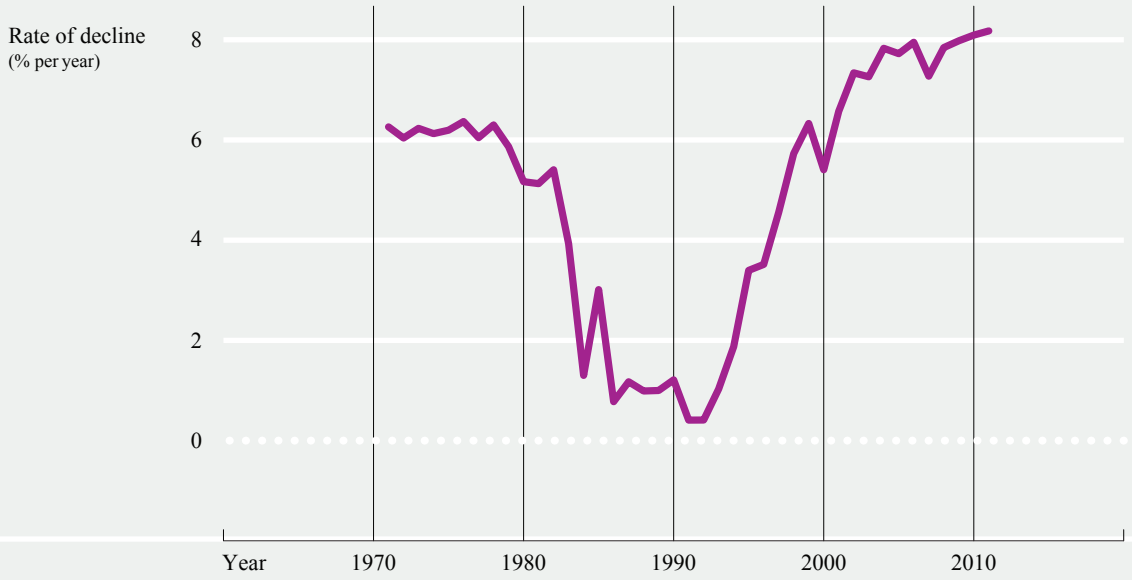
Figure A1.5

The rate of decline in under-5 mortality, selected countries, 1970-2011

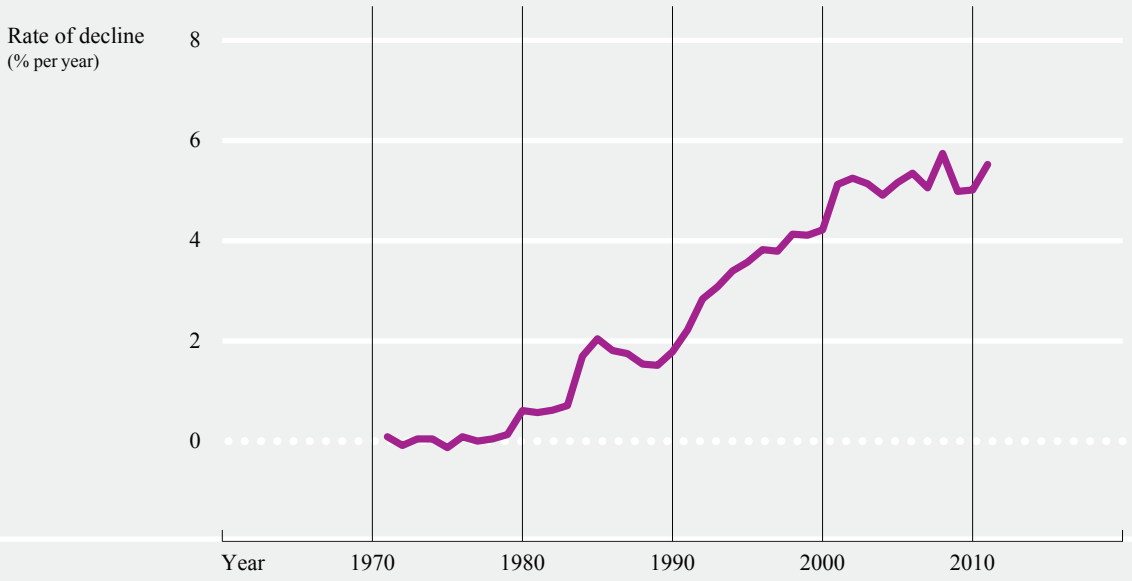
