

Uterine Fibroids and Women's Health

Advancing Diagnostics & Treatments to Improve Patient Care

What are uterine fibroids?

Uterine fibroids, or leiomyomas, are benign tumors that grow in or on the wall of the uterus. Typically made of muscle and connective tissue cells, uterine fibroids are the most common non-cancerous tumors in women of childbearing age. Some women experience debilitating pain, heavy menstrual bleeding, and problems with fertility from fibroids, while other women have minor or no symptoms. Research suggests that fibroids occur disproportionately among Black and African American women, who also tend to develop fibroids at younger ages and have more severe symptoms than other groups. Removing the uterus (hysterectomy) is currently the only “cure” for fibroids, although symptom management can also include medication and minimally invasive surgeries.

How does NICHD support research on uterine fibroids?

NICHD funds research to understand the causes and risk factors of fibroids and to identify better ways of diagnosing and treating them. In 2020, the U.S. Food and Drug Administration approved the drug Oriahnn® for treating heavy menstrual bleeding from uterine fibroids. This drug contains elagolix, which was initially developed through an NICHD small business grant. In 2024, NICHD launched the Specialized Centers for Research on Health Disparities in Uterine Leiomyoma to learn more about fibroids and explore the disparities related to fibroid risk, occurrence, and symptom severity among Black and African American women. The overall goal is to improve gynecological health for all women.

Success Snapshots

Developing a Prototype to Predict Risk

Knowing who is at risk for developing uterine fibroids could facilitate earlier treatment and prevention. With NICHD support, researchers developed a gene-based score to help predict aspects of fibroid disease. Created by analyzing genome-wide scans and electronic health records, these polygenic risk scores estimate the likelihood that a person will have a particular pattern of fibroid disease characteristics, as well as their severity of symptoms. Additional evaluation of the prototype is underway.

Identifying New Uses for Existing Drugs

The oral medication tranilast decreases production of collagen (a building block of muscle, skin, and connective tissues) and inflammation-causing elements. In other countries, it is approved for treating scars, asthma, and issues linked to collagen and inflammatory substance overproduction. Testing in a uterine fibroid mouse model, NICHD-funded researchers found that daily treatment with the drug for 8 weeks led to notably smaller tumors compared to untreated mice. This work suggests new uses of existing drugs for treating fibroids.

Selected NICHD-Funded Projects on Uterine Fibroids

Fibroid Origins & Health Disparities

Understanding the Role of Genes

To explore fibroid origins, an NICHD-funded study examined gene expression or activity in uterine muscle tissue. The team noted higher expression of the von Willebrand factor gene (*VWF*) in uterine muscle samples from Black women, compared to White women. *VWF* includes instructions for a protein that regulates blood vessel formation, a key aspect of fibroid growth.

Another NICHD-supported team used new genetic sequencing technology to identify 21 genes that are expressed differently in fibroid tissue samples from Black and Hispanic women, compared to samples from White women. Understanding how genetics may contribute to racial disparities can help inform care.

Linking Ancestry to Fibroid Characteristics

NICHD-funded researchers linked fibroid risk and features among U.S. Black and White women to their ancestry. For Black women: West African ancestry correlated with risk for a single fibroid, East African ancestry correlated with risk for multiple fibroids, and Northern European ancestry protected against multiple fibroids. For White women: Northern European ancestry protected against fibroids; and West African ancestry was linked to risk for larger fibroids. These insights may help quantify risk and define treatments.

Identifying the Effects of Stress on Fibroids

Exposure to stress affects health in many ways. NICHD-supported researchers found that women with fibroids who scored high on questionnaires about stress had high levels of microRNAs linked with tumor growth in their uterine muscle. The researchers suggest that stress from structural racism and other situations may explain some disparities in fibroid rates.



Fibroid Factors, Effects, & Treatments

Identifying Environmental Effects on Risk

Exposure to phthalates, chemicals in personal care products, cosmetics, and medical items, has wide-ranging health effects. One NICHD-funded study found that phthalate exposure may trigger the growth of fibroid cells and delay the rate at which they die. This finding explains higher fibroid rates in phthalate-exposed women and suggests that reducing such exposures may prevent fibroids.

Other NICHD-funded research discovered that the green-tea compound epigallocatechin gallate (EGCG) reduced levels of substances that promote cell division and proteins that cause the tumors' fibrous contents. This team now leads an NICHD-funded clinical trial to test if EGCG reduces fibroid symptoms, including improving fertility.

Evaluating Fibroids' Role in Fetal Growth

NICHD researchers found that uterine fibroids do not seem to restrict fetal growth in pregnancy. Earlier studies suggested that fibroids could cause smaller full-term infants. The study also confirmed a higher risk of preterm birth for pregnant women with fibroids. These findings can help optimize outcomes for those with fibroids.

Developing Non-Surgical Treatments

Current non-invasive fibroid treatments reduce symptoms, but do not affect tumor size or growth. NICHD-funded researchers created a new method that shrinks fibroids non-invasively in mice by encasing a tumor-killing drug in nano-sized spheres, and using the bloodstream to deliver the spheres directly to the fibroid. They are now exploring whether the technique is safe and effective for treating fibroids in humans.

**Learn More About NICHD
Uterine Fibroid Projects**



**NICHD's Fibroids Website:
<https://go.nih.gov/9vCkUes>**



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