Probability of having twins hereditary? [1]

Dear Alice,

I heard a rumor that if a couple has twins, then the higher probability of having twins skips a generation. My grandparents had twins — my two uncles. Does this mean that my generation now has a higher probability? Or is this rumor not true?

Signed,
Anticipating Twins

Answer

Dear Anticipating Twins,

When it comes to twinning, there are two types — fraternal and identical. Fraternal twins occur when two different eggs are fertilized by a different sperm, resulting in two embryos with different genetic make-up. Identical twins are a result of a single egg splitting in two soon after fertilization. Because, in this case, they came from the same egg, identical twins have the same genetic make-up. So, will you have twins because your grandparents did? Well, this depends. While the likelihood of having fraternal twins does run in the family, having identical twins does not. As far as your generation having an increased probability of twinning, this may be true depending on several factors (more on that later).

First, how likely is it that folks will have twins? The twin birth rate in 2013 was 33.7 per 1000 births; a record high in the United States (for reference: in 1980, it was 18.9 per 1000)! Why the sudden increase? This rise has been attributed to fertility therapies such as ovulation-inducing medication and assisted reproductive technologies. One such technology, in-vitro fertilization (IVF) [2], increases the chances of having identical twins. One study showed that this may be attributed to family history of twinning and strong ovarian functioning, as opposed to the IVF therapy by itself. However, while this study did indicate a family history, researchers still indicate that identical twinning is not hereditary and this is really just a matter of chance whether a single fertilized egg divides into two identical embryos.

Unlike identical twins, having fraternal twins does appear to be hereditary, but involves multiple factors. There are certain genes involved in ovulation that induce hyper-ovulation, or the release
of multiple eggs. If you have these genes, your chances of fertilizing two different eggs by two
different sperm increases, resulting in fraternal twinning. In addition, having fraternal twins
depends only on the mother’s genetics, not the father’s family history. However, even though a
father’s genetics might not increase his own direct chance of having twins, he can pass those
genomes on (via the single X chromosome he has) to a future daughter. This daughter could then
be predisposed to twinning, which may account for the idea that it skips a generation (a father
passes on the genes to his daughter who then has twins). The chance of fraternal twins is,
therefore, impacted by whether a particular generation has more males or females. If your
grandparents had all boys, none of them would contribute to multiple births in the next
generation. But, if your grandparents had daughters along with your twin uncles, they may have
an increased probability of having twins, too. Moreover, having fraternal twin siblings makes a
woman two and half times more likely to have twins than the average woman.

There are also many other factors that may contribute to twinning including environment,
nutrition, and age. Women of African descent are two times more likely than Caucasian women,
and four times more likely than Asian women, to have twins. Additionally, as women age, their
chances of having twins increases due to a rise in follicle stimulating hormones (FSH) [3], which
may cause more than one egg to be released during ovulation. Women who have had children
before also have a higher probability of having fraternal twins.

All this to say, depending on the type of twins you’re talking about, there may be a genetic
predisposition in the works, but, keep in mind, it’s not the only factor that may play into the need
for a double stroller!

Alice!
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