Panel A – Bangladesh



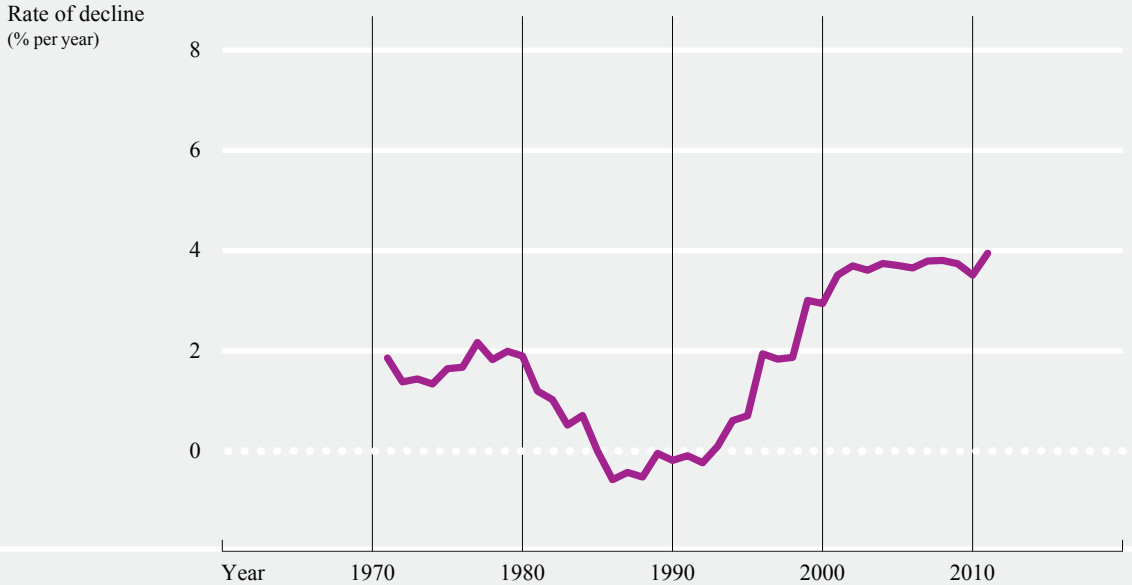
Panel B – China



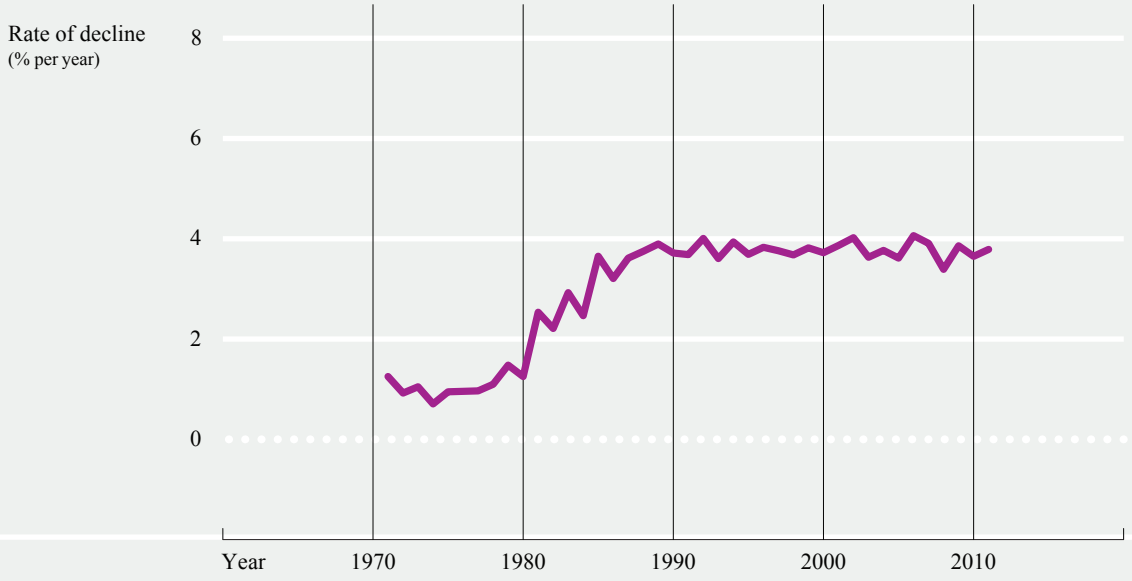
Panel C – Ethiopia



