EXECUTIVE INSIGHTS

Clinical NGS Testing Trends and Sample-to-Answer Platform Adoption: Insights From L.E.K.'s US Diagnostic Lab Survey

Introduction

Clinical next-generation sequencing (NGS) has been evolving from a specialized capability to a routine part of clinical decision-making. For NGS suppliers, capturing the next phase of growth will require understanding which lab segments are insourcing and why, what is driving instrument refresh and vendor selection and how sample-to-answer platforms fit into the near-term adoption curve.

L.E.K. Consulting's U.S. Clinical Diagnostic Lab Survey captures perspectives from 100-plus executives and directors across hospital-based and multispecialty reference labs on near-term NGS testing demand and instrumentation purchasing expectations, to identify key market trends and spending opportunities.

In this edition of *Executive Insights*, we share key trends in the U.S. clinical NGS market and implications for suppliers.

Key trends

Material growth expected for in-house NGS test volume, with significant new adoption among large community hospital labs

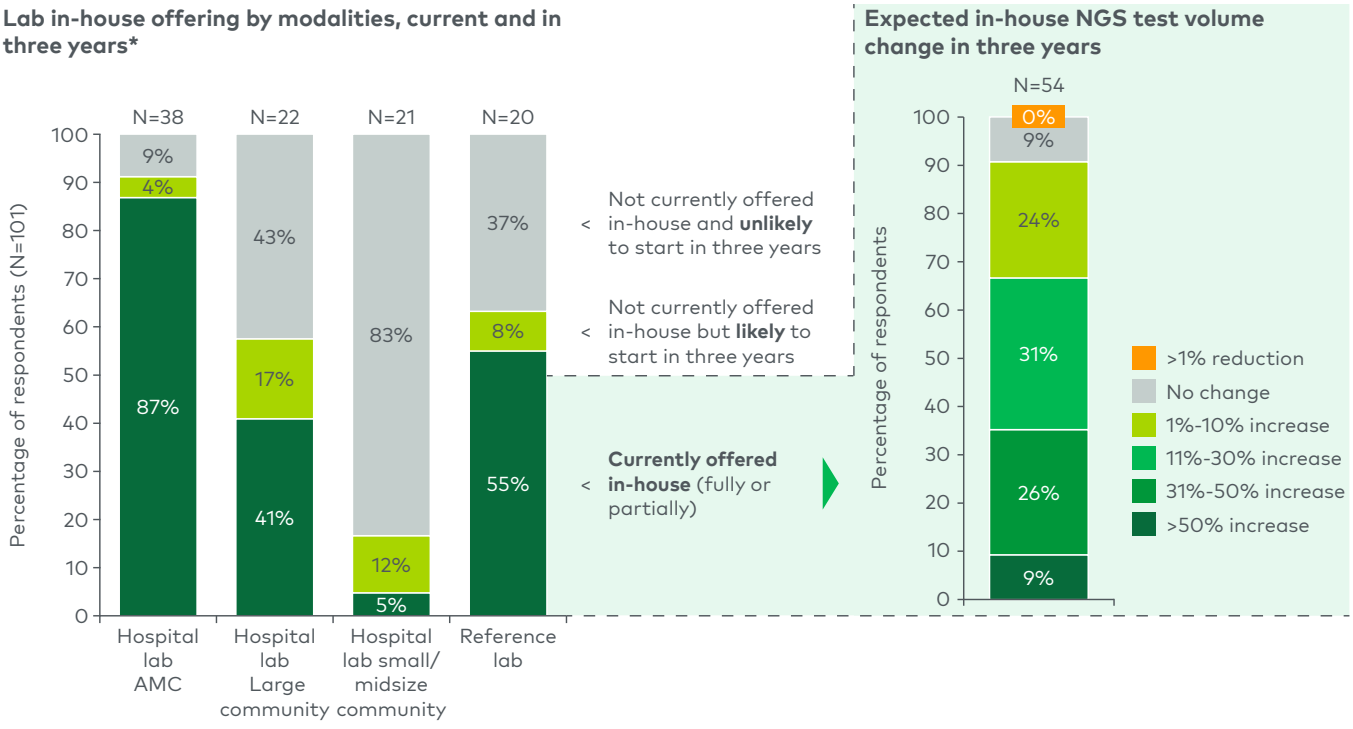
Approximately 90% of academic medical center (AMC) labs and 60% of reference labs surveyed run at least some clinical NGS testing in-house today (see Figure 1). Adoption is meaningfully lower in community hospitals, with around 40% of large community hospital labs and roughly 5% of small community hospital labs offering in-house NGS today.

