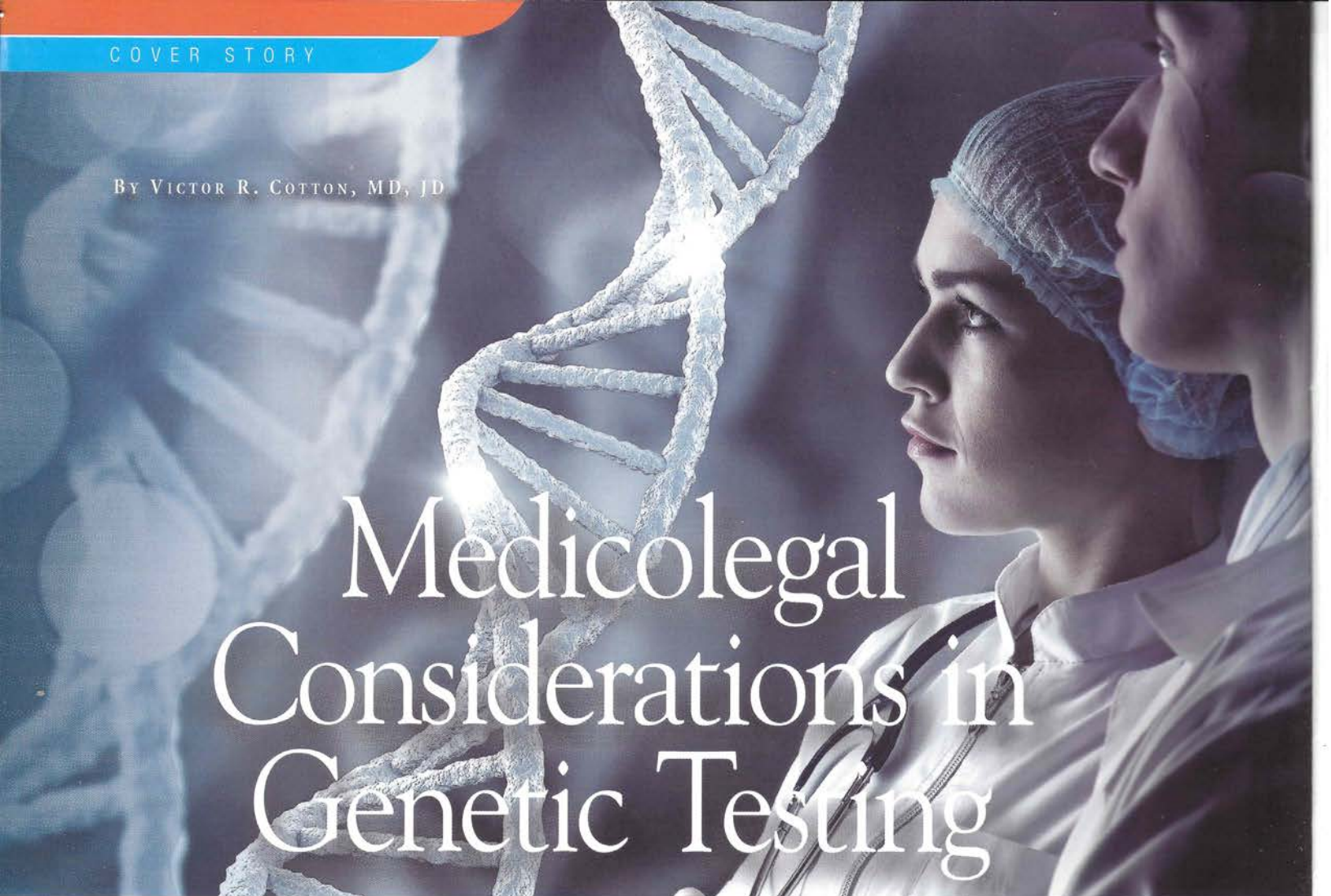


BY VICTOR R. COTTON, MD, JD



# Medicolegal Considerations in Genetic Testing

**Genetic testing provides a foundation for precision medicine by improving our ability to predict, manage, and avoid numerous diseases. These benefits, which were theoretical just a generation ago, are now being realized across the clinical spectrum—from guiding prenatal care at the beginning of life to improving cancer treatments near the end of life.**

**B**ecause genetic testing improves clinical outcomes, it has the potential to reduce MPL exposure. However, it also generates some unique medicolegal considerations that clinicians will need to navigate.