Panel D – Nigeria



Panel E – Philippines



Panel F – Turkey

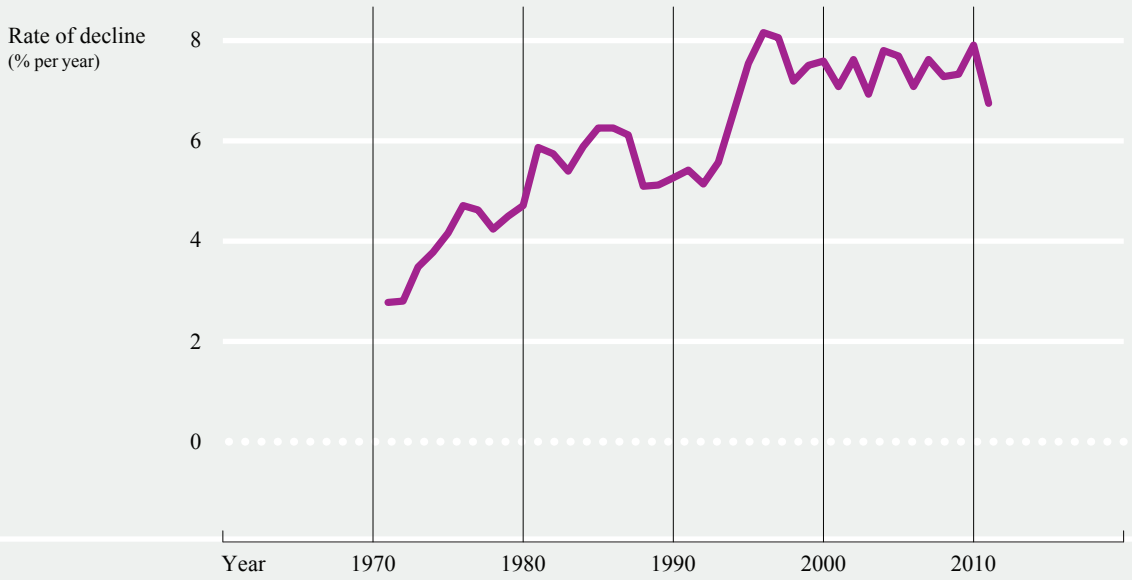
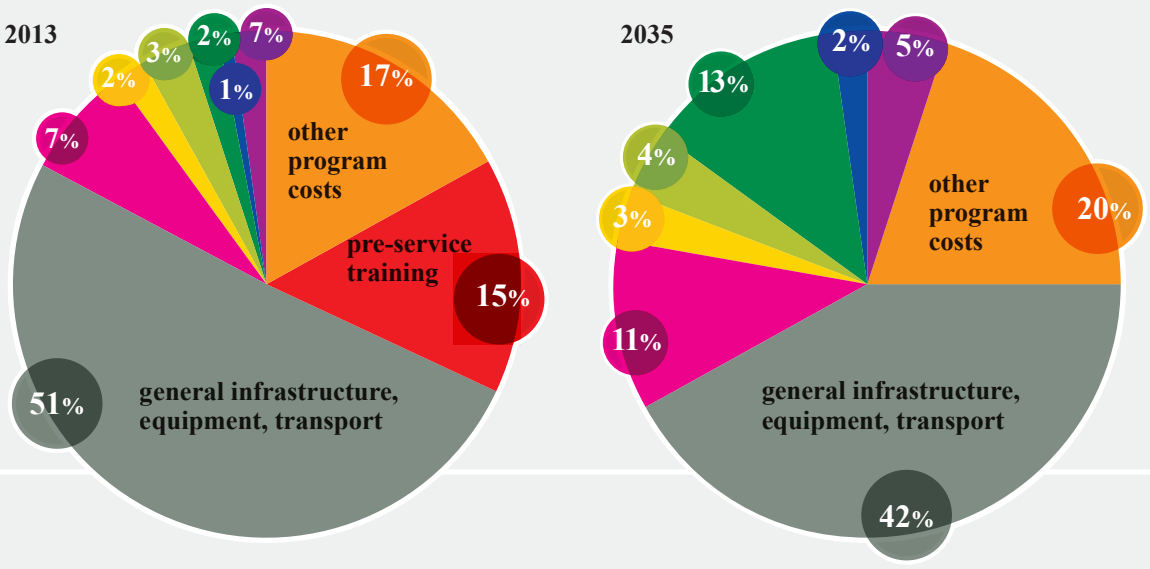


