

Direct-to-Consumer Laboratory Panels: Downstream Testing Generated by Unsolicited Abnormal Results

Marek Studenka-Chodsky^{1*}, Cecile Grandvaux-Perrey² and Andres Kaljuvee-Parts³

¹Department of Clinical Biochemistry, Chodsko Institute of Laboratory Medicine, Domazlice, Czech Republic. ORCID: [0000-0003-5534-9317](https://orcid.org/0000-0003-5534-9317)

²Department of General Practice, Gruyere Centre for Clinical Biochemistry, Bulle, Switzerland. ORCID: [0000-0003-7443-6248](https://orcid.org/0000-0003-7443-6248)

³Department of Health Economics, Hiiumaa Institute of Laboratory Medicine, Kardla, Estonia. ORCID: [0000-0001-4413-3890](https://orcid.org/0000-0001-4413-3890)

*Correspondence to: Marek Studenka-Chodsky, Department of Clinical Biochemistry, Chodsko Institute of Laboratory Medicine, Domazlice, Czech Republic, E-mail: m.studenkachodsky@cilm.cz

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Abstract

Direct-to-consumer laboratory testing panels, purchased without clinician involvement and often covering dozens of analytes at once, generate abnormal results at a rate driven substantially by the statistical consequence of testing many analytes simultaneously rather than by underlying disease prevalence, and these unsolicited abnormal results are frequently brought to primary care for interpretation and follow-up. We reviewed primary care consultation and downstream testing records for 412 patients presenting with a direct-to-consumer panel result over an eighteen-month period across nine primary care practices. At least one abnormal result was present in 78% of panels reviewed (median 34 analytes tested), and downstream confirmatory or follow-up testing was initiated for 61% of presentations, of which 84% ultimately identified no clinically significant abnormality. We estimate the downstream testing burden this generates and discuss what primary care and laboratory services can do to manage a pattern that direct-to-consumer testing appears set to increase rather than reduce.

Keywords: Direct-to-consumer testing; Primary care; Downstream testing; False positive; Health economics

Introduction

Direct-to-consumer laboratory testing, purchased online or through a retail pharmacy without a requesting clinician's involvement, typically offers panels covering a large number of analytes measured simultaneously against individual reference intervals, each conventionally defined to include roughly 95% of a healthy reference population.^[1] Testing many analytes at once compounds this statistically: a healthy individual tested across 30 to 40 independent analytes has a substantial probability of at least one result falling outside its reference interval purely by chance, independent of any underlying disease.^[2]

These unsolicited abnormal results, generated outside any clinical consultation and often without pre-test counselling about this statistical property, are frequently brought to primary care by the consumer seeking interpretation, and the downstream testing this generates has not been well quantified. We reviewed

primary care consultation and downstream testing records across nine practices to characterise the scale and yield of this pattern.

Direct-to-consumer testing has grown rapidly as a market segment over the past decade, driven by consumer interest in proactive health monitoring, reduced reliance on clinician gatekeeping for test access, and marketing that frequently emphasises comprehensiveness -- the number of analytes covered -- as a selling point, a marketing emphasis that, as this report will discuss, directly works against the statistical reality that testing more analytes simultaneously increases rather than decreases the likelihood of encountering at least one incidental abnormal result unrelated to genuine disease.^{[1][7]}

Methods

Records were reviewed for 412 consecutive primary care presentations explicitly prompted by a direct-to-consumer laboratory panel result across nine practices over eighteen months. For each presentation, the number of analytes tested, the number and type of abnormal results, any downstream confirmatory or follow-up testing initiated by the primary care clinician, and the ultimate clinical outcome of that downstream testing were recorded.^[3]

Primary care consultation time directly attributable to the direct-to-consumer result presentation itself, separate from any subsequent downstream testing consultations, was also recorded for each of the 412 presentations, to characterise the immediate consultation burden independent of the further downstream testing burden reported separately below.^[4]

Results

The panels reviewed tested a median of 34 analytes (range 12-96), and at least one abnormal result was present in 78% of panels (321 of 412). The most frequently abnormal analytes were mildly outside range and of low individual clinical significance -- vitamin D, certain lipid subfractions, and several liver enzymes among the most common -- consistent with the pattern expected from multiple simultaneous testing against conventional reference intervals rather than a specific disease signal.^[4]

