MDForLives

THE GLOBAL PULSE OF HEALTHCARE · LABORATORY MANAGEMENT & DIAGNOSTICS INSIGHT REPORT

In-House vs Reference Laboratory Testing: What Drives the Decision?

An in-depth laboratory-management view of when testing should move in-house, where reference-laboratory turnaround time creates the most friction, what operational barriers can stop a launch, and how workforce, financing, governance, and automation shape the decision over time.

Clinical Need → Feasibility → Launch → Reassessment

9	2	88.9%	8979133
Survey records	Countries represented USA · UK	Completion rate	Survey ID

WHY THIS REPORT

Every send-out decision is also a decision about clinical time, laboratory capacity, and what the health system wants the lab to own.

Laboratory managers sit at the intersection of clinical demand and operational reality. A service line may want a faster result, clinicians may be frustrated by send-out turnaround time, or volume may have grown enough to make insourcing attractive. Yet the laboratory still has to ask whether it has the staff, validation pathway, analyzer capacity, LIS/EHR build, quality controls, financing, and ongoing utilization needed to run the service reliably.

That is why "bring it in-house" is not a binary technology decision. The same test can be the right insourcing candidate in one hospital and the wrong one in another because volume, urgency, workforce, platform availability, and clinical pathways differ. It can also change over time. A test that made sense as a send-out two years ago may become an in-house priority after demand increases, treatment pathways change, or automation reduces the operational burden.

The MDForLives survey focuses on those trade-offs. Laboratory managers, supervisors, and directors were asked which testing categories they are evaluating for in-house expansion, what makes a test attractive, where reference-laboratory turnaround time creates the most friction, what metric drives the final decision, what blocks launch, how platforms are financed, how send-outs are reassessed, who holds influence, and what may reshape the model over the next 3-5 years.

Survey lens. The source report contains nine survey records with an 88.9% completion rate across USA and UK. Structured clinical questions use the source report's recorded response base. One testing-priority item allowed up to two selections. Hidden country punching is used only as geography metadata. Internal operational, after-survey, and honeypot fields are excluded from analysis.

LABORATORY OPERATIONS CONTEXT

The insourcing decision has to satisfy quality, competence, workflow, and clinical value at the same time.

External laboratory standards reinforce why the decision is multi-dimensional. ISO 15189:2022 specifies requirements for quality and competence in medical laboratories. In the United States, CLIA applies to laboratories testing human specimens and includes requirements covering personnel, quality systems, proficiency testing, and verification of performance specifications. CLSI method-evaluation guidance distinguishes the work required to validate or verify test performance before routine patient use.

Operational fit matters beyond the bench. CDC's laboratory informatics work emphasizes accurate integration of diagnostic information into electronic health records, which is relevant when a new assay changes ordering, result reporting, alerts, interfaces, and downstream clinical workflows. An analytically sound test can still create friction if the surrounding information flow is incomplete.

The workforce and technology environment is also changing. ASCP's 2024 U.S. vacancy survey, published in 2025, describes persistent staffing pressures and long hiring timelines. In 2026, ADLM highlighted the potential of AI and automation in laboratory medicine while emphasizing validation, interoperability, professional oversight, and ongoing monitoring. These external sources provide context for the MDForLives findings; they do not replace them.

EXECUTIVE SUMMARY

Six signals shaping the in-house versus reference-laboratory decision.

INSIGHT 01

Clinical turnaround time drives the final choice

Turnaround time and clinical impact outrank cost per reportable result and utilization as the strongest final decision metric.

INSIGHT 02

Molecular infectious-disease testing leads the insourcing pipeline

Molecular/PCR or syndromic infectious-disease testing is the most selected category being evaluated for in-house expansion.

INSIGHT 03

Volume makes a test attractive

High volume with consistent demand is the leading factor that makes a diagnostic test a strong in-house candidate.

INSIGHT 04

Staffing can be the launch constraint

Qualified laboratory staffing and expertise is the most selected primary hurdle when validating and launching a new assay.

INSIGHT 05

Laboratory leadership holds the strongest decision authority

Laboratory leadership is identified as the group with the greatest influence on major in-house versus reference decisions.