Figure A1.6

Breakdown of health systems strengthening costs in low-income countries, 2013 and 2035



- +Program administration human resource costs
- Program infrastructure
- Logistics
- Health information systems
- %Governance, accreditation, regulation
- Health financing

Data from reference 21.

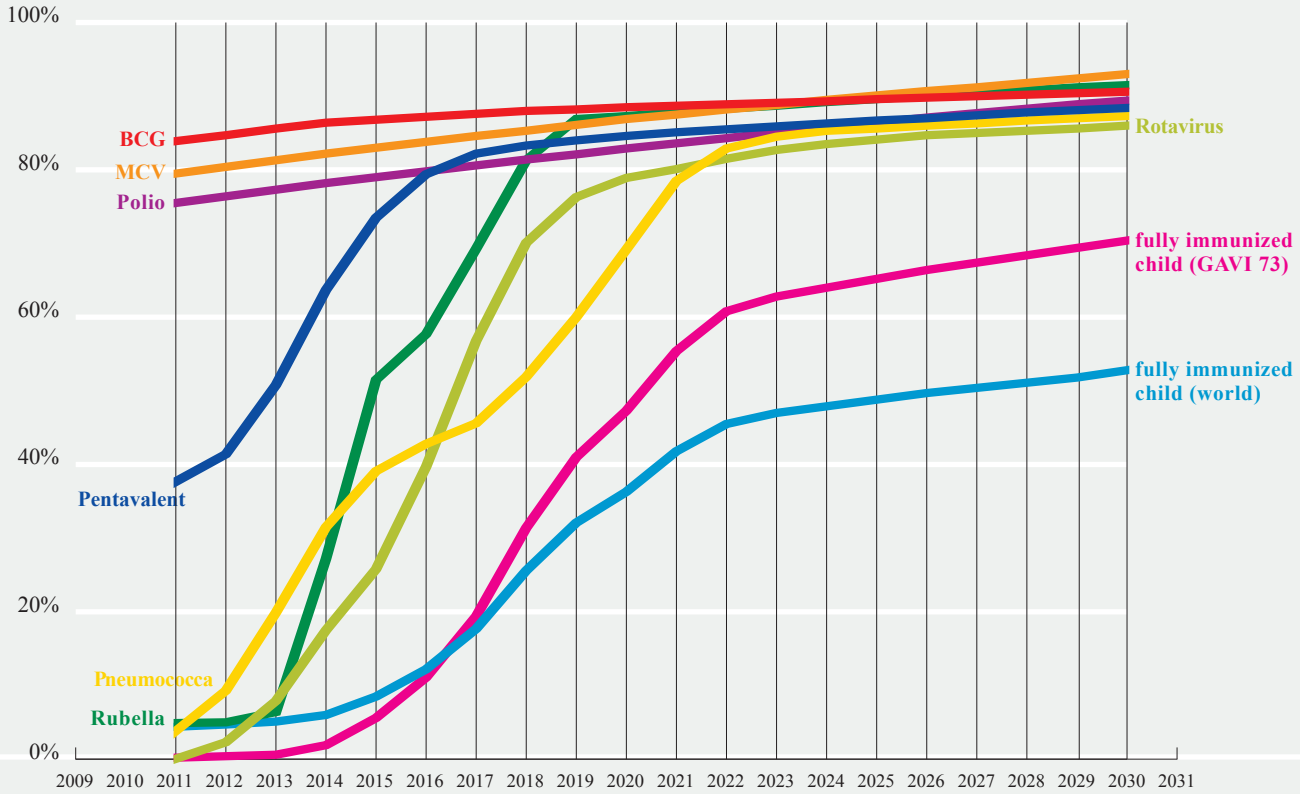
Note: The World Bank did not classify all countries into income categories. Countries that were unclassified in either 1990 or 2011 were removed from the calculations. Data refer to classifications based on 1990 and 2011 GNI per capita that were the basis for the World Bank's lending classifications for its FY92 and FY13, respectively.