Downstream confirmatory or follow-up testing was initiated by the primary care clinician for 61% of the 412 presentations (251 cases). Of these, 84% (211 of 251) ultimately identified no clinically significant abnormality on completion of the follow-up pathway, with the abnormal direct-to-consumer result most often attributed to normal biological variation, a mild and clinically insignificant finding not warranting intervention, or resolution on repeat testing.^{[5][6]}

The initial consultation prompted by the direct-to-consumer result itself had a median duration approximately 40% longer than this practice group's average consultation length, reflecting the time needed to review an unfamiliar, often lengthy results list and explain the statistical basis for incidental abnormal findings to a consumer who had not received this context at the point of purchase.^[5]

Metric	Value
Presentations reviewed	412
Median analytes per panel	34 (range 12-96)
Panels with ≥ 1 abnormal result	78% (321/412)
Downstream testing initiated	61% (251/412)
Downstream testing, no significant finding	84% (211/251)

Table 1: Summary of Direct-to-Consumer Panel Presentations and Downstream Testing Outcomes Across the Nine Practices.

Discussion

A downstream testing initiation rate of 61%, with 84% of that downstream testing yielding no clinically significant finding, represents a substantial volume of primary care consultation time and laboratory resource directed at a pattern that is, to a meaningful extent, a predictable statistical consequence of the panel design itself rather than a genuine screening yield.^[7] This is not an argument that direct-to-consumer testing never identifies genuine pathology -- a minority of the reviewed cases did lead to a clinically meaningful diagnosis -- but that the panel format, by testing many analytes without pre-test counselling about multiple comparison effects, generates a disproportionate volume of downstream activity relative to that genuine yield.

Pre-test consumer counselling explaining that testing many analytes simultaneously increases the chance of an incidental abnormal result unrelated to underlying disease, delivered clearly at the point of purchase rather than buried in terms and conditions, could plausibly reduce unnecessary primary care presentation, though we did not directly test this intervention here.^[8] A structured interpretive report accompanying direct-to-consumer results -- flagging which abnormalities are common incidental findings of low individual significance versus those warranting prompt clinical review -- would also help primary care clinicians triage these presentations more efficiently than working from a raw results list alone.^{[9][10]}

The Statistical Basis of Multiple Comparison in Panel Testing

The statistical phenomenon underlying this report's central finding -- that testing many analytes simultaneously generates incidental abnormal results at a predictable rate independent of disease prevalence -- is well established in the broader statistical and laboratory medicine literature and is worth explaining in concrete terms.

If each of 34 independently measured analytes has a conventional reference interval defined to include 95% of a healthy population, then for a healthy individual with no correlation between analyte results, the probability that all 34 results fall within their respective reference intervals is approximately 0.95 raised to the 34th power, or roughly 17%, meaning an entirely healthy individual tested across this many analytes has roughly an 83% chance of at least one result falling outside its reference interval purely by chance.^{[2][3]}

This calculation assumes full statistical independence between analytes, which does not hold perfectly in practice since some analytes are physiologically correlated, but the broad magnitude of the effect -- a high probability of at least one incidental abnormal result when testing several dozen analytes -- is robust to this simplification and is consistent with this study's observed 78% rate of at least one abnormal result across the reviewed panels.

Why Marketing Emphasis on Panel Comprehensiveness Is Counterproductive

Direct-to-consumer testing marketing frequently emphasises the number of analytes covered by a panel as a primary selling point, framing a larger panel as providing more comprehensive health insight, and this marketing framing sits in direct tension with the statistical reality this report describes.

A larger panel does provide more comprehensive coverage of individual analytes in the sense that more biological systems are sampled, but it simultaneously and predictably increases the probability of at least one incidental abnormal result unrelated to genuine disease, meaning the marketing framing of comprehensiveness as straightforwardly beneficial omits the corresponding and statistically certain downside of increased incidental finding burden.^{[1][7]}

A more statistically honest marketing framing would communicate that a larger panel trades increased biological coverage against an increased likelihood of an incidental, clinically insignificant abnormal finding requiring interpretation, giving consumers the information needed to weigh this trade-off before purchase rather than encountering it only after receiving an unexplained abnormal result.

Economic Considerations for Primary Care and Health Systems

The downstream testing burden characterised in this study carries direct economic implications for primary care and laboratory services, worth quantifying in general terms even without a formal costed economic analysis.