Among labs that already run NGS in-house, material growth in test volumes is expected, driven primarily by expanding oncology testing and, to a lesser extent, hereditary genetics testing. Nearly two-thirds of labs currently performing NGS in-house anticipate double-digit growth in such testing over the next three years, including approximately 10% that are expecting volume to increase by more than 50% over the period. Additionally, labs with a mix of in-house and send-out volume expect the share of in-house tests to rise from an average of around 50% today to about 70% within three years.

Notably, NGS has the strongest overall growth outlook among all major testing modalities surveyed (see our previous *Executive Insights* on this topic for cross-modality comparison). This insourcing trend reflects growing confidence among labs that they can successfully operationalize NGS workflows in-house, versus a diminishing role for centralized testing. Specialty and reference labs offering laboratory developed test menus remain integral to the clinical NGS landscape, particularly for more complex assays (e.g., personalized minimal residual disease testing).

Figure 1

NGS insourcing trend and expected in-house volume growth



*Survey questions: What percentage of all NGS test currently performed in your lab (single lab site) are performed in-house (versus sent out to another lab)? What do you expect this percentage to be in three years? Of all test modalities that your lab fully sends out or currently does not offer, how likely is your lab going to start performing (at least partially) in-house in the next three years?
Note: NGS=next-generation sequencing; AMC=academic medical center
Source: L.E.K. 2025 Diagnostic Lab Survey

Continued adoption of NGS by new labs is also expected to drive growth, with large community hospital labs representing the most significant incremental adopter pool. Nearly 30% of those without current capability are likely to pursue it within three years, suggesting that their expected volume scale and clinical demand can justify investment. In contrast, small and midsize community hospitals remain constrained, with more than 80% expected to continue fully outsourcing NGS over the next three years.

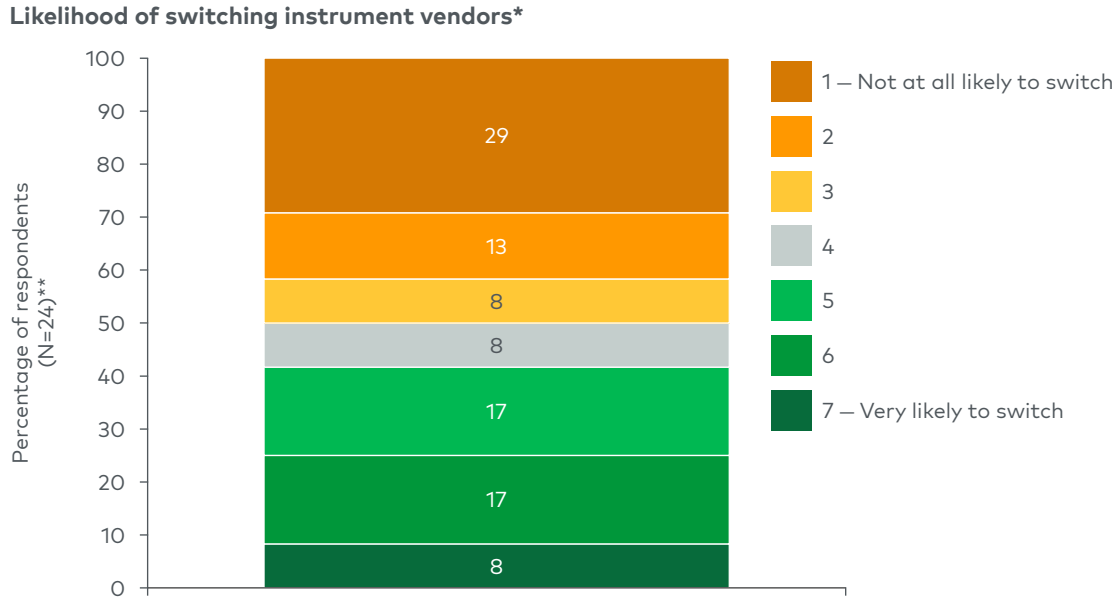
The adoption outlook creates two distinct demand pools for suppliers: labs already running NGS seeking greater throughput flexibility as volumes scale, and new adopters, led by large community hospitals, prioritizing implementation support to reduce operational risk during ramp-up. Each will require a different commercial approach.