Panel A1.1

The fully immunized child and the value of vaccines

Vaccines are considered one of our most successful and cost-effective interventions. Countries and international agencies have tended to rely on one or two tracer vaccines—usually receipt of the third dose of diphtheria-tetanus-pertussis (DTP) vaccine or first dose of measles vaccine—to measure immunization coverage. Such indicators can be useful measures of the reach of immunization programs and. In the case of DTP, which requires three contacts with the health system at the appropriate time, these indicators can also be a measure (albeit an incomplete one) of the strength of health systems. However, such indicators are outdated and limited. Very few countries continue to use the traditional DTP vaccine. Most countries—including, by 2015, all 73 countries supported by the GAVI Alliance—now deliver more modern combination vaccines that protect against a wider range of diseases. With the emergence of new life-saving vaccines that protect against some of the biggest childhood killers, such as pneumonia and diarrhea, as well as important causes of disability and cancer, such as hepatitis B, WHO now recommends 11 antigens for universal use among infants in all countries in the world. These are: BCG, pertussis, diphtheria, tetanus, polio, *Hemophilus influenza* type B, hepatitis B, pneumococcus, rotavirus, measles, and rubella.

Projected rise in proportion of fully immunized children to 2030



Data were provided by the GAVI Alliance. Projections are based on current forecasting. 'GAVI 73' refers to the 73 countries currently supported by the GAVI Alliance.

New indicators are needed to reflect these developments, to refocus the unit of interest on the child rather than the tracer vaccines, and to speak to the right of children everywhere to be fully protected from vaccine-preventable diseases. One such indicator, proposed by the GAVI Alliance, is the **fully immunized child**, which measures the percentage of children in the world who have received all vaccines universally recommended by WHO for delivery by a child's first birthday—a critical first step in the convergence agenda. Currently less than 5% of the world's children are fully immunized. As shown in the figure, the GAVI Alliance projects that only 53% of children in the world are likely to be fully immunized by 2030. In the 73 countries currently supported by the GAVI Alliance, which have the world's largest burden of vaccine-preventable disease and compose 65% of the birth cohort, the alliance projects that 7 out of 10 children will be fully immunized by 2030, an increase from under 1% in 2012. With a push, we can do even better. Given that four out of every five children are currently reached globally with DTP-containing vaccine, such low levels of full immunization coverage signal an imperative to get these vaccines out. Every child has the right to be fully immunized, in order to get a head start on a healthy life.