INSIGHT 06

Automation and AI lead the future view

Half expect automation and AI-enabled laboratory workflows to reshape the model most over the next 3-5 years.

01

TESTING PRIORITIES

Molecular infectious-disease testing is the clearest current insourcing priority

62.5% are evaluating molecular/PCR or syndromic infectious-disease testing for in-house expansion over the next 12-24 months.

CONTEXT

Testing portfolios evolve as clinical demand, platform capability, treatment pathways, and economics change. The first strategic question is therefore not whether laboratories are interested in insourcing at all, but which categories are high enough on the priority list to justify deeper feasibility work.

WHAT THE DATA SHOWS

Molecular/PCR or syndromic infectious-disease testing leads at 62.5%. Routine chemistry/immunoassays or specialized immunology follows at 50.0%. Oncology molecular testing/NGS is selected by 25.0%, and mass spectrometry/toxicology or drug monitoring by 12.5%. The item allowed up to two selections.

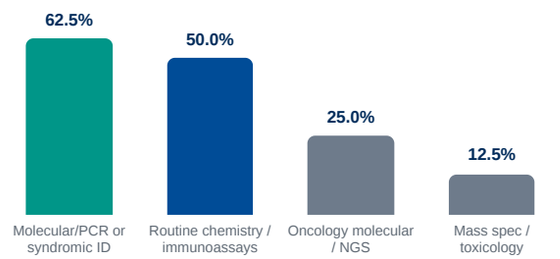
THE INSIGHT

The leading categories combine different operating profiles. Molecular infectious-disease testing can carry strong time sensitivity. Routine chemistry and immunoassays may be attractive because of volume and established workflow. Oncology molecular and mass spectrometry may offer clinical differentiation but can demand specialized expertise, validation, and interpretation.

WHY IT MATTERS

Laboratory leaders can use the priority list as the beginning of a staged business case. Each candidate should then be scored on clinical urgency, expected volume, current send-out TAT, referral cost, staffing, platform fit, validation effort, LIS/EHR work, quality requirements, and ongoing utilization.

Diagnostic categories being evaluated or prioritized for in-house testing



02

CANDIDATE CRITERIA

High and consistent demand is what most often makes a test look insourcable

50.0% say high volume with consistent demand is the primary factor that makes a diagnostic test a strong candidate for in-house testing.

CONTEXT

Volume is one of the few variables that touches nearly every part of the decision. It affects reagent utilization, analyzer capacity, staffing, economies of scale, competency maintenance, quality-control burden, and the likelihood that an in-house platform will be used enough to justify fixed costs.

WHAT THE DATA SHOWS

High volume with consistent demand leads at 50.0%. A clinically important turnaround-time advantage follows at 37.5%, while sufficient expertise and infrastructure is selected by 12.5%.

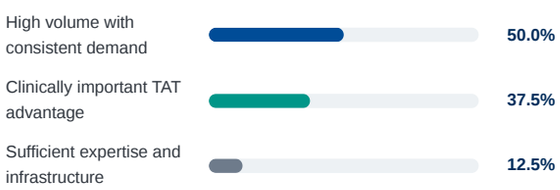
THE INSIGHT

The pattern suggests that laboratory leaders first look for sustainable demand, then ask whether clinical speed makes the case stronger. Expertise and infrastructure are less often selected as the reason a test is attractive, but later results show they become important when the laboratory tries to launch the service.

WHY IT MATTERS

A mature insourcing screen can separate candidate attractiveness from implementation readiness. Volume and clinical TAT may answer "Why should we consider this?" while staffing, validation, interfaces, space, quality, and finance answer "Can we operate it safely and sustainably?"

Primary factor that makes a test a strong in-house candidate



03

REFERENCE-LAB FRICTION

Reference-lab turnaround time creates the most friction in clinically time-sensitive pathways

Emergency/critical care and infectious disease/antimicrobial stewardship are tied at 37.5% as the service areas where reference-laboratory TAT creates the greatest friction.

CONTEXT

A send-out result is not only a laboratory event. Its timing can affect bed flow, antimicrobial decisions, escalation or de-escalation, procedure timing, discharge, and follow-up. The same absolute TAT can therefore carry very different clinical consequences depending on where the test sits in the care pathway.