The 251 presentations in this study's sample that proceeded to downstream confirmatory or follow-up testing each generated at least one additional laboratory test and, in most cases, at least one additional primary care consultation to review the downstream result, and with 84% of this downstream testing ultimately identifying no clinically significant abnormality, a substantial proportion of this resource consumption did not translate into a clinically actionable outcome.^[6]

At a health system level, with direct-to-consumer testing volume continuing to grow, the aggregate downstream testing burden implied by this study's 61% downstream-testing-initiation rate scaled across a growing consumer base represents a meaningful and likely under-recognised cost pressure on primary care and laboratory capacity, one that is not currently reflected in most health system planning given that direct-to-consumer testing itself occurs entirely outside the health system's own commissioning and planning processes.

Comparison with Previously Published Work on Incidental Findings

This study's findings are consistent with, and extend into the direct-to-consumer context, a broader body of previously published work on incidental findings and overdiagnosis arising from testing or screening conducted outside a strong pre-test probability of disease.

Welch and Black's work on overdiagnosis in cancer screening, and the broader screening literature examining the trade-off between detection benefit and incidental finding burden, describe a structurally similar phenomenon to this study's findings, though applied to a different testing context: screening for a specific disease in an asymptomatic population rather than simultaneous testing of many unrelated analytes, yet sharing the common underlying theme that testing conducted outside a strong clinical indication tends to generate a disproportionate volume of incidental findings relative to genuine diagnostic yield.^{[5][6]}

Naugler and Guo's specific work on mass screening with random reference intervals anticipated closely the statistical phenomenon this study documents empirically, and this study's contribution is to provide concrete, consultation-level outcome data quantifying how this statistical phenomenon translates into actual primary care presentation and downstream testing volume in practice.^[2]

Practical Recommendations for Primary Care Clinicians

Drawing together this study's findings, we propose practical recommendations for primary care clinicians managing a patient presenting with a direct-to-consumer panel result.

Before initiating downstream confirmatory testing, consider explicitly the number of analytes tested in the original panel and the magnitude of the abnormal result relative to its reference interval, since a single mildly abnormal result from a panel of several dozen analytes is substantially more likely to represent an incidental finding than the same result obtained from a smaller, clinically indicated test panel ordered for a specific presenting complaint.^{[4][8]}

Where clinically appropriate, consider a period of clinical observation or simple repeat testing of the specific abnormal analyte alone, rather than a broader confirmatory workup, as an initial step for a mildly abnormal, asymptomatic incidental finding of the kind most commonly identified in this study's reviewed panels.

Recommendations for Direct-to-Consumer Testing Providers

Direct-to-consumer testing providers themselves have a meaningful opportunity to reduce the downstream burden characterised in this study through changes to pre-test counselling and result reporting.

Clear, prominent pre-test counselling at the point of purchase, explaining in plain language that testing many analytes simultaneously increases the likelihood of an incidental abnormal result unrelated to disease, would give consumers realistic expectations before they receive their results, rather than encountering this statistical reality only after an unexpected abnormal finding prompts concern and a primary care visit.^{[9][10]}

A structured interpretive report accompanying results, distinguishing common, low-significance incidental abnormalities from findings warranting prompt clinical review, would also help consumers and the primary care clinicians they subsequently consult triage a results list more efficiently than working from a raw, undifferentiated list of analyte values and reference intervals alone.

Study Limitations

This study's retrospective, multi-practice design carries limitations worth noting explicitly.

This study captured only presentations that reached primary care; consumers who received an abnormal direct-to-consumer result but did not present to primary care, whether because they disregarded the result, sought interpretation elsewhere, or were reassured by accompanying information, are not represented in this sample, meaning the true population-level rate of abnormal results among all direct-to-consumer panels purchased, as opposed to the subset specifically brought to primary care, cannot be directly estimated from this study's data alone.^[3]

The nine participating practices were not randomly selected and may not be representative of primary care practice more broadly in terms of patient demographics, direct-to-consumer testing uptake, or individual clinician threshold for initiating downstream confirmatory testing, limiting the generalisability of this study's specific quantitative findings beyond the practices studied.

Future Directions

A prospective study directly testing the effect of enhanced pre-test consumer counselling or a structured interpretive report on subsequent primary care presentation rates would provide stronger evidence for the practical value of these interventions than this study's observational design, which did not directly test either intervention, can offer.

Further research characterising the specific minority of direct-to-consumer-prompted presentations that did identify genuine clinically significant pathology in this study's sample would help clarify which specific analyte categories and abnormality patterns carry the greatest genuine diagnostic yield, potentially informing a more targeted triage approach than treating all direct-to-consumer-prompted presentations uniformly.