What would be the value of fully immunizing every child with all 11 vaccines recommended for global use by WHO before a child's first birthday? At first glance the answer might seem obvious: the prevention of illness and death contributing to the convergence. This is certainly true, but there is now a growing body of evidence to indicate that this may only be part of the story. The full benefits of childhood vaccination extend beyond protecting child health and saving lives and reach well into a child's life, through adulthood and into the wider community and ultimately the national economy. By avoiding illness, infants are able to grow into healthier children who are able to attend school more regularly, for more years, and to benefit more from every day they spend in school. And by remaining well, other family members can work instead of having to care for their sick children, generating higher incomes for households.

Further studies are needed to better understand and quantify the relationship between full immunization coverage and a wide range of beneficial outcomes for individuals, households, communities and countries, and to better understand the synergies between delivery of vaccines and other essential health services. It is clear, however, that in order to increase full immunization coverage, routine delivery systems must be strengthened in order to (a) raise coverage of vaccines already introduced into country programs, and (b) support countries in introducing new and underused vaccines by addressing financial and other barriers. If children received all recommended vaccines rather than one or two tracer vaccines, the impact on health and poverty reduction would be profound. And the momentum and considerable donor support for immunization could be harnessed to build more comprehensive health systems, as shown by the GAVI Alliance's HSS activities.

Panel A1.2

Replacing kerosene with liquefied petroleum gas (LPG) for cooking

While kerosene is seen as a cleaner choice for cooking than solid fuels (biomass and coal), some kerosene devices, especially wick stoves used by poor communities for cooking, can still emit significant amounts of health-damaging pollutants. While gaps remain in our knowledge of the health impact of kerosene use for cooking, enough is known to promote the replacement of kerosene with cleaner technologies such as LPG and electricity wherever possible.[29] In an efficient market with light taxes on LPG, the World Bank estimated that cooking and heating water with LPG would cost a household about $15 per month, making it a difficult choice for very poor households.[30] Universal price subsidies on LPG to promote its use are inefficient. A far more efficient approach, adopted in Brazil and the Dominican Republic, is to include assistance for purchasing LPG in social safety net programs.[30]

In 2007, the Indonesian government introduced a project to convert cooking fuel from kerosene to LPG in 50 million households by 2011 in order to achieve health and environmental benefits and to reduce the government subsidy for petroleum fuels. While kerosene and LPG are both subsidized in Indonesia, considering the energy equivalence of the fuels, and the relative subsidies, the government estimated, based on 2006 data, that it would save about US$2.2 billion annually from the conversion.[31] The government market tested its approach, before launching the program in Jakarta, distributing free packages of a 3 kg LPG cylinder, a first gas-fill, a one burner stove, a hose, and a regulator to eligible households. As the program expanded, and conversion packages were distributed, the government withdrew the supply of kerosene from the area. This kerosene to LPG conversion project was facilitated by the fact that Indonesia has just a single state-owned national oil company, Pertamina, so coordinating the distribution of LPG was relatively easy. By the end of 2009, more than 44 million conversion packages had been distributed in 15 provinces; in 6 provinces, all subsidized kerosene had been withdrawn.[31]

Panel A1.3

Cost-effectiveness of treating childhood cancers in low- and middle-income countries

About 90% of children with cancer live in low- and middle-income countries.[32] While pediatric cancer cure rates in high-income countries approach 80%, they are much lower (5-40%) in low- and middle-income countries because of limited access to curative treatment.[33] It is often assumed that such treatment is *not* cost-effective in resource-limited settings—but does the evidence really support this belief?