## Managing negative results

Due in part to the expanding criteria for genetic testing, up to 24% of women may now be candidates for BRCA testing.<sup>1</sup> Fortunately, most of these patients will test negative for a pathogenic (i.e., cancer-causing)

mutation. While a negative result is certainly good news, it does not mean that these patients are not at risk of developing breast cancer. In fact, because cancer risk is driven by both genetic and nongenetic factors, some of these women will still be at very high risk and should be followed closely with both mammography and breast MRI. For example, a woman who smokes cigarettes, had her first child after the age of 30, and has certain patterns of genetic variation known as “single nucleotide polymorphism” may have a lifetime risk of cancer similar to that of women who test positive for pathogenic BRCA mutations.

In addition, because new pathogenic mutations continue to be discovered, many of these patients may be candidates for additional genetic testing in the future. To cover these possibilities, clinicians should remind patients that even though they tested negative for a pathogenic mutation, they may still be at increased risk of developing cancer and should continue to seek care on a regular basis.<sup>2</sup>

### Managing positive results

Patients who test positive for genetic mutations are often faced with the challenge of making major healthcare decisions. In the case of a pathogenic BRCA mutation, the patient will likely have to choose between a double mastectomy and a lifetime of frequent screening tests. And, a patient whose fetus has serious genetic abnormalities must decide about the future of her pregnancy.

Given the gravity of the circumstances, clinicians must be prepared to provide these patients with timely and accurate information about their options and have established referral networks in place to manage them. In terms of reducing medical professional liability (MPL) exposure, a genetic test should not be ordered unless there is a process in place to efficiently manage whatever the result may be.


### Managing variant of undetermined significance (VUS)

Although our understanding of the human genome has greatly expanded, there are still significant gaps in our knowledge. It is therefore quite common for even the most experienced labs to report a genetic test as “variant of undetermined significance.” In layman’s terms, this means: “We don’t know.”

Although most VUSs are eventually determined to be benign, some will be pathogenic. A VUS is therefore something that should be followed rather than treated. Unfortunately, the fact that many physicians are unfamiliar with genetic testing, combined with variations in the manner in which labs report VUSs, has already resulted in litigation, in particular: against a physician who performed a double mastectomy on a patient whose only genetic finding was a VUS.<sup>3</sup>

### Absence of FDA regulation

Genetic testing is regulated under the Clinical Laboratory Improvement Act (CLIA) rather than by the Food and Drug Administration (FDA). The distinction is important because CLIA focuses on consistency of process, whereas the FDA requires accuracy of results. In addition, because genetic testing is classified as a “laboratory developed test,” CLIA permits each lab to use its own methodology, rather than mandating a standardized approach.

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The variation in methodology and absence of an accuracy standard combine to create a situation where two labs will commonly issue different results for the same specimen—meaning at least one of them must be wrong.<sup>4</sup> The impact of these errors is magnified by the fact that significant patient care decisions are often made *solely* on the basis of a genetic test (e.g., double mastectomy for a BRCA mutation). Given the significant potential for patient harm, clinicians should rely on only the most reputable and well-established labs.

### Direct-to-consumer genetic testing

The difficulties caused by lab-to-lab variation are compounded by direct-to-consumer (DTC) genetic testing. DTC genetics began as an intriguing way to learn about one’s ancestry, but it entered the clinical realm last year when *23 and Me* added BRCA testing to its analysis. And, many patients now share their *23 and Me* results with their healthcare provider. In terms of how clinicians should manage this information, the prudent approach is never to rely on it.

