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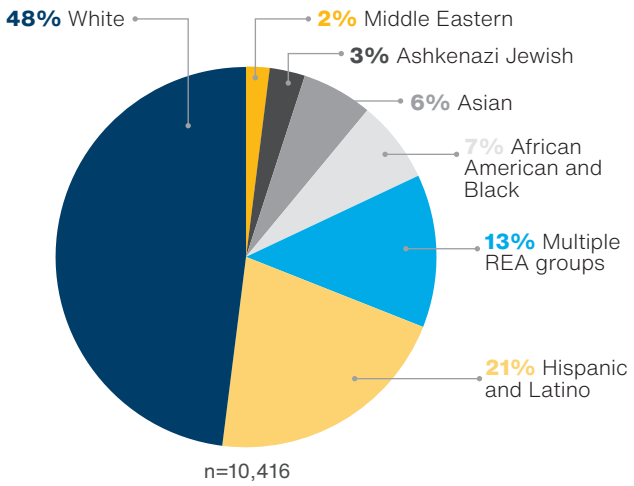
Research For Your Practice

Driving Diagnostic Equity Through Patient for Life™ Exome Reanalysis

INTRODUCTION

Exome reanalysis has become an essential component of genomic medicine, allowing reinterpretation of existing data as new gene–disease relationships and variant evidence emerge. This process can substantially improve diagnostic yield and provide long-awaited answers for patients with previously inconclusive results.[1] Ambry's Patient for Life program was developed to make reanalysis routine and accessible through a proactive, laboratory-initiated model that continuously monitors for new discoveries. In a recent *Genetics in Medicine* publication, Giles et al. demonstrated that this approach not only increases diagnostic yield but also promotes equitable access to these benefits across racial, ethnic, and ancestral (REA) groups.[2]

Figure 1. Study cohort demographics



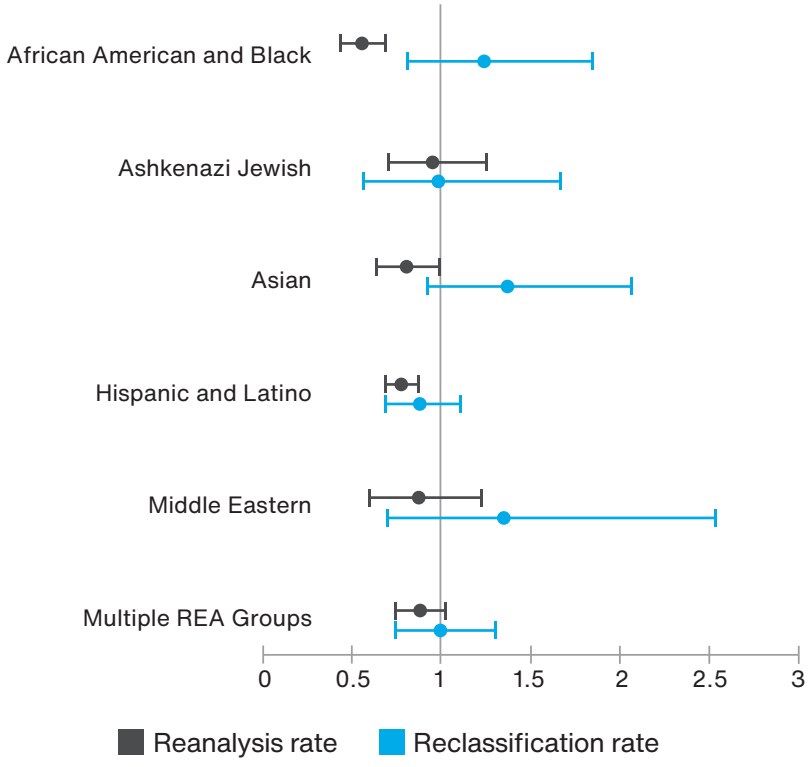


Figure 2. Odds ratio of reanalysis and reclassification rates compared to White individuals

HOW PROACTIVE REANALYSIS IMPROVES DIAGNOSTIC YIELD

In a retrospective review of 10,416 exomes ordered between 2011-2021 (Figure 1), study investigators identified 2,418 cases that underwent reanalysis through 2023. Reanalysis increased the overall diagnostic yield by approximately 5%, with positive findings improving for every REA group. However, lower rates of provider-initiated reanalysis requests were identified among Hispanic/Latino, Asian, and African American/Black patients compared to White patients (Figure 2), highlighting a barrier tied to follow-up access. In contrast, laboratory-initiated reanalysis rates were consistent across all REA groups.

Among patients who received reanalysis, reclassification rates were similar (Figure 2), with diagnostic outcomes improving in every group. Notably, a higher proportion of laboratory-initiated reanalyses led to upgraded reports compared to clinician-initiated requests—reinforcing the value of a proactive approach.