The upcoming 3rd edition of the *Disease Control Priorities Project* (DCP3) examines the evidence on treating pediatric cancers in a range of low- and middle-income countries, and finds that treating the most common childhood malignancies in many settings would meet accepted cost-effectiveness thresholds. Why? Because treatments are effective and those cured can live for decades.

For example, Bhakta et al. found that up to $US 260,000 could be spent to treat a single child with acute lymphoblastic leukaemia in Brazil and treatment would still remain under the very cost-effective threshold.[32] Howard and colleagues report that the actual treatment costs in Recife, Brazil for treating this childhood cancer are much lower (US$17, 000, which includes all medical care and psychosocial support).[34] Treating a single child with Burkitt lymphoma in Malawi, where chemotherapy and supportive drug costs are under $US 50, would be very cost-effective up to a cost of $US 14,000.[35]

DCP3 argues that discussions about cost and cost-effectiveness of treating childhood cancers should take two other factors into account.[36] First, "adapted treatment regimens of lower intensity can cure a significant proportion of children, with further increases in intensity delivering real, but diminishing, gains." Second, nontraditional funding sources, particularly private philanthropic funds that would not otherwise go to health at all, have been successfully mobilized to establish pediatric oncology centers in many countries, such as in Pakistan and Guatemala.

Panel A1.4

Measuring the welfare gains from Medicare in the United States

Recent studies draw on the insurance literature to measure the relative insurance value of the U.S. Medicare program to individuals in different income groups.[37] Using accounting measures of dollar flows, McClellan and Skinner found that wealthier enrollees pay more into Medicare than poorer enrollees but they receive greater benefits because they use more medical services and live longer.[38] Using such measures, the overall result is that Medicare redistributes slightly from the poor to the wealthy. However, before Medicare was created, less than 40% of the elderly in the bottom third of the income distribution had health insurance, compared to about 75% in the upper third. The value of the health insurance provided by Medicare can be approximated by calculating the value of the premium (or price for insurance) that individuals would be willing to pay in order to acquire that insurance. The researchers found, using this estimated willingness-to-pay approach, that Medicare appears to be much more redistributive to lower income groups than the accounting of cost and benefit incidence suggests.

Finkelstein and McKnight estimated the impact of the introduction of Medicare upon out of pocket spending among elderly people.[39] They used empirical estimates of the distribution of medical expenses before and after Medicare's introduction, and compared these expenses to the estimated costs of Medicare. They found that the introduction of Medicare was accompanied by a 40% decline in out of pocket spending for the top quartile of out-of-pocket spending distribution. The welfare gains from this very large reduction in financial risk exposure are large and cover perhaps half to three-quarters of the costs of Medicare.

These two analyses illustrate the need to consider the impact of health insurance coverage not just on health status but also the very large potential welfare gains from reduction in risk. GNP omits inclusion of the value of social insurance programs, as the Sarkozy Commission on Measurement of Social Welfare has pointed out.[40] For this reason, indirect approaches—such as those represented by these two studies, and others discussed in this Commission's report—are essential.

Panel A1.5

The cost-benefit ratio of HIV vaccine development

Since the start of the epidemic 32 years ago, 70 million people have been infected with HIV and 35 million people have died of AIDS. In 2011, 34 million people worldwide were living with HIV/AIDS, with the health, social, and financial burden falling particularly heavily on Sub-Saharan Africa.[10] During this time, there have been major R&D accomplishments, including demonstrating the main routes of transmission, developing diagnostic tests, and developing highly active antiretroviral drugs that can prolong life expectancy and reduce viral transmission. These successes have highlighted the importance of R&D, adding to the excitement around HIV vaccine development.

