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Talking about Genomic Testing Cost

Genomic testing is being gradually adopted in healthcare assisting in defining treatments for selected disorders.

One of the primary fields for these tests are cancer mutations. Genomic tests on cancer cells may help to determine what types of treatment would be effective. Some insist that in cases of advanced cancer oncologists have an ethical obligation to request genomic testing while patients should be demanding these tests to make better informed decisions regarding their treatment.

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Still, in many cases neither cancer patients request these kinds of tests not doctors offer them, primarily due to the high cost of the procedure. But even if the possibility of genomic testing is discussed with their patients, nearly one in four oncologists rarely or never bring up the issue of costs. The majority of doctors who initiated such discussions were those who received training in genomic testing or are working with electronic medical record (EMR) alerts for genomic tests.

Discussion with Patients

Such are the results of a new study led by American Cancer Society's Robin Yabroff, Ph.D. and published on November 1 in *JNCI: The Journal of the National Cancer Institute*.

Its aim was to analyse how routine were the discussions about expected costs of genomic testing and what related treatments were happening. Such discussions facilitate treatment decision making and provide cancer patients with a clearer picture about expenses involved, but despite their importance little is known of whether and how often they take place.

The investigators studied the data from 1,220 oncologists who reported discussing genomic testing with their cancer patients from the 2017 National Survey of Precision Medicine in Cancer Treatment. They found that 50% discussed the likely costs of testing and related treatments often; 26.3% did sometimes; and 23.7% did never or rarely.

Further on, it appeared that if oncologists had training in genomic testing or implemented EMR alerts for genomic tests, they about twice as likely discussed cost issues sometimes or often compared to rarely/never. More frequent cost discussions were also associated with a number of other factors, including:

- treating solid tumours (as opposed to only hematological cancers)
- using next-generation sequencing (NSG) technology
- having higher patient volume; and
- dealing with higher percentages of patients, potentially vulnerable to expenses (insured by Medicaid, or self-paid or uninsured).

"Initiating a discussion about the expected out-of-pocket costs of genomic testing and related treatment is a necessary first step, but is not sufficient to ensure that patients and their families can make fully informed decisions about treatment options," the authors conclude. They point out that targeting modifiable physician and practice factors, such as training in genomic testing and use of EMR alerts, may be influential in increasing the frequency of physician-patient cost discussions.

Procedure Cost

With the cost of sequencing generally falling, in the U.S., for example, genomic testing for patients with early-stage breast cancer costs $3,217 on average. In a recent study conducted in the UK, genome sequencing costs were found to be £6,841 per cancer case and £7,050 per rare

disease case. The major share of sequencing cost (68–72% of the total) falls on the consumables used during the testing. Equipment costs are higher for rare disease cases, whereas consumable and staff costs are slightly higher for cancer cases.

Categories of Expenses

The National Human Genome Research Institute (NHGRI) that for many years has been tracking the costs associated with DNA sequencing considers the following 'production' costs:

- Labour and management costs, utilities, consumables
- Instruments and other large equipment (three-year amortisation period)
- Necessary informatics activities (eg initial data processing)
- Processing and submission of data to a public database; and
- Indirect costs such as fringe benefits, overhead costs and general administrative costs.

There are, however, so called 'non-production' activities that also influence the ultimate cost of testing, such as:

- Quality assessment/control
- Development of technology and computational tools necessary for further improvement of the sequencing process
- Micro-managing of individual projects
- Informatics equipment
- Initial data processing (eg sequence assembly and alignments, interpretation of results)

Genetic vs Genomic Testing

It should be noted that genomic testing is often used interchangeably with and genetic testing, but each procedure has unique characteristics. Genetic testing refers to a type of medical test that looks at the hereditary profiles of patients. It is used to identify the risk of possible genetic disorders development in the future. This procedure in relatively cheap and can be even done at home with a device such as Oxford Nanopore's hand-held reader. In turn, genomic testing can be performed by healthcare professional only and helps to understand the how certain genes in the body behave and interact once a gene mutation has occurred. It can provide insight on the aggressiveness and responsiveness of a tumour prompting a preferred course of treatment.

References

Dinan MA, Wilson LE, Reed SD. Chemotherapy costs and 21-gene recurrence score genomic testing among Medicare beneficiaries with early-stage breast cancer, 2005 to 2011. *J Natl Compr Canc*. 2019;17(3):245-254. Available from https://jnccn.org/view/journals/jnccn/17/3/article-p245.xml

Schwarze K, Buchanan J, Fermont JM et al. (2019) The complete costs of genome sequencing: a microcosting study in cancer and rare diseases from a single center in the United Kingdom. Genetics in Medicine (2019): 1-10. Avaliable from https://www.nature.com/articles/s41436-019-0618-7

Wetterstrand KA. DNA Sequencing Costs: Data from the NHGRI Genome Sequencing Program (GSP) Available at www.genome.gov/sequencingcostsdata.

Yabroff RK, Zhao J, de Moor JS et al. (2019) Factors associated with oncologist discussions of the costs of genomic testing and related treatments. *JNCI: Journal of the National Cancer Institute. Available from* https://academic.oup.com/jnci/advance-article/doi/10.1093/jnci/djz173/5609133

Published on : Tue, 5 Nov 2019