

## What Are Puberty Blockers, and How Do They Work?

Decades of data support the use and safety of puberty-pausing medications, which give transgender adolescents and their families time to weigh important medical decisions

By Allison Parshall | May 1, 2023

Adolescence can be a uniquely distressing time for young transgender people, who often experience gender dysphoria: a discrepancy between the sex they were assigned at birth and the gender that matches who they are. During this period, hormone production increases, leading to secondary sexual characteristics such as facial hair and breasts. The irreversible, slow-motion physiological changes can be emotionally and mentally disturbing, leading to depression, social withdrawal, self-harm and a risk of suicide. Hormonal medications called gonadotropin-releasing hormone agonists (GnRHAs), often referred to as puberty blockers, temporarily halt the production of sex hormones testosterone, estrogen and progesterone with minimal side effects. They can pause puberty and buy transgender children and their caregivers time to consider their options.

These medications are well studied and have been used safely since the late 1980s to pause puberty in adolescents with gender dysphoria. They have been used routinely for even longer in children who enter puberty too early and in adults with a range of other medical conditions. Puberty-blocking medications are part of a class of hormonal therapies that include birth control pills, treatments for menopause symptoms, treatments for certain kinds of cancer, and more.

But despite the evidence for the safety and efficacy of puberty-delaying treatments, some lawmakers across the U.S. have spread false claims about the drugs and other gender-affirming treatments as part of their efforts to ban or severely restrict access to health care for transgender people. Florida, Idaho, Georgia, Indiana, Kentucky, North Dakota, South Dakota, West Virginia, Arkansas, Mississippi, Utah, Iowa and Tennessee have banned gender-affirming care for anyone under 18 years old. The American Civil Liberties Union is tracking the status of 122 health care–related anti-LGBTQ+ bills, which disproportionately target transgender youth.

Half of transgender people aged 13 to 24 have seriously considered suicide in the past year, according to a 2023 nationwide survey released on May 1 by the Trevor Project, a nonprofit focused on LGBTQ+ suicide prevention. Gender-affirming hormone therapy can decrease this risk. A recent study in the *New England Journal of Medicine*, for example, showed that hormone therapy significantly decreased symptoms of depression and anxiety in transgender youth. Another study found that transgender teenagers who received gender-affirming care were 73 percent less likely to self-harm or have suicidal thoughts than those who didn't.

Medication that pauses puberty, specifically, has the power to prevent a mental health crisis, making the treatment a “profoundly meaningful intervention” for a young person and their family, says Meredith McNamara, an adolescent medicine physician at the Yale School of Medicine. “Puberty-blocking treatment is probably one of the most compassionate things that a parent can consent to for a transgender child.” It allows transgender children and their families the opportunity to weigh their options carefully, without the constant pressure of physical changes, she says.

Puberty has a long natural window, which typically occurs between eight and 14 years of age and lasts from two to five years. Blockers are usually prescribed once puberty has already begun, and the process involves evaluations by multiple doctors, including mental health practitioners, explains Stephen Rosenthal, a member of the board of directors at the World Professional Association for Transgender Health and a pediatric endocrinologist at the University of California, San Francisco, Benioff Children's Hospitals.

“Most people, within a year [of receiving puberty blockers], decide whether or not they're going to continue to transition,” says Vin Tangpricha, an adult endocrinologist at Emory University Hospital and Emory University Hospital Midtown and a co-author of some of the foremost clinical guidelines for treating gender dysphoria in the U.S. and worldwide. “You can't have someone on puberty blockers for a prolonged time.” If a teen decides not to transition and stops taking puberty blockers, the hormones their body produces on its own will cause puberty to resume. If they decide to move forward with a medical gender transition, they may take some combination of hormones—estrogen for feminizing effects or testosterone for masculinizing effects—to experience puberty that aligns with their gender.