Using a full income approach that put an economic value on additional life years gained (VLYs), Hecht and Jamison estimated the benefit-cost ratio (BCR) of HIV vaccine development for a Copenhagen Consensus project on priority investments for HIV/AIDS control in Africa.[41] Based on interviews with HIV experts, they assumed that: (a) a vaccine of 50% efficacy would be available by 2030, a conservative estimate; (b) the minimum cost of full vaccination would be $60 and the maximum would be $150 (the higher cost reflects the chance that booster doses will be needed); and (c) the vaccine is given to the general population aged 10-49 years, rather than to high risk sub-groups. The researchers found that if current HIV vaccine investments of about $800-900 million/year are maintained, the BCR would be conservatively estimated at 2-67. They conclude that the investment seems highly attractive, despite the very high R&D costs and long lead time.

The study also found that the vaccine would be beneficial even with a ten-year lag (to 2040) in vaccine introduction. The economic value of having a vaccine in 2030 rather than 2040 was valued at well over $100 billion, suggesting that it may even be justifiable to *increase* current levels of investment in HIV vaccine development.

Panel A1.6

Tackling antimicrobial resistance

Antimicrobial resistance is a natural phenomenon, an evolutionary response involving selective survival and reproduction when microorganisms are exposed to antimicrobial drugs. Resistance affects all classes of antimicrobials, including antibiotics, antimalarials, and antiretrovirals. While such resistance cannot be stopped, it can be slowed and a drug's effectiveness in tackling infection can be conserved. Resistant organisms may already be killing more people than malaria and the toll is growing. Why, then, has this crisis received limited attention from public or private global health funders or ministries of health? For one thing, antimicrobial resistance is not as obvious as HIV/AIDS or as newsworthy as a threatened bird flu epidemic. It has also been difficult to develop reputable estimates of the human and economic costs of antimicrobial resistance.

Worldwide, increasing incomes are promoting human and veterinary antibiotic use—in India, for example, per capita use increased by 37% between 2005 and 2010.[42] Because of multi-drug resistant and extensively drug-resistant TB, the antibiotics used for decades to treat this bacterial infection no longer work in 20% of patients in some countries.[43] For malaria, just one new drug class—the artemisinins—stands between cure and failure. Even more dangerous, and with greater consequences in the long term, the common fatal infections are becoming resistant to first line penicillins, cephalosporins, and macrolide antibiotics. In healthcare-associated infections, Gram-negative bacteria carrying the NDM-1 gene are resistant to most classes of antibiotics, including advanced carbapenems.

Where are the new compounds? Since 2000, just 10 new antibiotics have been approved in the United States, two of them since 2009. The development of antibiotics has declined steadily since the 1960s, with fewer companies bringing forth ever fewer compounds. In the pipeline of intravenous compounds for serious Gram-negative infections are a mere seven compounds that have cleared phase 1 hurdles.[44]

The consequences of antibiotic resistance are greater in low- and middle-income countries than in high-income countries. In high-income countries, nearly all infections can be cured at a cost. Tuberculosis presents a sobering example of high costs: while antibiotic-sensitive cases cost under $100 to treat, MDR TB drugs can cost $9000, treatment lasts for at least two years, and even with treatment many patients die.[45] In 2011, there were half a million new cases of MDR TB globally, or about 5-6% of all new TB cases, but only about 5% of these new MDR TB cases are adequately treated.[46,47]

There is no single technological fix for antimicrobial resistance. The way forward involves reducing both inappropriate use and the need for antibiotics, as well as the development of new antibiotics, vaccines and point-of-care diagnostics. Investment in exploring the basic mechanisms and genome organization and function of microorganisms is the first step towards discovering new and innovative antimicrobials. Eliminating overuse, for example in the common cold, would make a large dent in the rate of development of resistance. Agricultural use for livestock and aquaculture can also be cut without losses in wellbeing. Surveillance and containment of resistant strains, particularly in healthcare settings, must also be prioritized and funded so that progress can be tracked and effective interventions can be identified.

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