WHAT THE DATA SHOWS

Emergency/critical care and infectious disease/antimicrobial stewardship each account for 37.5%. Oncology/precision medicine and outpatient chronic disease management each account for 12.5%.

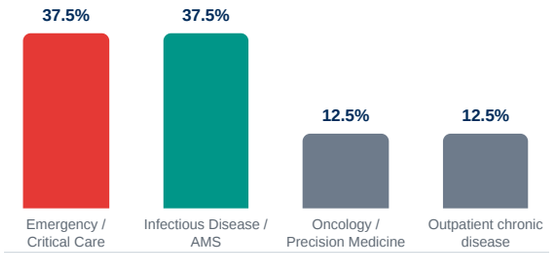
THE INSIGHT

The strongest friction appears where the care team may need to act before the reference result returns. This aligns with the broader finding that turnaround time and clinical impact, not cost alone, dominate the final in-house/reference decision.

WHY IT MATTERS

Laboratory managers can strengthen the case by translating referral TAT into pathway impact: time to targeted therapy, isolation or stewardship decision, escalation, discharge readiness, or other clinically relevant events. This creates a more complete comparison than laboratory TAT alone.

Clinical areas where reference-laboratory TAT creates the greatest friction



04

FINAL DECISION METRIC

The final choice is driven by turnaround time plus clinical impact more than by cost

62.5% say turnaround time and clinical impact have the greatest influence on the final in-house versus reference-laboratory decision.

CONTEXT

Laboratory business cases often begin with cost, but cost per reportable result does not capture what a delayed result may do to care. Nor does it capture whether a faster result actually changes practice. The final decision therefore benefits from pairing a laboratory metric with a clinical consequence.

WHAT THE DATA SHOWS

Turnaround time and clinical impact lead at 62.5%. Cost per reportable result is selected by 25.0%, while test volume and utilization is selected by 12.5%.

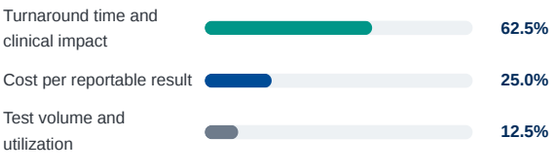
THE INSIGHT

The finding suggests that laboratory leaders are not treating speed as an operational vanity metric. The value of TAT appears to depend on whether it changes the downstream decision enough to justify the additional in-house complexity.

WHY IT MATTERS

A practical decision model can compare the reference-lab baseline with an in-house target and ask: What clinical decision moves earlier? How often will that matter? What capacity is required to sustain the new TAT? What quality, staffing, and interface work does the laboratory take on in exchange?

Metric with the greatest influence on the final decision



05

LAUNCH HURDLES

Staffing is the largest single launch hurdle, but validation and integration are close behind

37.5% identify qualified laboratory staffing and expertise as the primary operational hurdle when validating and launching a new in-house assay.

CONTEXT

Implementation is where an attractive candidate becomes a real laboratory service. New testing creates work across competency, validation or verification, quality control, maintenance, inventory, interfaces, reference ranges, reporting, clinician education, troubleshooting, and coverage. Any one of those tasks can become the limiting step.

WHAT THE DATA SHOWS

Qualified staffing and expertise lead at 37.5%. Assay validation and regulatory requirements account for 25.0%, and LIS/EHR integration and workflow setup also account for 25.0%. Instrument CapEx or laboratory footprint accounts for 12.5%.

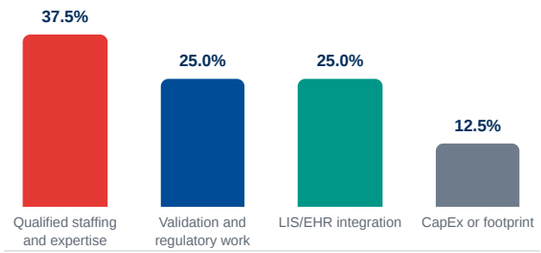
THE INSIGHT

The distribution shows that the bottleneck is not purely financial. Three of the four leading hurdles are operating capabilities: people, method implementation, and information-system workflow. That is consistent with the open responses, where technologist time and the difficulty of sustaining highly skilled microbiology staffing appear directly.