Capacity expansion is driving the next wave of instrument purchases, with meaningful vendor switching in play

Survey respondents anticipate NGS instruments to have the shortest replacement cycle among all major clinical lab instruments, averaging roughly 5.5 years. About 75% of current users expect to purchase a new sequencer within the next five years, including approximately 50% within three years (see Figure 2). Roughly 70% of expected purchases are tied to increasing capacity or expanding menu, with more than 70% of respondents anticipating moving to instruments with higher-performance specifications (e.g., higher throughput).

Figure 2

Vendor switching intent for next clinical NGS instrument purchase



*Survey question: For each type of instrument, how likely are you to switch instrument vendors for your next purchase? Please rate on a scale of 1 to 7 in which "1" means "not at all likely to switch" and "7" means "very likely to switch" for each instrument type
**Respondents who answered "I don't know" were excluded from analysis; all selected respondents are planning to purchase new NGS instruments within five years
Note: NGS=next-generation sequencing
Source: L.E.K. 2025 Diagnostic Lab Survey

Surveyed lab experts show a clear split in NGS vendor stickiness. Among respondents planning a purchase within the next five years, about 30% are "not at all likely" to switch vendors — the highest "no-switch" share across all instrument types tested — signaling a defensible installed base that will be difficult for new entrants to displace. At the same time, roughly 40% are open to switching, suggesting meaningful unmet needs (e.g., pricing flexibility, throughput scalability).

For suppliers, this dynamic cuts both ways. Incumbents will need to demonstrate continuation value, while challengers have a real opening, though winning conversions will require competitive economics, flexible instrument configurations and a low-friction transition plan that reduces migration risk.

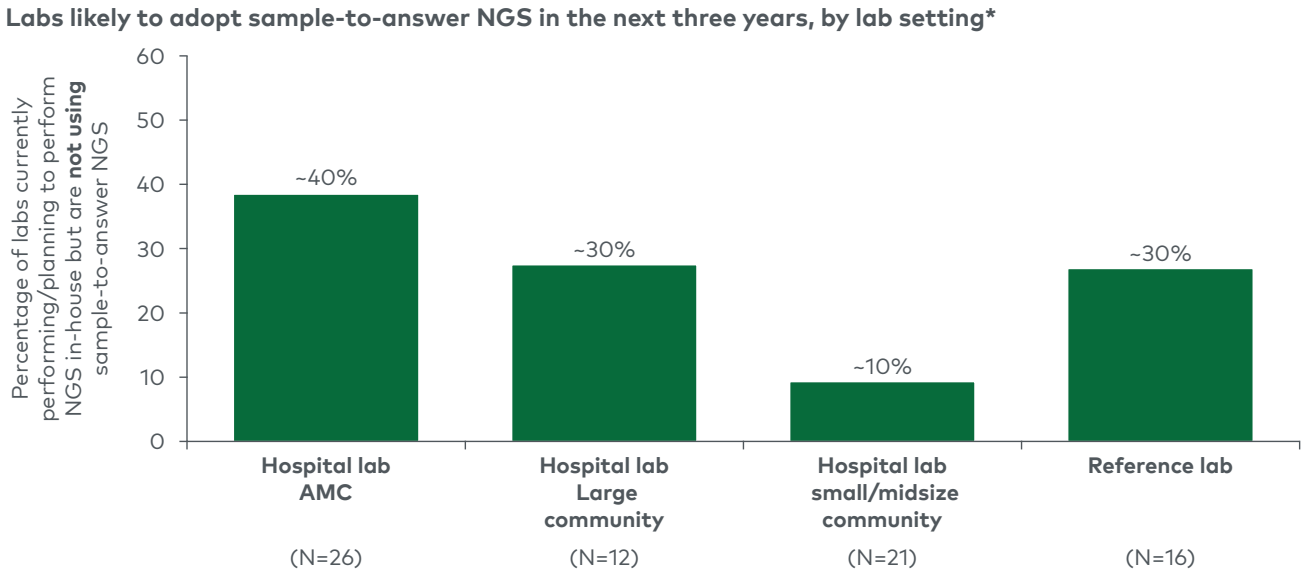
Sample-to-answer NGS platform adoption remains limited, with a subset of labs signaling near-term demand

