EpiMetrics, Inc.

Cost Utility Analysis of Colorectal Cancer Screening in the Philippines

EXECUTIVE SUMMARY

Abstract

Colorectal cancer (CRC) is one of the leading causes of cancer mortality in the Philippines, which is preventable with early screening. Screening, however, is not included in the current benefits package for CRC treatment. In order to determine the feasibility of a screening benefit package, a cost-utility analysis (CUA) and budget impact analysis (BIA) of colorectal screening was conducted. A discrete event microsimulation (DES) model was used to simulate four screening modalities versus no screening in a cohort of 10,000 average-risk Filipinos aged ≥50 years: (1) G-FOBT and (2) FIT both followed by colonoscopy every 10 years, (3) Flexible Sigmoidoscopy (FS) every 5 years followed by colonoscopy every 10 years, and (4) colonoscopy every 10 years. Parameters were derived from a rapid review and primary data collection in tertiary hospitals. Outcomes measured were QALYs gained. The payer's perspective was used, and time horizons were lifetime (up to 69 years) and 1 year for the CUA and BIA, respectively. All screening modalities except for FS every 5 years followed by colonoscopy every 10 years were found to be cost-effective, given that their ICERs fall below the WHO-CHOICE threshold - PHP 151,193.87, the Philippine GDP per capita. G-FOBT was found to be cost-saving, while FIT was found to have an ICER of 6,024.66. G-FOBT and FIT both followed by colonoscopy, costing around PHP 250M to 350M to implement at a 3.5% compliance rate, had the least budget impact. One-way sensitivity analyses were conducted for costs, compliance, and accuracy, with the first two greatly affecting uncertainty. Although G-FOBT was found to be the most cost-effective strategy for a benefit package with the least budget impact followed by FIT, the latter is recommended due to its accuracy and specificity for human blood, its increase in QALYs compared to GFOBT, and its convenience as a test as compared to GFOBT.

Executive Summary

A. Background

Colorectal cancer (CRC) is the third leading cause of cancer deaths in the Philippines, accounting for nine percent (9%) of the total deaths for males and females. The national estimated incidence rate for CRC in 2012 was 13.3 cases per 100,000 individuals, with males reporting higher rates (15.6 per 100,000) than females (11 per 100,000) (Laudico et al., 2015). CRC becomes symptomatic only at advanced stages, which makes screening critical while patients are still asymptomatic. The prognosis of colorectal cancer is better the earlier it is detected.

In 2014, the Philippine Health Insurance Corporation (PhilHealth) developed a Z Benefits package for CRC. The benefit package covers diagnostic tests, chemotherapy and other medicines, and procedures, such as surgery for closure of colostomy or ileostomy for Stage I until Stage III.

To complement the existing package, PhilHealth is considering covering CRC prevention, specifically screening, to help reduce the incidence of CRC, and subsequently, expected costs of reimbursing these cases. The latest revision of the National Health Insurance Act requires evidence generation through health technology assessment (HTA) to enable a more strategic expansion of benefits.

B. Methods

Four screening modalities were analyzed among average-risk Filipino individuals aged 50 and above. In 2015, the population of aged 50 and above was 11,697,514, and all individuals were assumed to be average risk due to the lack of local epidemiology for colorectal cancer.

A Markov-based discrete event microsimulation model was used to simulate four screening modalities as interventions, namely:

Modality A: Guaiac-Fecal occult blood test (gFOBT) confirmed by colonoscopy every 10 years

Modality B: Fecal immunochemical test (FIT) confirmed by colonoscopy every 10 years

Modality C: Fecal immunological test confirmed by flexible sigmoidoscopy and colonoscopy screening every 10 years.