WHY IT MATTERS

For managers, launch readiness should be tested with a resource map rather than a single capital estimate. The map should identify who validates the assay, who trains staff, who builds the LIS/EHR workflow, who owns quality monitoring, who covers downtime, and whether the staffing model remains resilient during vacancies or leave.

Primary operational hurdle when launching a new in-house assay



06

FINANCING MODEL

Laboratories are split between reagent-linked financing and direct capital purchase

Reagent rental or cost-per-test and direct capital purchase are tied at 37.5% each as the most common platform-acquisition model.

CONTEXT

Platform financing changes where risk sits. A capital purchase concentrates cost upfront but can improve long-term ownership economics. A reagent-rental or cost-per-test arrangement can lower capital barriers but may create volume commitments, pricing dependencies, and contract constraints. Leasing and health-system or grant funding add other trade-offs.

WHAT THE DATA SHOWS

Reagent rental or cost-per-test is selected by 37.5%, direct capital purchase by 37.5%, third-party equipment leasing by 12.5%, and health-system capital or grant funding by 12.5%.

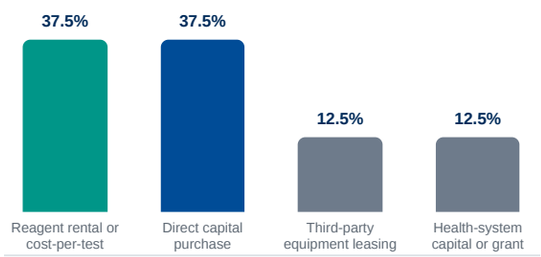
THE INSIGHT

There is no dominant financial model in this small respondent group. That suggests laboratories are matching acquisition strategy to local capital availability, expected utilization, vendor terms, and operational priorities rather than following one standard approach.

WHY IT MATTERS

The most useful comparison is total lifecycle cost. Contract minimums, reagents, calibrators, controls, service, middleware, interface work, staffing, validation, repeat testing, downtime, and decommissioning can all change the real economics of a platform beyond the purchase price.

Most common financial model for new testing platforms



07

PORTFOLIO REASSESSMENT

The in-house/reference boundary is reviewed on different clocks

37.5% say tests currently sent to reference laboratories are formally reassessed at least annually.

CONTEXT

A referral decision can outlive the conditions that created it. Volume may rise, reimbursement may change, a platform may become easier to operate, staffing may become harder, or a new clinical pathway may increase the value of faster results. Without a deliberate review cycle, the current state can become permanent by inertia.

WHAT THE DATA SHOWS

At least annual reassessment leads at 37.5%. Another 25.0% review mainly when volume or clinical needs change, 25.0% only when cost or service issues arise, and 12.5% every two to three years.

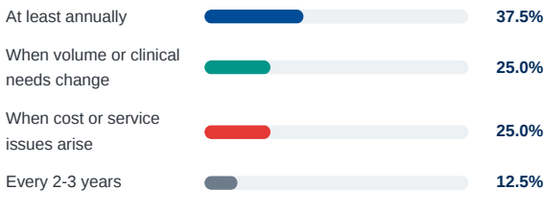
THE INSIGHT

The survey shows both proactive and event-driven portfolio management. An annual review creates a predictable opportunity to revisit strategy, while trigger-based review can respond to real changes. Relying only on visible service failure, however, may delay recognition that a send-out or in-house model no longer fits.

WHY IT MATTERS

A hybrid approach can work well: a scheduled portfolio review plus defined triggers such as volume thresholds, recurrent TAT complaints, new treatment pathways, staffing changes, vendor contract renewal, major reimbursement shifts, or the availability of a new platform.

How often send-out tests are formally reassessed



08

GOVERNANCE

Laboratory leadership holds the strongest influence over major testing-location decisions

75.0% say laboratory leadership has the greatest influence on decisions to bring testing in-house or move it to a reference laboratory.

