

## Multi-Fetal Pregnancy <sup>[1]</sup>

By: DeRuiter, Corinne Keywords: Fetus <sup>[2]</sup> Human development <sup>[3]</sup>

In [humans](#) <sup>[4]</sup>, [multi-fetal pregnancy](#) <sup>[5]</sup> occurs when a mother carries more than one [fetus](#) <sup>[6]</sup> during the [pregnancy](#) <sup>[7]</sup>. The most common [multi-fetal pregnancy](#) <sup>[5]</sup> is twins, but mothers have given birth to up to eight children (octuplets) from a single [pregnancy](#) <sup>[7]</sup>. Multiple fetuses can result from the release of multiple eggs or multiple ovulations, the splitting of a single [fertilized egg](#) <sup>[8]</sup>, or fertility treatments such as [in vitro](#) <sup>[9]</sup> [fertilization](#) <sup>[10]</sup> (IVF), which involves the insertion of many fertilized eggs into the mother's [uterus](#) <sup>[11]</sup>. The specific ways that multiples are conceived determines the degree of relatedness between individuals within the set. The detection of multiple fetuses can be made by using [ultrasound](#) <sup>[12]</sup> technology, through [hormone](#) <sup>[13]</sup> testing, and through the discovery of multiple heart beats. Some multiple births may be deemed high-risk due to the number of fetuses, due to their arrangement, or due to complications during development.

There are three classifications of multi-fetal pregnancies: dizygotic, monozygotic, and polyzygotic. Dizygotic, or fraternal twins, are the most common type of [multi-fetal pregnancy](#) <sup>[5]</sup> and arise from two separate eggs fertilized by two separate [sperm](#) <sup>[14]</sup> cells. Dizygotic twins are like any other pair of siblings, in that they do not look identical and can be different sexes. Some researchers suggest that some mothers may be genetically predisposed to release multiple eggs instead of just one. In addition to this genetic predisposition, dizygotic multiples also occur with greater frequency as a mother ages or if she uses fertility drugs. In rare cases, two eggs can be fertilized at different times during two or more acts of [sexual intercourse](#) <sup>[15]</sup>, resulting in fraternal twins with two different fathers, called bipaternization.

Monozygotic, or identical twins, occur when one [fertilized egg](#) <sup>[8]</sup> splits into two separate embryos. Monozygotic twinning can occur naturally or as a result of using IVF treatments. Natural occurrences of monozygotic twinning are considered spontaneous and usually occur after the [blastocyst](#) <sup>[16]</sup> collapses. The progenitor cells split, which yields two genetically identical embryos. Monozygotic twins are the same sex and generally exhibit the same phenotypic features. Although their DNA is essentially identical, environmental factors influence what [genes](#) <sup>[17]</sup> turn on and off, a phenomenon known as epigenetic modification. In rare cases such as Klinefelter's Syndrome, twins may be different sexes due to the addition of an extra chromosome caused by a mistake during the original splitting.

Dizygotic and monozygotic twin pregnancies are subject to more complications than single [fetus](#) <sup>[6]</sup> pregnancies. At times a [pregnancy](#) <sup>[7]</sup> begins as twins but one embryo or [fetus](#) <sup>[6]</sup> fails to develop and is reabsorbed into the endometrial lining early in the [pregnancy](#) <sup>[7]</sup>, known as [Vanishing Twin Syndrome](#) <sup>[18]</sup>. Conjoined twins can result when a single [zygote](#) <sup>[19]</sup> fails to separate completely. In some cases, one underdeveloped twin [fetus](#) <sup>[6]</sup> may parasitize a healthy twin [fetus](#) <sup>[6]</sup> in a condition known as parasitic twins. If the twins share a [placenta](#) <sup>[20]</sup> they may also develop [twin-to-twin transfusion syndrome](#) <sup>[21]</sup>, a condition in which blood from one twin diverts to the other twin.

Polyzyotic multiples, such as triplets or quadruplets, can result from a mixture of monozygotic and dizygotic siblings. Monozygotic multiples are uncommon and require that the single [fertilized egg](#) [8] splits once, then one of the zygotes splits again for triplets, or another [zygote](#) [19] may split once more for quadruplets. The likelihood of multiple births has increased with the invention of fertility drugs and IVF therapy. During the course of IVF therapy, it is common practice to implant more than one fertilized eggs in the [uterus](#) [11] to increase the chance that one [egg](#) [22] successfully implants and leads to [pregnancy](#) [7].

Multi-fetal pregnancies beyond quadruplets have been rare and sometimes capture media attention. In 1934, the Dionne quintuplets from Ontario, Canada were the first quintuplets reported to survive infancy. Under the Dionne Quintuplets? Guardianship Act of 1934, the infants became wards of the king as well as profitable tourist attraction in Ontario. With the aid of fertility treatments, multiples of up to eight babies have been born. The first occurrence of octuplets was the Chukwu family of Texas in 1998.

While twins are the most common [multi-fetal pregnancy](#) [5], the rarity of multiple birth pregnancies generates interest in both the media and among researchers. Multi-fetal pregnancies occur at much higher risk to the mother and developing fetuses.

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In humans, multi-fetal pregnancy occurs when a mother carries more than one fetus during the pregnancy. The most common multi-fetal pregnancy is twins, but mothers have given birth to up to eight children (octuplets) from a single pregnancy. Multiple fetusus can result from the release of multiple eggs or multiple ovulations, the splitting of a single fertilized egg, and fertility treatments such as in vitro fertilization (IVF) which involves the insertion of many

fertilized eggs into the mother's uterus. The specific ways that multiples are conceived determines the degree of relatedness between individuals within the set. Once conceived, there are many possibilities for arrangement of placentas, where the egg implants, and amniotic sacs. The detection of multiple fetuses can be made by using ultrasound technology, hormone testing, and through the discovery of multiple heart beats. Some multiple births may be deemed high-risk due to the number of fetuses, their arrangement, or due to complications during development.

## Topic

Processes <sup>[24]</sup> Reproduction <sup>[25]</sup>

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