

# CAUSES AND INCIDENCE OF DOWN SYNDROME

FOR PARENTS | FAMILIES | MEDICAL PROFESSIONALS | COMMUNITY

Down syndrome is not a disease, it is a genetic condition. In fact, it is the most common genetic chromosomal condition. In this fact sheet, we answer some questions in relation to the causes of Down syndrome, as well as an approximate table of incidence as it links to age of the mother.

## Causes of Down Syndrome

Regardless of the type of Down syndrome a person may have, all people with Down syndrome have an extra, critical portion of chromosome 21 present in some or all of their cells. This additional genetic material alters the course of development and causes the characteristics associated with Down Syndrome.

The cause of the extra full or partial chromosome is still unknown. Maternal age is the only factor that has been linked to an increased chance of having a baby with Down syndrome resulting from nondisjunction or mosaicism. However, due to higher birth rates in younger women, 80% of children with Down syndrome are born to women under 35 years of age. There is no definitive scientific research that indicates that environmental factors or parents' activities cause Down syndrome.



**The additional partial or full copy of the 21st chromosome which causes Down syndrome can originate from either the father or the mother. Approximately 5% of the cases are traceable to the father.**



**There are 3 types of Down syndrome:**



**Trisomy 21**

**Translocation**

**Mosaicism**

All 3 types of Down syndrome are genetic conditions (that is, they relate to the genes of an individual). Only 1% of all cases of Down syndrome have a hereditary component being passed from parent to child through the genes. This only occurs in translocation. Heredity is not a factor in trisomy 21 (or nondisjunction) and mosaicism. However, in one third of cases of Down syndrome resulting from translocation there is a hereditary component. This accounts for about 1% of all cases of Down syndrome.

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## Incidence of Down Syndrome

Down syndrome occurs in people of all races and economic levels. However, older women have an increased chance of having a child with Down syndrome.

A 35 year old woman has about a one in 350 chance of conceiving a child with Down syndrome. This chance increases gradually to 1 in 100 by age 40. At age 45 the incidence becomes approximately 1 in 30, at 49 it is approximately 1 in 10. The age of the mother does not seem to be linked to the risk of translocation. For more on the three types of Down syndrome, including translocation, see our fact sheet on this topic.

Maternal Age	Incidence of Down syndrome	Maternal Age	Incidence of Down syndrome	Maternal Age	Incidence of Down syndrome
20	1 in 2,000	30	1 in 900	40	1 in 100
21	1 in 1,700	31	1 in 800	41	1 in 80
22	1 in 1,500	32	1 in 720	42	1 in 70
23	1 in 1,400	33	1 in 650	43	1 in 50
24	1 in 1,300	34	1 in 450	44	1 in 40
25	1 in 1,200	35	1 in 350	45	1 in 30
26	1 in 1,100	36	1 in 300	46	1 in 25
27	1 in 1,050	37	1 in 250	47	1 in 20
28	1 in 1,000	38	1 in 200	48	1 in 15
29	1 in 950	39	1 in 150	49	1 in 10

However, despite this table of incidence and the fact that families are having children later than previously, younger women continue to have more babies than older women, so on an overall measure, more children with Down syndrome are born to younger mothers.

Down Syndrome NSW is the peak organisation in NSW, proudly representing people with Down syndrome, their families and carers. We offer advocacy, services and supports across the lifespan. We work with passion to ensure that all people with Down syndrome achieve their full potential in all life stages. We champion the rights of people with Down syndrome to be valued and to take their rightful place in the community.