Interaction Between Panel Size and Genuine Diagnostic Yield

A natural question arising from this study's findings is whether larger direct-to-consumer panels, despite generating more incidental findings, also identify proportionally more genuine pathology, a trade-off worth examining using this study's own data on the minority of presentations that did identify clinically significant findings.

Within this study's sample, presentations arising from larger panels (above the median 34 analytes) were not proportionally more likely to identify a genuinely significant finding on downstream testing than presentations arising from smaller panels, suggesting that the genuine diagnostic yield of direct-to-consumer testing in this sample was not strongly driven by panel breadth, while the incidental finding burden, by contrast, scaled predictably with the number of analytes tested as the earlier statistical discussion in this report would predict.^{[2][4]}

This asymmetry -- incidental finding burden scaling with panel size while genuine diagnostic yield does not scale proportionally -- is the central practical concern this report raises about panel comprehensiveness as a marketed feature, since it suggests that larger panels primarily add incidental finding burden rather than proportionally greater genuine diagnostic value.

Patient and Consumer Communication Considerations

Beyond the provider-side counselling recommendations made earlier in this report, there is a broader communication challenge in helping consumers understand the statistical nature of an incidental abnormal finding without this explanation itself seeming to dismiss or minimise a result that understandably causes concern.

Framing an explanation of multiple comparison effects in a way that acknowledges the consumer's reasonable concern about an abnormal result, while still conveying that an isolated, mildly abnormal finding from a panel of several dozen analytes carries a meaningfully lower probability of representing genuine disease than the same finding would in a more targeted clinical context, requires careful communication that avoids both unwarranted alarm and inappropriate dismissal.^[9]

Primary care clinicians managing these presentations in this study's sample reported, informally, that consumers generally responded well to a clear, specific explanation of why an isolated mild abnormality in a large panel was unlikely to be clinically significant, particularly when this explanation was accompanied by a concrete plan, such as a single repeat test, rather than either dismissing the finding without any follow-up or proceeding directly to an extensive confirmatory workup.

Regulatory Context for Direct-to-Consumer Testing

Regulatory oversight of direct-to-consumer laboratory testing varies considerably between jurisdictions, ranging from requirements for clinician countersignature of results to largely unregulated direct consumer access, and this regulatory variation has direct bearing on the pre-test counselling and interpretive reporting recommendations made throughout this report.^[8]

Jurisdictions with more permissive direct-to-consumer testing regulation could reasonably consider mandating minimum pre-test counselling content, specifically addressing the multiple comparison effect this report characterises, as a regulatory requirement for direct-to-consumer panel marketing and result delivery, rather than leaving this disclosure entirely to individual provider discretion as currently occurs in most markets.^[10]

Interdisciplinary Coordination Between Primary Care and Laboratory Services

Primary care clinicians managing a direct-to-consumer-prompted presentation frequently have limited direct access to laboratory medicine expertise for interpreting an unfamiliar panel's results, particularly for less commonly ordered analytes, and closer coordination between primary care and laboratory services could help address this gap.

A laboratory advice line or equivalent rapid-access consultation pathway, allowing a primary care clinician to quickly check whether a specific abnormal result from an unfamiliar direct-to-consumer panel warrants confirmatory testing or is more likely to represent a benign incidental finding, would provide primary care clinicians with expert laboratory medicine input at the point of decision-making, potentially reducing the 61% downstream-testing-initiation rate observed in this study where some of that testing may have been avoidable with better specialist input at the point of initial presentation.^{[6][7]}

Applicability to Other Forms of Unsolicited Health Testing

The underlying phenomenon this report characterises -- incidental abnormal findings generated by testing many analytes simultaneously outside a strong clinical indication -- extends beyond direct-to-consumer laboratory panels specifically to other forms of unsolicited health testing with similar structural features.

Consumer wearable devices and health applications that flag physiological parameters as abnormal based on population reference ranges, and workplace or community health screening events offering broad biometric panels without individualised pre-test counselling, share the same fundamental structural vulnerability to incidental finding generation that this report characterises for direct-to-consumer laboratory testing specifically, suggesting the communication and reporting recommendations made throughout this report have relevance beyond the laboratory testing context alone.^[1]

Age and Demographic Patterns Within the Reviewed Presentations

This study's 412 reviewed presentations showed some demographic patterning worth describing, offering context for which patient groups are most likely to present with a direct-to-consumer result and therefore most likely to benefit from the recommendations made throughout this report.

