

Cost-effectiveness of colorectal cancer genetic testing

ABSTRACT

Colorectal cancer (CRC) remains the second leading cause of cancer-related deaths worldwide. Approximately 3–5% of CRCs are associated with hereditary cancer syndromes. Individuals who harbor germline mutations are at an increased risk of developing early onset CRC, as well as extracolonic tumors. Genetic testing can identify genes that cause these syndromes. Early detection could facilitate the initiation of targeted prevention strategies and surveillance for CRC patients and their families. The aim of this study was to determine the cost-effectiveness of CRC genetic testing. We utilized a cross-sectional design to determine the cost-effectiveness of CRC genetic testing as compared to the usual screening method (iFOBT) from the provider's perspective. Data on costs and health-related quality of life (HRQoL) of 200 CRC patients from three specialist general hospitals were collected. A mixed-methods approach of activity-based costing, top-down costing, and extracted information from a clinical pathway was used to estimate provider costs. Patients and family members' HRQoL were measured using the EQ-5D-5L questionnaire. Data from the Malaysian Study on Cancer Survival (MySCan) were used to calculate patient survival. Cost-effectiveness was measured as cost per life-year (LY) and cost per quality-adjusted life-year (QALY). The provider cost for CRC genetic testing was high as compared to that for the current screening method. The current practice for screening is cost-saving as compared to genetic testing. Using a 10-year survival analysis, the estimated number of LYs gained for CRC patients through genetic testing was 0.92 years, and the number of QALYs gained was 1.53 years. The cost per LY gained and cost per QALY gained were calculated. The incremental cost-effectiveness ratio (ICER) showed that genetic testing dominates iFOBT testing. CRC genetic testing is cost-effective and could be considered as routine CRC screening for clinical practice.