CONTEXT

The decision sits closest to laboratory leadership because the lab carries responsibility for analytical quality, staffing, method implementation, capacity, and ongoing operations. Yet major platform choices can also involve health-system finance, operations, IT, infection prevention, pharmacy, oncology, or other service-line leaders.

WHAT THE DATA SHOWS

Laboratory leadership is selected by 75.0%, while multidisciplinary finance/operations teams account for 25.0%.

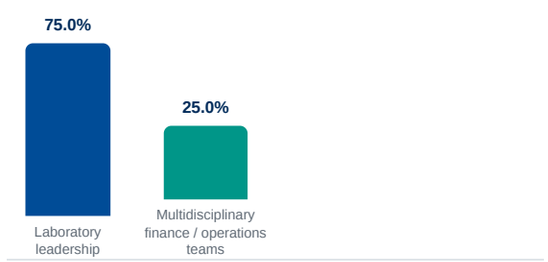
THE INSIGHT

The result suggests strong laboratory ownership of the decision architecture. That can be an advantage because it keeps feasibility and quality central. The risk is that a laboratory-only business case may understate clinical or health-system value if it does not include pathway outcomes, downstream utilization, and cross-functional benefits.

WHY IT MATTERS

The most resilient governance model gives laboratory leadership a clear voice while requiring structured input from the clinical services and operational teams affected by the result. This is especially important when the decision depends on clinical TAT, workforce investment, or enterprise capital.

Who has the greatest influence on major testing-location decisions



09

FUTURE MODEL

Automation and AI are expected to reshape what laboratories can sustainably keep in-house

50.0% say automation and AI-enabled laboratory workflows are most likely to reshape in-house versus reference-laboratory

testing over the next 3-5 years.

CONTEXT

Technology can change the insourcing threshold by reducing manual steps, supporting quality review, simplifying routing, standardizing interpretation, or helping laboratories manage higher complexity with the same workforce. But automation also creates its own requirements for validation, integration, monitoring, cybersecurity, training, and accountability.

WHAT THE DATA SHOWS

Automation and AI-enabled workflows lead at 50.0%. Workforce shortages and pressure to control costs follow at 25.0%. More accessible advanced testing platforms and growing demand for faster, decentralized testing each account for 12.5%.

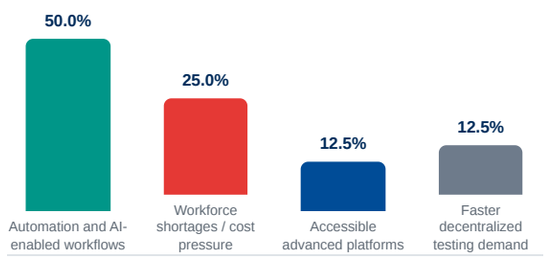
THE INSIGHT

The future is therefore shaped by both capability and constraint. Automation may make more in-house testing feasible, while workforce shortages and cost pressure may push some services in the opposite direction. The outcome is unlikely to be universal insourcing or outsourcing. It is more likely to be a continually optimized mix.

WHY IT MATTERS

ADLM's 2026 AI policy work emphasizes validation, local performance assessment, interoperability, professional oversight, and ongoing monitoring. For laboratory managers, those are not abstract governance issues. They determine whether automation actually reduces burden or simply moves work from the bench into validation, informatics, and quality oversight.

Development most likely to reshape testing location over the next 3-5 years



OPEN RESPONSE LENS

When laboratory leaders explain the decision in their own words, the trade-off becomes more operational than theoretical.

Respondents were asked to think of a diagnostic test their laboratory had recently brought in-house, kept with a reference laboratory, or considered moving between the two, then describe the decision drivers, the challenge encountered, and what ultimately influenced the outcome.

Turnaround time is the most concise answer

One respondent answers simply with turnaround time, while another places turnaround time alongside cost per test and the technologist time required to perform the assay. The brevity is useful: for some laboratories, the reason to reconsider a send-out is immediately obvious when care is waiting on the result.

Volume can move a test across the boundary

One response describes molecular C. difficile testing being brought in-house because order volume increased. This mirrors the structured finding that high and consistent demand is the leading factor that makes a test an attractive insourcing candidate.