Presentations clustered somewhat more heavily among patients in mid-adulthood with higher self-reported engagement in proactive health monitoring, consistent with general market research on the direct-to-consumer testing consumer base, and this demographic skew suggests that targeted pre-test counselling efforts by providers, and targeted clinician awareness efforts within primary care, could reasonably prioritise this demographic segment as the one most likely to generate the pattern of presentation and downstream testing characterised in this study.^[4]

Why This Study Measured Consultation Burden Separately From Downstream Testing

This study's methodology separately recorded the immediate consultation burden of the initial direct-to-consumer result presentation and the further burden of any downstream confirmatory testing, a distinction worth explaining given that many prior discussions of direct-to-consumer testing's health system impact focus primarily on downstream testing volume alone.

The immediate consultation burden -- the longer-than-average consultation time needed to review and explain an unfamiliar results list, as reported earlier in this study's Results section -- represents a real primary care resource cost that occurs even for the 39% of presentations that did not proceed to any downstream testing at all, meaning the total primary care burden attributable to direct-to-consumer testing in this study's sample exceeds what a downstream-testing-only accounting would capture.^[5]

Governance Recommendations for Primary Care Practices

Individual primary care practices, independent of any broader regulatory or provider-level change, can take practical steps to manage the direct-to-consumer-prompted presentation pattern characterised in this study.

Developing a brief, practice-level clinical guidance note summarising the statistical basis for incidental findings in large panels, along with a suggested triage approach distinguishing mildly abnormal incidental findings from results warranting prompt further investigation, would give clinicians within a practice a consistent, evidence-based starting point for managing these presentations, rather than each clinician independently determining their own threshold for initiating downstream testing.^{[6][8]}

Tracking the practice's own rate of direct-to-consumer-prompted presentations and downstream testing outcomes over time, following a simplified version of this study's own methodology, would allow a practice to monitor whether its internal guidance is achieving an appropriate balance between avoiding unnecessary downstream testing and ensuring genuine pathology is not missed among the incidental finding noise.

Why 84% of Downstream Testing Identified No Significant Finding

The specific finding that 84% of downstream testing ultimately identified no clinically significant abnormality warrants closer examination of what the remaining 16% did find, to contextualise how this study's findings should and should not be interpreted regarding the genuine value of direct-to-consumer testing.

The minority of downstream testing that did identify a clinically significant finding in this study's sample spanned a range of conditions, from previously undiagnosed metabolic conditions to, in a small number of cases, findings prompting specialist referral, meaning this study's findings should not be read as suggesting direct-to-consumer testing never identifies genuine pathology, but rather that the proportion of presentations ultimately explained by genuine pathology is considerably smaller than the proportion ultimately explained by incidental, clinically insignificant variation.^{[5][6]}

This 84%/16% split is broadly consistent with what the multiple-comparison statistical framework described earlier in this report would predict for a panel of this median size tested in a population not pre-selected for elevated disease risk, reinforcing that this study's quantitative findings are explicable by, rather than inconsistent with, the underlying statistical mechanism this report describes.

Practical Checklist for Primary Care Clinicians

Drawing together the recommendations made throughout this report, we propose the following practical checklist for primary care clinicians encountering a direct-to-consumer panel presentation.

Ask how many analytes were tested and note the magnitude of the abnormal result relative to its reference interval; explain to the patient, clearly and without dismissiveness, that testing many analytes increases the chance of an isolated incidental finding unrelated to disease; consider a single targeted repeat test rather than a broad confirmatory workup as an initial step for a mild, asymptomatic incidental finding; and document the rationale for the chosen approach to support consistent practice within the clinic over time.^{[4][9]}

Scalability of This Study's Findings as Direct-to-Consumer Testing Grows

Direct-to-consumer laboratory testing volume has grown substantially over the period this study's data was collected and is generally expected to continue growing, and the implications of this study's findings scale directly with that growth.

If the 61% downstream-testing-initiation rate and 78% at-least-one-abnormal-result rate observed in this study's sample remain broadly representative as direct-to-consumer testing volume continues to grow, the absolute primary care and laboratory resource burden this pattern generates will grow proportionally, reinforcing the importance of the provider-side counselling and regulatory recommendations made throughout this report as a means of moderating that growth in burden relative to growth in testing volume, rather than allowing both to scale together unchecked.^{[1][7]}

Why This Study Reviewed Nine Practices Rather Than a Single Site

This study's decision to review records across nine primary care practices rather than a single site reflects an aim of capturing some of the variation in clinician response to direct-to-consumer-prompted presentations that a single-site study would not be positioned to detect.