EQUITY VS EQUALITY

Equity recognizes and addresses people's different needs by removing barriers to ensure fair participation and access, whereas equality treats everyone the same regardless of those needs (see Figure 3). Access to ongoing genetic care is influenced by structural factors such as specialist availability, insurance coverage, referral pathways, and follow-up access, creating stopgaps that can limit reanalysis. In light of these disparities, laboratories have a responsibility to help mitigate barriers, and Patient for Life™ was intentionally developed to reduce reliance on follow-up pathways that are not equally available to all patients.

Figure 3. The Difference Between Health Equality and Equity

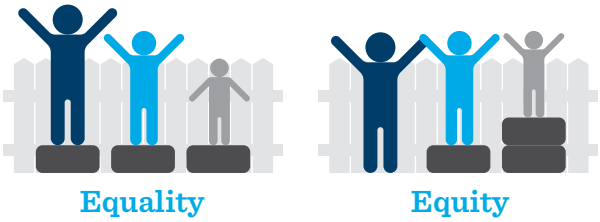
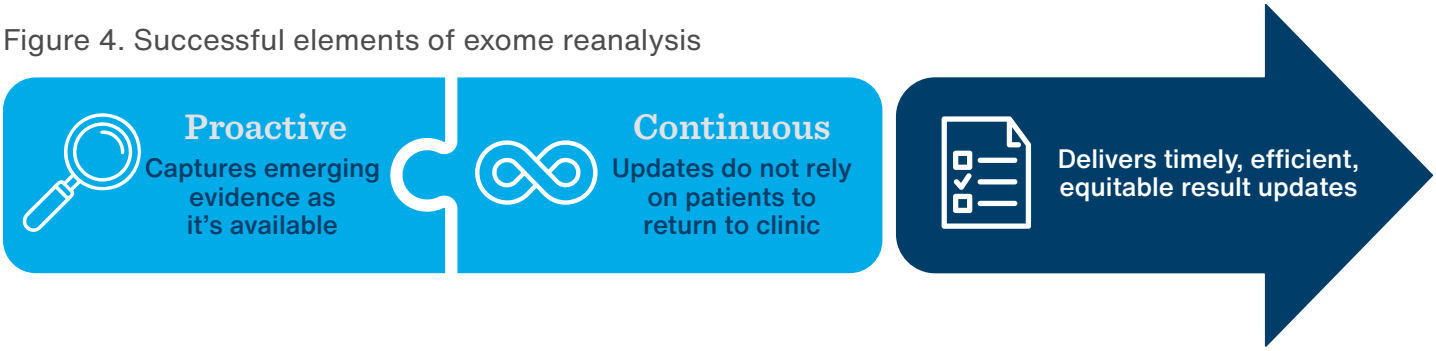


Figure 4. Successful elements of exome reanalysis



HOW PATIENT FOR LIFE™ DRIVES MORE EQUITABLE CARE

Because Patient for Life™ operates as a proactive, laboratory-initiated reanalysis process, new gene- and variant-level evidence is monitored as it becomes available. This approach eliminates the traditional lag between evidence updates and reanalysis, maximizes efficiency (Figure 4), and plays a critical role in reducing disparities and advancing genomic equity.

Previous results indicate that clinician-initiated reanalysis often aligns with annual follow-up visits, suggesting that the differences in overall reanalysis rates (Figure 5) across REA groups may reflect underlying disparities in access to ongoing care. Patient for Life removes this dependency. Patient for Life ensures that all patients—regardless of follow-up frequency—benefit equally from the latest genomic discoveries.

Figure 5. Outcomes of combined laboratory- and clinician-initiated reanalysis

	Non-White Individuals*	White Individuals*
Reanalysis Rate	17–24% (21%)	25%
Reclassification Rate	36–47% (38%)	36%
Increase in Diagnostic Yield	2–6% (5%)	4%

*min-max (average) of REA groups n>10

WHY PROACTIVE REANALYSIS MATTERS

The results of this study illustrate how clinical laboratories can actively contribute to advancing equity in genetic testing. This evidence-based approach helps reduce disparities linked to uneven access to care and expands diagnostic opportunities for underrepresented groups. Proactive, laboratory-initiated reanalysis is a critical component of a comprehensive diagnostics strategy that maximizes the long-term value of genomic testing and helps ensure that patients benefit from emerging scientific discovery over time.

References

1. Towne MC, et al. Impact of laboratory-driven proactive reanalysis: Reclassification to positive in 5% of initially negative or uncertain exome sequencing cases. *Genet Med.* 2025 Sep;27(9):101464. doi: 10.1016/j.gim.2025.101464. This document summarized results from Towne M, et al. Used under CC-BY.
2. Giles A, et al. 10 years of exome sequencing and reanalysis among racial, ethnic, and ancestral groups: the importance of equitable reanalysis access. *Genet Med.* 2025 Oct 16:101576. doi: 10.1016/j.gim.2025.101576. This document summarizes results and adaptations of figures from Giles A, et al. Used under CC-BY.

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