Staffing can move the same decision in the opposite direction

A respondent describes full bacteriology being sent to a reference laboratory largely because it had become difficult and costly to maintain a sufficient pool of highly skilled microbiology technologists. This is the clearest qualitative example of workforce capacity changing the make-or-buy answer.

Cost is broader than reagent price

Responses refer to test cost, technologist time, instruments, supplies, and corporate pressure. Together they show why total operating cost can look different from a simple reagent comparison and why the human impact of cost pressure can become part of the decision.

What the qualitative responses add: The structured survey identifies the dominant variables; the open responses show how those variables collide in real decisions. Turnaround time, volume, staffing, instruments, supplies, and patient or workforce consequences are often discussed together rather than one at a time. One listed response is punctuation-only and was not used to infer any theme. No qualitative percentages were created.

PEOPLE ALSO ASK · TOPIC FAQ

Frequently asked questions about in-house laboratory testing.

What factors should a hospital laboratory consider before bringing a test in-house?

A laboratory should consider clinical urgency, expected test volume, turnaround-time benefit, staffing and expertise, validation or verification requirements, instrument capacity, LIS/EHR workflow, quality oversight, cost, reimbursement, and whether the service can be sustained over time.

When does turnaround time justify moving testing in-house?

Turnaround time matters most when a faster result can change near-term clinical decisions, patient flow, antimicrobial treatment, critical-care management, or other time-sensitive actions. The value of speed should be weighed against staffing, quality, utilization, and total operating cost.

What is the difference between assay validation and verification?

In general laboratory practice, validation establishes performance for a laboratory-developed or meaningfully modified method, while verification confirms that a laboratory can meet stated performance specifications for a method under its own operating conditions. Local regulatory and accreditation requirements still apply.

How do laboratories choose between reagent rental and capital purchase?

The choice usually depends on expected volume, contract terms, reagent commitment, capital availability, service coverage, equipment life, maintenance, flexibility, and total cost over the expected use period. Neither model is automatically better in every setting.

Why is LIS/EHR integration important when launching a new laboratory test?

A new assay must fit ordering, specimen tracking, result transmission, reference ranges, alerts, billing, quality monitoring, and clinician workflows. Weak integration can create manual steps, reporting delays, duplicate work, or patient-safety risk even when the analytical method performs well.

How can automation and AI affect clinical laboratory workflows?

Automation and AI can support tasks such as routing, quality review, data interpretation, workload management, and decision support. Their value depends on local validation, data quality, interoperability, staff training, professional oversight, and ongoing performance monitoring.

LABORATORY DECISION LENS

What this means at four decision gates in the testing portfolio.

The survey suggests that a durable in-house/reference strategy can be built around four recurring gates rather than a one-time capital decision.

Clinical value gate

Question: Will a faster or more locally controlled result materially change a clinical decision, pathway, or patient-management step?

Demand gate

Question: Is volume predictable and sustained enough to support competency, reagent use, QC, maintenance, and the fixed costs of local testing?

Readiness gate

Question: Does the laboratory have the staffing, expertise, validation or verification plan, LIS/EHR workflow, quality systems, and physical capacity to launch safely?

Lifecycle gate

Question: Does the financing model make sense, who owns the decision, and when will the laboratory formally reassess whether the current testing location still fits?

CLOSING PERSPECTIVE

The most resilient laboratory portfolio is not the one with the most testing in-house. It is the one that keeps the right testing in the right place as conditions change.

The survey describes a decision model built around clinical time, demand, and operational feasibility. Turnaround time and clinical impact are the strongest final decision metric. High and consistent volume makes a test attractive. Staffing is the largest single launch hurdle. Laboratory leadership holds the strongest decision influence. Automation and AI are expected to reshape what becomes feasible next. These are not separate findings. They are the sequence of a make-or-buy decision.

The sequence starts with the care pathway. If a result can safely remain a send-out without delaying meaningful clinical action, the reference-laboratory model may preserve local capacity and expertise. If referral turnaround time interferes with emergency care, antimicrobial stewardship, or another time-sensitive decision, the clinical value of in-house testing rises. But that value still has to be weighed against the laboratory's ability to perform the service consistently.

