The Health Technology Report Series has been developed by the Department of Public Health, University of Tartu.

The cost-effectiveness of EGFR inhibitors in colorectal cancer treatment

Summary

Objective: To analyze the benefits, costs and cost-effectiveness of current clinical practice to scenario with increased proportion of biological agents in the first-line treatment of the metastatic colorectal cancer (CRC) patients in Estonia.

Methods: Literature reviews for evidence on effectiveness and cost-effectiveness of the medicines were carried out in the PubMed database in July to August 2014. Studies were selected using predefined selection criteria. For effectiveness, 55 articles met the inclusion criteria and were included in the report. For cost-effectiveness, 8 articles met the criteria and were discussed in the report. Model for the simplified cost-effectiveness analysis compared the overall benefits (OS and PFS) and drug costs for the first-line treatment of 260 metastatic CRC patients in current practice with scenario of twofold increase in the use of biological agents. A budget impact analysis was conducted to assess the additional costs from the Estonian Health Insurance Funds’ perspective.

Results: According to the literature review, the additional health effect of adding EGFR inhibitor to the chemotherapy is proven for patients in ESMO treatment groups 1 and 2 (treatment line 1 or 2 or 3), and adding VEGF inhibitor to the chemotherapy is proven for patients in ESMO treatment groups 1–3 (treatment line 1 or 2). The cost-effectiveness results in the sources showed that ICER for cetuximab and chemotherapy was $21,033–401,731 per LYG and $30,971–153,448 for bevacizumab and chemotherapy.

In the cost-effectiveness analysis, as a result of increasing the proportion of biological agents in the first-line treatment, the metastatic colorectal cancer patient may get additional 1.3–2.1 PFS months and 2.3–7.4 OS months. In the base-case scenario, ICER was €79,144 per one additional PFS life-year, and €44,565 per one additional OS life-year. In the sensitivity analysis, ICER ranged from €48,804–94,762 per one PFS life-year and €14,045–53,359 per one OS life-year, most influenced by effectiveness input. Overall, ICER was lowest to ESMO treatment group 1, ranging from €13,086–35,689 per one PFS life-year and €3,101–15,862 per one OS life-year, and it was highest to ESMO treatment group 2, ranging from €99,594–154,848 per one PFS life-year and €21,944–61,939 per one OS life-year.

As a result of increasing the proportion of biological agents in the treatment of metastatic colorectal cancer patients, the additional costs to Estonian Health Insurance Fund would be €2.1–3 million per annum. In the first line treatment, the additional costs per annum would be €2.1–2.7 million.

Conclusions: Biological agents together with chemotherapy are more effective than chemotherapy alone in treatment of ESMO treatment groups of 1–3 patients, but also create additional costs.