

# Occult Mix-Ups Occur in About 1 of 100 Prostate Biopsies

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Although mix-ups of prostate biopsy specimens of the occult variety are not common, they do happen, according to a [study published](#) in the January issue of the *American Journal of Clinical Pathology*.

Researchers prospectively looked at a databank of 13,000 prostate biopsies performed at 54 labs in the United States. The combined rate of type 1 (complete transposition between patients) and type 2 (contamination of a patient's tissue with that of other patients) errors was 0.93%. In other words, about 1 in 100 biopsies have an error of unknown origin.

Type 1 errors happened less frequently (0.26%); type 2 errors were about 3 times as frequent (0.67%).

All 54 of the labs studied had at least 1 error of each type, according to John Pfeifer, MD, PhD, and Jingxia Liu, PhD, both from the Washington University School of Medicine in St. Louis, Missouri.

The mix-ups found were limited to the type known as occult specimen-provenance complications. This term reflects the fact that there is an absence of any direct or indirect indication that a specimen switch or contamination has occurred.

This study is important because the rate at which occult specimen-provenance complications occur has previously not been known.

Sometimes specimen contamination is clear, not occult, explained Thomas Wheeler, MD, who is Harlan J. Spjut Professor of Pathology and chair of the Department of Pathology & Immunology at Baylor University in Houston, Texas. He was not involved in the study, but was asked to comment on its findings.

Extraneous tissue is usually easy to recognize and dismiss as a diagnostic consideration, he said. In his Lab Line by the Doctor's Doctor [Medscape blog](#), Dr. Wheeler explained that a fragment of placenta can easily be detected on a colon biopsy slide because the 2 tissues look very different.

Drs. Pfeifer and Liu point out that garden-variety specimen-provenance complications (i.e., those that are not occult) occur at a rate of about 6%. These include specimen-labeling deficiencies, mismatches between the patient name on the container and the requisition slip, and accessioning errors. However, the specimen mix-ups and contaminations in this study were all less obvious; they were occult specimen-provenance complications.

## DNA Testing Company Provided Specimens

The researchers were able to determine the rate of specimen mix-ups and contamination because the biopsies come from a databank of a DNA testing company (Strand Analytical Laboratories). As part of its service to physicians, the company provides DNA specimen testing in the setting of transrectal prostate biopsy. Thus, the researchers could compare the DNA results and the biopsy samples to determine if everything matched up.

One of the values of DNA tests is that, in less-obvious cases of contamination, "you will be able to sort it out," Dr. Wheeler told *Medscape Medical News*.

Generally, if the DNA from the biopsy matches that of the blood, "then it is usually good," said Dr. Wheeler, meaning that both belong to the same patient. However, "genetics labs can mix up samples too," he added. At what rate? "Probably at about the same rate as in this study," he said. "There is no reason to believe it's different."

In other words, the potential for human error lurks in every lab.

The researchers admit to that potential. "Despite more than a century of process improvements and technical innovation, the potential for specimen mix-ups, cross-contamination, floaters, or carryover artifacts has not been eliminated completely," they write.

Nevertheless, they like the idea of DNA testing as an extra check for biopsies. "The concept of the 'DNA timeout' implies that patient safety can be improved by providing the opportunity to rule out diagnostic error due to occult [specimen-provenance complications] in settings where a specific diagnosis will lead to aggressive surgical or medical therapy," they conclude.

This study provides a "scope of the problem" in prostate biopsy. DNA testing is "likely" to be cost effective in preventing treatment errors stemming from misidentifications, the researchers add, citing economic-analysis studies of the DNA specimen-provenance testing. However, whether insurers, providers, or patients pay for the testing is "uncertain," they acknowledge.

*The authors and Dr. Wheeler have disclosed no relevant financial relationships.*

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