Automated, sample-to-answer NGS platforms (e.g., Ion Torrent Genexus) are designed to make NGS implementation easier for labs by simplifying workflows, reducing hands-on time and reducing reliance on highly specialized personnel (e.g., bioinformaticians).

While adoption of sample-to-answer platforms is still limited today, there is strong near-term adoption interest among AMCs, large community hospitals and reference labs. AMCs show the strongest purchase intent, with approximately 40% indicating likely adoption within three years (see Figure 3). Nearly 30% of large community hospital and reference lab respondents are likely to adopt within three years, pointing to demand among lab settings that may face greater challenges with staffing and specialized expertise relative to AMCs. In labs with established high-throughput NGS workflows, sample-to-answer platforms are likely to serve as a complement rather than a replacement, enabling faster turnaround for targeted panels (e.g., rapid solid tumor or hematologic malignancy profiling) while existing platforms continue to handle broader, higher-complexity assays.

Figure 3

Near-term sample-to-answer NGS adoption intent

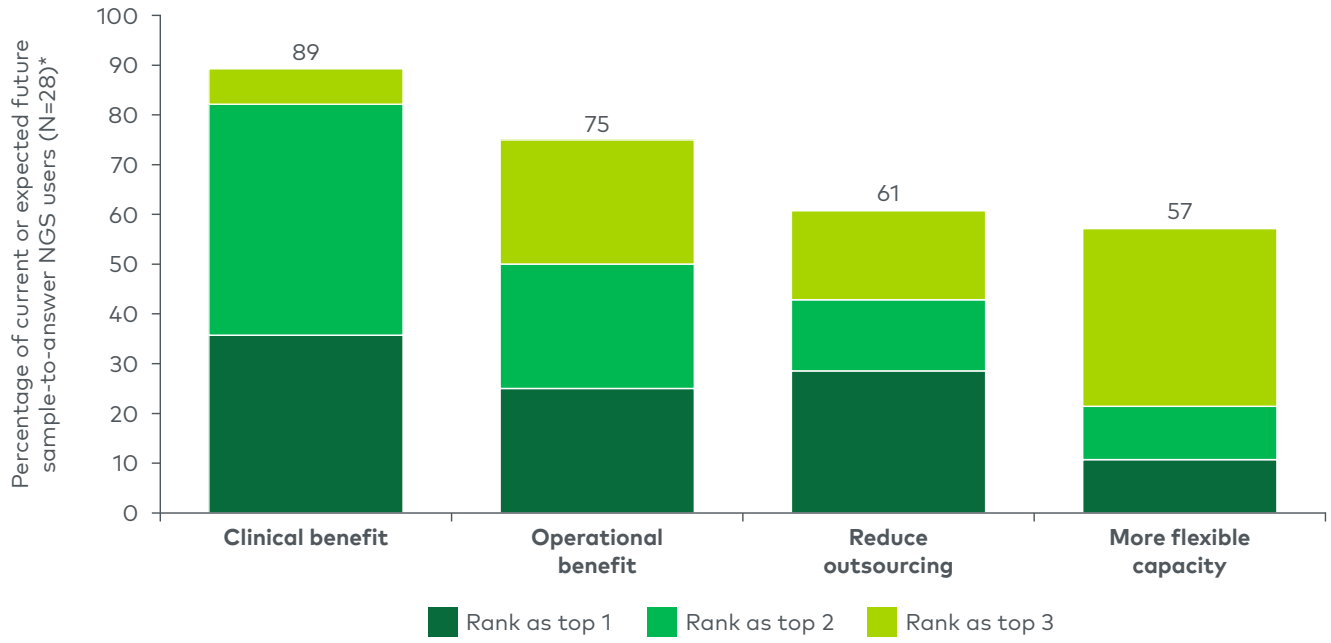


*Survey question: Of all the emerging technology platforms that you are NOT using today, how likely are you to purchase one in the next 3 years? – Automated sample-to-answer NGS (e.g., Ion Torrent Genexus); Likelihood of adoption has been adjusted for overstatement using the following method: 80% of respondents choosing "definitely will" will adopt, 60% of respondents choosing "probably will" will adopt, 25% of respondents choosing "might or might not" will adopt, 0% of respondents choosing "probably will NOT" or "definitely will NOT" will adopt
Note: NGS=next-generation sequencing; AMC=academic medical center
Source: L.E.K. 2025 Diagnostic Lab Survey

Beyond clinical impact and operational benefit, which are the leading motivations for adoption, respondents also cite reduced outsourcing and more flexible capacity as key drivers (see Figure 4). Separately, the Food and Drug Administration's proposed reclassification of certain nucleic acid-based companion diagnostics from Class III (premarket approval) to Class II (510(k) with special controls) could provide an incremental catalyst by simplifying new platform launches and content update cycles for sample-to-answer NGS platforms (e.g., adding biomarkers, updating reportable variants).