Teens who had access to puberty blockers and hormone therapy require fewer gender-affirming surgeries as adults. The World Professional Association for Transgender Health's latest standards of care do not specify rigid age limits for gender-affirming surgeries; instead they encourage providers to assess the needs of individual patients. Gender-affirming surgeries are not common among those under age 18 and are usually limited to “top surgery,” or a mastectomy. Breast reduction surgery is also one of the most common forms of plastic surgery in cisgender teenagers.

At every stage, the adolescents, their families and their doctors monitor their development. Each step of their transition is considered independently and carefully by the young people and their families, McNamara says.

“These puberty-pausing medications are widely used in many different populations and safely so,” McNamara says. GnRHs are also used in adolescents to treat endometriosis, a condition in which the cells lining the uterus grow in other parts of the body. These hormonal drugs have provided solutions to a number of hard-to-treat conditions. They adjust hormone levels for people with prostate and breast cancer, pause menstruation for those undergoing chemotherapy and help with in vitro fertilization. This host of beneficial clinical uses and data, stretching back to the 1960s, shows that puberty blockers are not an experimental treatment, as they are sometimes mischaracterized, says Simona Giordano, a bioethicist at the University of Manchester in England. Among patients who have received the treatment, studies have documented vanishingly small regret rates and minimal side effects, as well as benefits to mental and social health.

“From an ethical and a legal perspective, this is a benign medication,” Giordano says. She is puzzled by the extra scrutiny these treatments receive, considering their benefits and limited risks. “There are no sound clinical, ethical or legal reasons for denying them to those in need,” she says.

Like any medication, GnRHs carry the potential for adverse effects. GnRHs, when used as puberty blockers or for endometriosis, are known to limit the buildup of bone mineral density, raising concerns about bone fractures. But bone density often recovers after sex hormones are reintroduced. The impacts on bone health **depend** on many factors, such as when someone started taking GnRHs, how long they stayed on the medication, what their sex at birth was and what sex hormones they will go on to take afterward.

But these bone density scores might not tell the full story of a person’s long-term health, McNamara explains. An individual’s bone density is evaluated on a broader population average—data that might not be representative of transgender people, who often have lower bone density than their cisgender peers to begin with. Transgender people—especially transgender women—are more likely to have lower bone density, whether or not they used puberty blockers. This is potentially because of the social stressors of being transgender, such as social isolation, exclusion from some physical activities and a high prevalence of restrictive eating.

“The bright side of this whole story is that fractures do not appear to be increased [by GnRHs]. That’s what we really care about,” Tangpricha says. The treatment “hasn’t translated to really bad health outcomes.” Meanwhile the increased rates of suicide among those who do not receive gender-affirming care is well documented.

“I think the patients and their families have to weigh the risk of having lower bone density versus a gender issue that’s not properly treated,” Tangpricha says.

The families that McNamara and Rosenthal work with are aware of the potential risks and benefits of puberty blockers. “We [physicians] are honest acknowledgers of the uncertainty to our patients and their parents, who then make informed consent decisions,” McNamara says. Caregivers must weigh any concerns against the lifelong risks of not receiving the care, such as depression and suicidality, and the need for future surgeries, she says. “These are private decisions that parents make for their children’s well-being. And the conversations had in these private settings are thorough and exhaustive and iterative,” she adds.

To McNamara, the widespread attempts to take these decisions out of families’ hands by banning care for transgender youth is a clear indication that the goal is not to protect the health of children, as proponents claim. “These bans did not come from a public outcry about concern for trans youth,” she says.

Transgender health care bans are increasingly expanding beyond restrictions for minors. Last month an emergency rule by Missouri’s state attorney general placed new, onerous restrictions on adults seeking gender-affirming care, including blocking people diagnosed with autism and depression from accessing it. Nearly four transgender people are autistic, compared with one in 20 cisgender people, and depression is a common outcome of gender dysphoria. A state judge temporarily blocked the order hours before it was set to take effect last Thursday.

“Politicians deciding what doctors can do puts doctors, not only patients, in a really difficult situation ... of not serving the best interests of the patients,” Giordano says. “‘Alarming’ is, I think, the right word.”