Letters

Next-generation sequencing

September 2023—I read with interest "In anatomic pathology labs, a balancing act" (August 2023). Some of the roundtable participants highlighted an area of next-generation-sequencing–based diagnostics that is a blind spot for pathologists, molecular biology tool manufacturers, and laboratory information system vendors—namely how to reduce the fractional cost of performing NGS-based analysis. On the topic of gene panels, the participants offered that the workflows are complex, reimbursement is relatively low, and startup costs are high—all true statements. However, I was struck that they evaluated the cost structure only in the setting of tissue oncology, with the implication being that the fully loaded cost of the diagnostic must be borne by the degree and level of oncology-based sequencing.

I would suggest that NGS-based diagnostics be looked at in a larger context and that the diagnostic barriers be broken down so that a larger number of NGS-based diagnostics can be evaluated in a facility. For example, noninvasive prenatal testing can be a significant number of samples for a health care system's population. Additionally, amplicon-based sequencing as a replacement for array-based genotype scales better and more efficiently. Both of these types of diagnostics have the further benefit of being more statistical analyses rather than complex interpretive analyses, so they could be more easily incorporated into a typical health system laboratory. Limiting the cost structure of NGS-based diagnostics to only oncology diagnostics is the equivalent of basing a chemistry analyzer purchase on the number of low-volume assays while ignoring high-volume assays.

Because of the capacity of NGS instruments, diagnostic workflows are driven by the need to maximize the number of sequences performed during a sequencing run. Once a run starts, the unused capacity becomes the equivalent of a commercial airplane taking off with unsold seats—the costs and potential profits are amortized over a smaller number of participants. Functionally, maximizing sequencing usage means that almost everything in an NGS-based workflow is batched, and health systems will not be able to compete with large reference laboratories based on cost because the economics of the health system batch size won't support it. Unless these health systems, tool manufacturers, and LIS vendors consider an expanded and less siloed view of what NGS-based diagnostics can accomplish within their client hospitals, cost justifying the infrastructure necessary to provide NGS diagnostics will continue to be an issue.

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