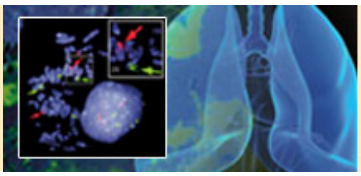

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ABSTRACT

Cost-Effectiveness of Gene-Expression Profiling for Tumor-Site Origin

J Hornberger, I Degtiar, H Gutierrez, A Shewade, WD Henner, S Becker, S Raab

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BACKGROUND

Gene-expression profiling (GEP) reliably supplements traditional clinicopathological information on the tissue of origin (TOO) in metastatic or poorly differentiated cancer. A cost-effectiveness analysis of GEP TOO testing versus usual care was conducted from a third-party payer perspective in the United States.

METHODS

A retrospective, observational study examined treatment changes in patients whose physicians had received the GEP TOO test results to help diagnose the tissue-site of their patient's malignancy and to guide appropriate therapy. Changes in planned chemotherapy, surgery, radiation therapy, added blood tests, imaging investigations, and referral to hospice care before and after the GEP TOO test results were recorded. The effect of changes in chemotherapy on survival were based on randomized controlled trials informing appropriate use of chemotherapy cited in National Comprehensive Cancer Network (NCCN) and Up-to-Date guidelines. Drug and administration costs were based on average doses reported in NCCN guidelines. Centers for Medicare and Medicaid Services (CMS) fee schedules were used to obtain other unit costs. Quality-of-life weights were obtained from literature sources. Changes in overall survival, costs, and cost per quality-adjusted life year (QALY) gained were estimated using bootstrap methods.

RESULTS

One hundred and seven patients participated in the study. Use of chemotherapy regimens consistent with guidelines for the final tumor-site diagnosis increased significantly from 42% to 65% (net difference 23%; $p < 0.001$). Overall survival was projected to increase from 15.9 months to 19.5 months (mean difference 3.6 months, 95%CI: 2.0, 5.1). The average estimated increase in survival adjusted for quality of life was 2.7 months (95%CI: 1.4, 3.9), and average third-party payer costs per patient increased by $10,360 (95% CI: $5,668, $15,053). The cost per QALY gained was $46,858 (95% CI: $17,995, $75,718).

CONCLUSIONS

GEP TOO testing significantly altered clinical practice patterns for treating metastatic cancer of uncertain primary. It is projected to increase overall survival, QALYs, and costs, resulting in an expected cost per QALY of less than $50,000.

For information about the Pathwork® Tissue of Origin Test, please contact Pathwork Diagnostics at info@pathworkdx.com or call 1-877-808-0006

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