

Annex 12D. Valuing Interventions—Regional Ceiling Ratios for Benchmarking

Supplementary material for: Ali, M., K. Siegal, E. Chandrasekar, N. Tandon, P.A. Montoya, and others. 2017. “Diabetes: An Update on the Pandemic and Potential Solutions.” In *Cardiovascular, Respiratory, and Related Disorders* edited by D Prabhakaran, S Anand, TA Gaziano, J-C Mbanya, Y Wu, and R Nugent. Volume 5 of *Disease Control Priorities, third edition*. Washington, DC: World Bank.

To gauge the value of each intervention for different settings, we also provided the thresholds of value defined by the World Health Organization’s Choosing Interventions That Are Cost-Effective (CHOICE) Project. We used recent country-specific gross domestic product (GDP) per capita data (in 2012 U.S. dollars) from the World Bank to calculate current median (and ranges of) GDP per capita for each region of the world.¹ Where possible, we identified low-, middle-, and high-income countries within regions and delineated the cost-effectiveness thresholds for these groups separately.

These thresholds, shown in table 12.C1, are intended to allow decision makers in each country to benchmark whether the median and reported estimates of cost-effectiveness fall into the very cost-effective/cost-saving, cost-effective, or not cost-effective range for their region. These thresholds vary considerably between regions, with median GDP per capita of US\$956.8 for all of Sub-Saharan Africa versus US\$52,409.2 for North America, and even within regions, with median GDP per capita of US\$38,020.2 for high-income European countries versus less than US\$775.5 to US\$6,381.2 for developing European and Central Asian countries.

Interventions with estimated cost per QALY less than GDP per capita for a region or country are considered very cost-effective or even cost-saving; interventions with estimated cost per QALY between 1–3 times GDP per capita are considered cost-effective; and interventions with estimated cost per QALY greater than 3 times GDP per capita are considered not cost-effective.

¹. World Bank data on GDP per capita are available at <http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD>.

Table 12D.1 Thresholds for Each Region of the World to Assess Cost-Effectiveness of Intervention, by Income Level (2012 US\$)

Region	Very-cost effective or cost-saving	Cost-effective	Not cost-effective
<i>East Asia and Pacific^a</i>	<4,244.84	4,244.84–12,734.52	>12,734.52
Low-income	<945.49	945.49–2,836.48	>2,836.48
Middle-income	<3,529.67	3,529.67–10,589.01	>10,589.01
High-income	<43,902.94	43,902.94–131,708.82	>131,708.82
<i>Europe and Central Asia^a</i>	<14,090.65	14,090.65–42,271.95	>42,271.95
Low-income	<953.06	953.06–2,859.18	>2,859.18
Middle-income	<5,107.18	5,107.18–15,321.54	>15,321.54
High-income	<38,020.23	38,020.23–114,060.69	>114,060.69
<i>Latin America and the Caribbean^a</i>	<7,583.04	7,583.04–22,749.13	>22,749.13
Low-income	<775.54	775.54–2,326.63	>2,326.63
Middle-income	<6,381.23	6,381.23–19,143.69	>19,143.69
High-income	<15,081.31	15,081.31–45,243.93	>45,243.93
<i>Middle East and North Africa^a</i>	<8,197.83	8,197.83–24,593.50	>24,593.50
Middle-income	<4,553.27	4,533.27–13,659.80	>13,659.80
High-income	<29,230.26	29,230.26–87,690.78	>87,690.78
<i>South Asia^a</i>	<1,377.71	1,377.71–4,133.13	>4,133.13
Low-income	<699.08	699.08–2,097.24	>2,097.24
Middle-income	<2,458.40	2,458.40–7,375.19	>7,375.19
<i>Sub-Saharan Africa^a</i>	<956.75	956.75–2,870.25	>2,870.25
Low-income	<576.39	576.39–1,729.17	>1,729.17
Middle-income	<2,742.22	2,742.22–8,226.66	>8,226.66
High-income	<22,404.75	22,404.75–67,214.26	>67,214.26
North America ^a	<52,409.19	52,409.19–157,227.58	>157,227.58

Note: Country regions and income levels are defined by World Bank. World Health Organization's CHOICE categorization: less than GDP per capita (very cost-effective or cost-saving); 1–3 times GDP per capita (cost-effective); more than 3 times GDP per capita (not cost-effective).

a. Median for the region.

Since there were so few data from LMIC settings regarding cost-effectiveness of interventions to detect, prevent, and manage diabetes, we generated calibrated median ICER estimates by region. The methodology to develop these estimates was as follows:

1. It was assumed that the effectiveness of interventions does not differ markedly between regions of the world;
2. Since costs to implement interventions and purchasing power do differ between regions, we developed a region-specific cost-index using health care input cost data compiled by the World Health Organization (http://www.who.int/choice/country/WHO-CHOICEunit_cost_estimates_2007_2008.xls?ua=1);
3. Using the median ICER data from HICs in Annex Table 12B.1, we used the regional cost index as a multiplier to calculate median ICERs for LMIC regions (table 12.2 in the chapter). These calibrations were based on the assumption that costs across regions are related linearly.