Figure 4

Key drivers of automated sample-to-answer NGS adoption

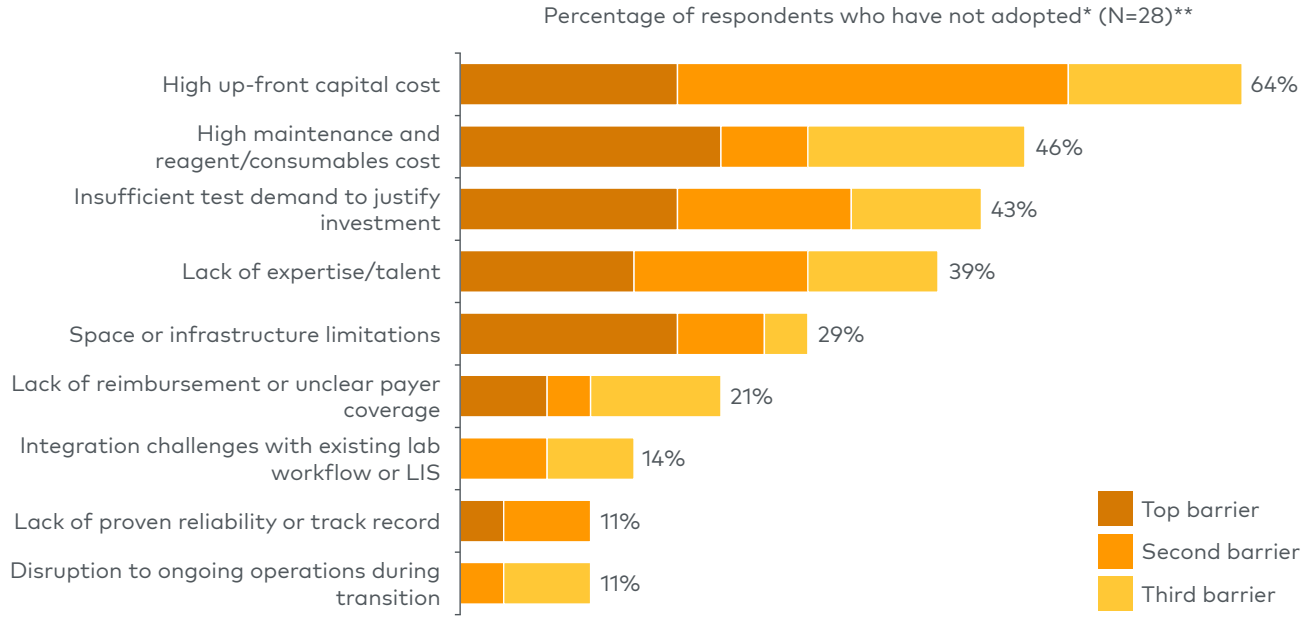


*Survey question: What, if any, from list below are key drivers of your existing/potential purchase of an automated sample-to-answer NGS system?
Note: NGS=next-generation sequencing
Source: L.E.K. 2025 Diagnostic Lab Survey

The most common barriers to sample-to-answer NGS adoption are up-front and ongoing costs, coupled with concerns about low utilization (see Figure 5), while performance and integration are less frequently cited. Notably, reimbursement pressure, previously a common concern for labs running NGS, is no longer among the top five barriers to adoption, reflecting improvements in coverage and payment for NGS-based testing.

Figure 5

Key perceived barriers to automated sample-to-answer NGS adoption



*Survey question: What, if any, from list below are key barriers to purchasing an automated sample-to-answer NGS system in your lab?
**Selected respondents routinely offer molecular tests
Note: NGS=next-generation sequencing; LIS=laboratory information system
Source: L.E.K. 2025 Diagnostic Lab Survey

Addressing these cost and utilization concerns through contracting models and commercial positioning will be central to accelerating adoption.

Implications for suppliers

Clinical NGS is entering a new phase of growth, with in-house testing expanding beyond AMCs and reference labs into a broader set of hospital settings. Capturing that opportunity requires aligning products, services and contracting models to the distinct needs of different adopter segments.

Compete on delivered economics, not instrument specs