Modality D: No Screening base case scenario

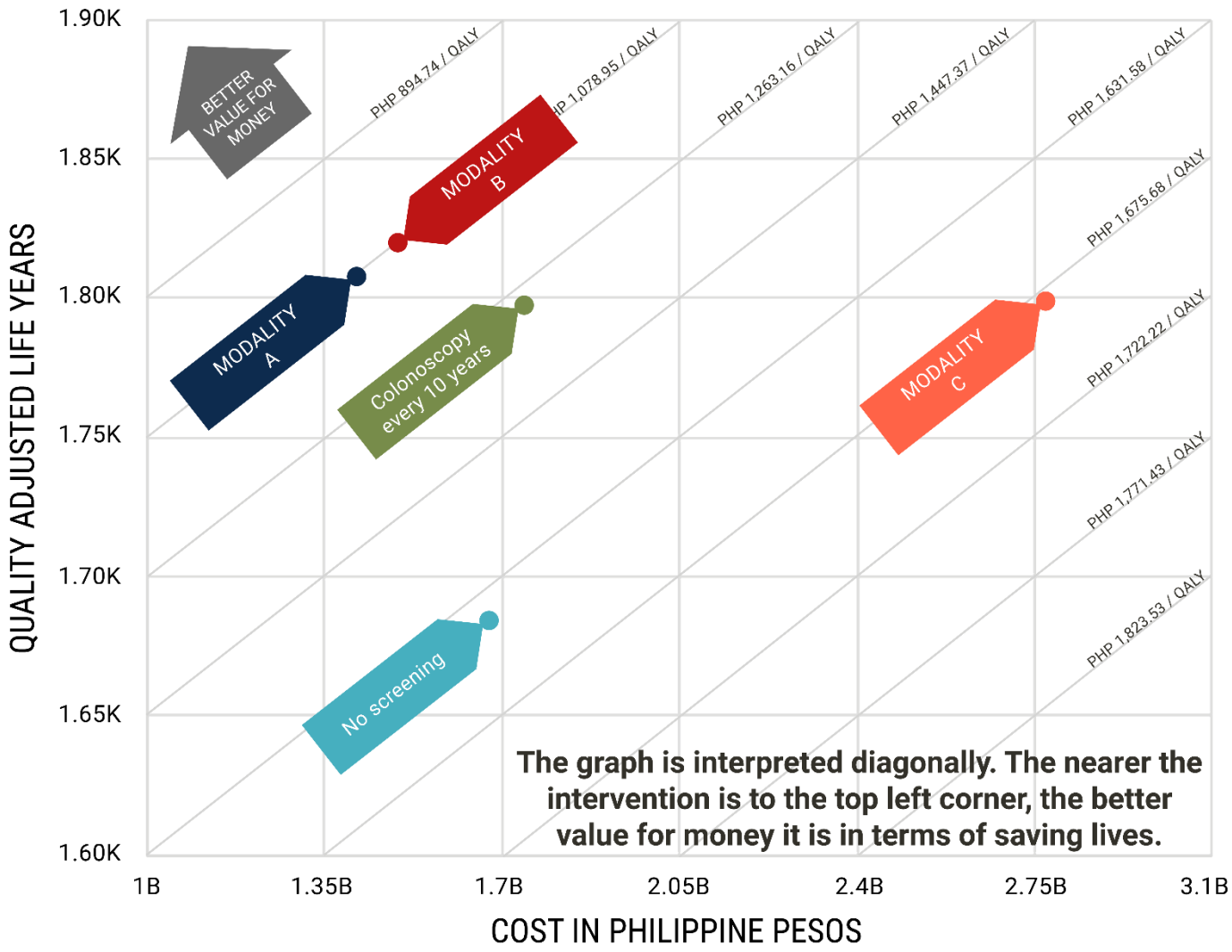
Parameter and cost values were derived from a rapid review of literature and primary data collection in a nationally representative sample of tertiary hospitals. Lifetime simulation for cost-utility analysis and 1 year for budget impact analysis have been generated from the model using the payer's perspective, specifically PhilHealth. Total costs of each screening intervention, partitioned through multiple cost levels, and quality-adjusted life years (QALYs) have been calculated to produce incremental cost-effectiveness ratios (ICERs).

C. Results and Discussion

For simulation scenario using centralized parameter values, all screening modalities were cost-effective, considering the ICERs fall below the 1 GDP per capita threshold. In terms of budget impact, the most cost-effective strategy was Modality B. Simulations generated from one-way sensitivity analysis for cost, compliance, and accuracy of the screening test parameters show that ICERs of all four screening modalities evaluated still remain below the 1 GDP Per Capita. Assuming low compliance, Modality A and B may each cost as low as Php 1B for the first year of national program implementation.

D. Conclusion

PhilHealth may introduce a benefit package for outpatient screening of colorectal cancer. Either Modality A or B are plausible strategies, with gFOBT being cost-saving and FIT having an ICER of 6,024.66, well below the WHO recommendation of under 1 GDP per capita threshold. Both interventions have a budget impact of Php 9B in the first year assuming moderate compliance, or as low as Php 1B for the first year assuming low compliance. Further analysis, specifically costing studies, should be conducted on what the optimum cost of the benefit package is given that costs of tests vary widely among facilities. Identifying the optimum cost that is affordable for PhilHealth may reduce the budget impact. Between gFOBT and FIT, further criteria should be considered, such as effectiveness, safety, availability and consensus among clinicians.



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