The BRCA analysis performed by *23 and Me* is significantly limited in many ways. First, although there are more than 1,000 pathogenic BRCA mutations, *23 and Me* tests for only three of them (the three Ashkenazi founder mutations). In addition, *23 and Me* does not actually examine the BRCA gene. Instead, it looks for a genetic marker (SNP) that is commonly associated with the Ashkenazi mutations. The *23 and Me* methodology is thus an indirect analysis of just three possible mutations. In contrast, clinical-grade testing involves a direct analysis for more than 1,000 possible pathogenic mutations. Because of these and other significant limitations, clinicians should not make treatment decisions based solely on DTC genetic testing.

### Genetic information and healthcare insurance

A few years ago, patients who tested positive for genetic mutations might have found it very difficult to purchase or maintain healthcare insurance coverage. Genetic testing was thus a double-edged sword: It identified patients who were at risk of developing disease and then negated their healthcare insurance.

Fortunately, this no longer occurs, because two federal laws prevent healthcare insurers from discriminating on the basis of genetic information. First, the Affordable Care Act prevents insurers from making coverage decisions based on preexisting conditions, including genetic conditions. Second, the Genetic Information Nondiscrimination Act (GINA) prohibits healthcare insurers from adjusting premiums, altering coverage, or refusing to issue a policy on the basis of an individual’s genetic profile.

Although the Affordable Care Act remains at risk in the ongoing political debate, GINA has never been at risk. Clinicians can therefore assure patients that genetic testing will not adversely affect their healthcare insurance—no matter what the result.

## Duty to notify at-risk family members

When a patient is found to have a genetically based disease, that has implications for his family members, who may have also inherited the disease. And, when genetic abnormalities are found in a fetus, that has implications for future pregnancies, which may also be affected. Because many of these family members and parents will be unaware of these risks, it is reasonable to ask whether physicians have a legal duty to warn them.

As a general rule, a physician's legal duty is limited to his patients (and not family members or future pregnancies). However, our courts have occasionally extended this duty to include non-patients when those persons are deemed to be in harm's way. Known as "third party liability," most of the cases have involved communicable diseases or patients who threaten to physically harm someone. Because genetic conditions are not communicable and are not a threat to anyone other than the patients who possess them, logic dictates that third party liability should not apply. However, in the few cases that have reached the appellate level, our courts have held that it does apply and that clinicians can be held liable if they fail to warn these persons.<sup>5,6</sup>

Fortunately, this duty is easily fulfilled: In the case of at-risk family members, by educating the patient and instructing him or her to share the information with family; and, in the case of prenatal conditions, by educating the affected parents and counseling them appropri-

ately. Clinicians who identify genetic abnormalities should therefore engage in these conversations and document their efforts.

## Conclusion

As the use of genetic testing expands, the overall impact on MPL can be effectively minimized by addressing the points discussed in this article. **MPL**

For related information, see [www.myriad.com](http://www.myriad.com).



## References

1. DeFrancesco M et al. Hereditary cancer risk assessment and genetic testing in the community-practice setting. *Obstet Gynecol.* 2018 131:119S.
2. National Comprehensive Cancer Network Clinical Practice Guidelines in Oncology, Breast Cancer Risk Reduction. Version 1.2019. Available at [nccn.org](http://nccn.org).
3. <https://www.forbes.com/sites/elaineschattner/2017/10/29/3-lessons-from-an-alarming-case-of-mistaken-cancer-genetic-test-results/#632ea2266305>.
4. Balmaña J. et al. Conflicting interpretation of genetic variants and cancer risk by commercial laboratories as assessed by the prospective registry of multiplex testing. *2016 J Clin Oncol* 2018 34:4071-78.
5. *Pate v Threlkel*, 661 So.2d 278 (Fla. 1995).
6. *Malloy v. Meier*, 679 N.W.2d 711 (Minn. 2004).

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