For labs with established in-house NGS volume, winning refresh and expansion decisions hinges on quantifying delivered outcomes (e.g., throughput per full-time equivalent, turnaround time, uptime, cost per reportable), not on instrument specs alone. Incumbents should defend share with measurable continuation value (e.g., predictable performance, low disruption) and credible upgrade paths that improve capability without destabilizing operations. For challengers, a structured switching toolkit (e.g., validation templates, data comparability plans, workflow transition support) addresses the operational risk that deters labs from changing vendors.

Winning the next wave of community hospital adopters

Among labs beginning to build in-house NGS capability, large community hospitals represent the most actionable near-term growth opportunity, but their needs differ from those of AMCs. Onboarding packages should address their specific constraints: limited bioinformatics staff, tighter budgets and lower initial volumes that make capex-heavy models difficult to justify. Ramp-friendly economics (e.g., reagent rental, volume-linked pricing) and turnkey implementation support will be important deciding factors.

Make a clear return-on-investment (ROI) case for sample-to-answer platforms

AMCs and large community hospitals are the primary near-term addressable market for sample-to-answer NGS platforms. A menu of validated assays with clear clinical benefits is table stakes; suppliers will also need to demonstrate operational ROI (e.g., hands-on time saved, staffing additions avoided). Volume-linked pricing, shifting the decision from capex to opex, addresses the utilization concern for labs taking their first steps toward in-house NGS.

To discuss these findings and translate modality-level growth into commercial actions across products, services and informatics, please **contact us**.

Note: Artificial intelligence was used to support the drafting of this article.

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