Downstream-testing-initiation rates varied across the nine practices in this study's sample, from a low of approximately 48% to a high of approximately 74%, suggesting that individual clinician or practice-level threshold for initiating confirmatory testing in response to an incidental finding varies considerably even when the underlying panel results and statistical phenomenon generating them are essentially the same, a finding that itself supports this report's recommendation for practice-level guidance to promote more consistent decision-making.^{[3][6]}

Summary of Recommendations Across Stakeholders

This report's recommendations span direct-to-consumer testing providers, primary care practices and individual clinicians, and regulators, and summarising them together by stakeholder helps clarify the distinct but complementary role each can play in addressing the pattern this study documents.

Providers can reduce downstream burden through clear pre-test counselling and structured interpretive reporting at the point of result delivery; primary care practices can develop internal guidance promoting consistent, statistically informed triage of incidental findings; individual clinicians can apply a measured, single-repeat-test-first approach to mild, asymptomatic incidental findings before proceeding to broader confirmatory workups; and regulators can consider mandating minimum pre-test counselling content where current provider practice does not voluntarily achieve this.^{[8][10]}

Reflections on Consumer Autonomy and Clinical Paternalism

The recommendations made throughout this report, particularly those touching on regulation of pre-test counselling content, sit within a broader ethical tension between respecting consumer autonomy to purchase and interpret health information as they choose and the clinical and health system interest in reducing avoidable downstream burden.

Vayena's work on direct-to-consumer genomics and the scales of autonomy addresses a structurally similar tension in the genetic testing context, and the same basic framework applies here: mandating clearer pre-test counselling content does not restrict consumer access to direct-to-consumer testing itself, but aims to ensure that the autonomous choice to purchase such testing is made with adequate information about its statistical properties, a position consistent with informed consent principles applied elsewhere in healthcare rather than an unusual departure from them.^{[10][8]}

Why This Study Did Not Pursue a Cost-Effectiveness Framing

This study deliberately presents its findings in terms of consultation and testing volume rather than attempting a full formal cost-effectiveness analysis, a methodological choice worth explaining given that health economics expertise was available among this study's authorship.

A formal cost-effectiveness analysis would require assumptions about the monetary value of a primary care consultation, a downstream test, and the clinical benefit of the minority of genuine diagnoses identified, assumptions that vary considerably across health systems and would limit this study's generalisability beyond the specific funding and cost context in which such an analysis was conducted; presenting the underlying volume data instead allows readers in different health system contexts to apply their own locally appropriate cost assumptions to this study's consultation and testing volume findings.^[6]

Closing Reflection on the Broader Trend Toward Consumer-Directed Testing

This study's findings sit within a broader trend toward consumer-directed access to health information outside traditional clinician gatekeeping, a trend driven by genuine consumer demand for autonomy and proactive health engagement that is unlikely to reverse regardless of the downstream burden this report documents.

Rather than arguing against this broader trend, this report's recommendations are aimed at ensuring the trend develops in a way that manages its predictable statistical consequences through better pre-test counselling, more informative result reporting, and more consistent primary care triage practice, so that the genuine benefits of consumer-directed testing access are not undermined by an avoidably large burden of incidental finding follow-up that this study's data suggests is, to a

substantial degree, a predictable and therefore manageable consequence of panel design rather than an unavoidable cost of consumer testing access itself.^{[1][7]}

Final Methodological Note on Panel Size Classification

Throughout this report, panels have been discussed in terms of the number of analytes tested, and a brief final methodological note on how this study classified and counted analytes helps clarify the basis for the figures reported throughout.

Analyte counts in this study were based on the number of individually reported results with their own distinct reference interval, rather than the number of underlying test requisition codes or billing units, since a single requisition can sometimes generate multiple individually reported analyte results (for example, a lipid panel reporting total cholesterol, high-density and low-density lipoprotein cholesterol, and triglycerides as four distinct reported results), and this individually-reported-result level of counting is the statistically relevant unit for the multiple comparison framework this report applies throughout.^{[2][3]}

Conclusion

Direct-to-consumer laboratory panels generated at least one abnormal result in 78% of cases reviewed, and primary care downstream testing initiated in response identified no clinically significant abnormality in 84% of cases. This pattern reflects, in substantial part, the statistical consequence of testing many analytes simultaneously without pre-test counselling, and better consumer education and structured interpretive reporting at the point of purchase could reduce the downstream primary care burden this currently generates.

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