

# THE LANCET

## Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Gelband H, Sankaranarayanan R, Gauvreau CL, et al, for the Disease Control Priorities-3 Cancer Group. Costs, affordability, and feasibility of an essential package of cancer control interventions in low-income and middle-income countries: key messages from Disease Control Priorities, 3rd edition. *Lancet* 2015; published online Nov 11. [http://dx.doi.org/10.1016/S0140-6736\(15\)00755-2](http://dx.doi.org/10.1016/S0140-6736(15)00755-2).

**Web panel: Search strategy, selection criteria, and analysis methods**

The 79 authors of the 18 chapters in the *Cancer* volume of the *Disease Control Priorities*, 3rd edition, searched published and grey scientific literature to identify cost-effective interventions for the cancers types studied. Cancer-specific incidence and mortality data used are from the International Agency for Research on Cancer's GLOBOCAN,<sup>1</sup> mortality data are from WHO's global health estimates,<sup>2</sup> and demographic estimates are from the UN.<sup>3</sup>

Analyses were stratified by World Bank country income classifications, as defined by 2013 per capita gross national income: 34 low-income countries (<US\$1045), 50 lower-middle-income countries (\$1046–4125), and 55 upper-middle-income countries (\$4126–12745).<sup>4</sup>

Cost-effectiveness estimates were compiled for each cancer type and intervention. We searched PubMed for all interventions included in the *Cancer* volume,<sup>5</sup> for studies in or including LMICs, published between Jan 1, 2003 and Dec 31, 2013, using the search terms "cancer" AND "effectiveness", "cost-effectiveness", "treatments", "therapies", and "economics". For colorectal cancer, we also searched for studies from high-income Asian economies. In 2010, a review about cost-effectiveness of cancer

interventions for high-income countries provided useful information.<sup>6</sup> Studies identified from the search used various outcome measures such as life-years saved, quality-adjusted life-years (QALYs) gained, and disability-adjusted life-years (DALYs) averted.

Evidence from studies completed in LMICs would have been preferred, but these were rarely available. Cost-effectiveness evidence from high-income countries was therefore reviewed, with evidence from high-income Asian economies preferred. We used the same scale as the Commission on Macroeconomics and Health (in 2001), which defined interventions as very cost effective, cost effective, or cost ineffective as costing less than one, one to three, or more than three times per capita income per QALY (or other measure), respectively.<sup>7</sup>

The essential package includes interventions rated as very cost effective, cost effective, and judged as potentially affordable and feasible in resource-constrained, middle-income countries. Costs were expressed as US dollars (2012). Costs were also expressed as a percentage of national public spending on health, as estimated by the World Bank.<sup>8</sup>

For details about methodology of the cost-effectiveness analysis and costing exercise see <http://dcp-3.org/resources/methodology-and-results-systematic-search-cost-and-cost-effectiveness-analysis-cancer>

- 1 Ferlay J, Soerjomataram I, Dikshit R, et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer* 2015; **136**: e359–86.
- 2 WHO. Health statistics and information systems: global health estimates, 2012. [http://www.who.int/gho/mortality\\_burden\\_disease/en/](http://www.who.int/gho/mortality_burden_disease/en/) (accessed Oct 31, 2015).
- 3 UNPD. World population prospects: the 2012 revision. New York: UN Population Division, 2012.
- 4 World Bank. Country and lending groups. <http://data.worldbank.org/about/country-and-lending-groups> (accessed May 31, 2015).
- 5 Horton S, Gauvreau CL. Chapter 16. Cancer in low- and middle-income countries: an economic overview. In: Gelband H, Jha P, Sankaranarayanan R, Horton S, eds. Disease control priorities. 3rd edn. Volume 3: cancer. Washington, DC: World Bank, 2015 (in press).
- 6 Greenberg D, Earle C, Fang CH, Eldar-Lissai A, Neumann PJ. When is cancer care cost-effective? A systematic overview of cost-utility analyses in oncology. *J Natl Cancer Inst* 2010; **102**: 82–88.
- 7 WHO. Macroeconomics and health: investing in health for economic development. Geneva: World Health Organization, 2001.
- 8 World Bank. World Bank development indicators 2014: table 2.15 health systems. <http://wdi.worldbank.org/table/2.15> (accessed May 31, 2015).