The next gate is sustainability. Half of respondents point to high, consistent demand as the strongest reason a test becomes a good in-house candidate. That matters because demand supports competency, reagent utilization, quality monitoring, and platform economics. Yet demand can also increase workload. The open responses show how technologist time and workforce availability can change the answer even when volume and TAT argue for insourcing.

Implementation then becomes a systems problem. Staffing, validation or regulatory work, and LIS/EHR integration all rank above capital footprint as the primary operational hurdle. This means the go-live plan has to extend beyond analyzer installation. It needs a workforce model, validation or verification plan, informatics build, quality plan, clinician communication, downtime strategy, and ongoing utilization review. The operational architecture is part of the test.

Finally, the decision must stay reversible. Financing models are split between reagent-linked and direct-capital approaches, and reassessment cycles vary. Technology is also moving. Half of respondents expect automation and AI-enabled workflows to reshape testing location over the next few years, while another quarter point to workforce shortages and cost pressure. Both forces can be true at once: technology may make some services easier to keep in-house while staffing or economics make others more logical to refer.

The strategic role of laboratory leadership is therefore not to maximize insourcing. It is to keep clinical value, quality, workforce, technology, and finance aligned. A test portfolio that is deliberately reviewed can move testing in either direction when the facts change, without treating either in-house or reference testing as an ideological preference.

1 · Translate TAT into a clinical consequence

Define what changes for the patient or clinician when the result is available earlier, and whether that outcome justifies additional local complexity.

2 · Separate attractiveness from readiness

Volume and clinical urgency can make a test attractive, but staffing, validation, interfaces, quality, and coverage determine whether the laboratory is ready.

3 · Cost the whole lifecycle

Include reagents, controls, service, interface work, validation, staffing, maintenance, downtime, competency, and decommissioning rather than comparing purchase price alone.

4 · Build the informatics work into the launch plan

Map ordering, result routing, reference ranges, alerts, billing, quality monitoring, and clinician workflow before go-live so analytical success does not create operational friction.

5 · Protect specialized workforce capacity

Ask whether the service can be sustained through vacancies, leave, turnover, training, and after-hours coverage, especially for high-complexity or specialist testing.

6 · Reassess the portfolio on a schedule and by trigger

Use regular review plus predefined triggers such as volume shifts, recurrent TAT issues, new treatment pathways, contract renewal, staffing changes, or new automation.

Help future laboratory-management insights reflect how testing decisions are actually made.

Join MDForLives to share perspectives on test insourcing, reference-laboratory use, turnaround time, staffing, validation, informatics, automation, and diagnostic operations.

Join the Panel

REFERENCES AND DATA SOURCE

Sources used for this report

1. **MDForLives internal survey report.** All SGID report for 8979133, Project: Engagement Campaign | Lab manager Insight Survey_Sep. Nine survey records, 88.9% completion rate, across USA and UK. Structured clinical items use the response base recorded in the source report. The testing-priority item allowed up to two selections. Seven usable open-ended responses were reviewed; one listed response is blank. No qualitative percentages were created.
2. **International Organization for Standardization.** ISO 15189:2022 - Medical laboratories: Requirements for quality and competence. Specifies requirements for quality and competence in medical laboratories.
3. **Centers for Medicare & Medicaid Services.** CLIA Regulations & Compliance. U.S.-specific context on quality systems, proficiency testing, personnel, and laboratory testing requirements.
4. **Clinical and Laboratory Standards Institute.** Verifying Performance Claims for Medical Laboratory Tests. Current CLSI guidance mapping evaluation protocols used when laboratories verify performance claims.
5. **Centers for Disease Control and Prevention.** About Informatics and Data Science. Context on laboratory information systems, EHR integration, and informatics approaches that support clinical and public-health outcomes.
6. **American Society for Clinical Pathology.** 2024 Vacancy Survey summary. U.S. workforce context showing persistent laboratory staffing pressure, rising retirements in many departments, and operational challenges associated with AI adoption.
7. **Association for Diagnostics & Laboratory Medicine.** Artificial Intelligence in Laboratory Medicine. 2026 policy report emphasizing validation, transparency, accountability, interoperability, patient safety, professional oversight, and lifecycle monitoring for AI-enabled laboratory practice.

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