



Seizure Disorders ©2004

A seizure is defined as an abnormal electrical activity of nerve tissue in the brain. Seizure disorders affect 1% of the general population. There are genetic and non-genetic causes of seizures. Possible non-genetic causes of recurrent seizures include environmental factors such as head injury, tumors of the brain, and infections. The recurrence risk for these types of seizures is not increased above the general population risk.

Seizures with a genetic cause may be isolated or may occur in individuals with specific genetic syndromes. There are over 140 specific genetic syndromes in which seizures occur. A few examples of these genetic syndromes include: tuberous sclerosis, mitochondrial diseases and metabolic disorders. Additionally, seizure disorders can occur in individuals with mental retardation. The recurrence risks for these disorders vary; therefore, the best way to assess the risk for a pregnancy is by a thorough genetic assessment of the individual with seizures.

Most isolated seizure disorders are not caused by a genetic syndrome. They are thought to have a multifactorial inheritance pattern. This means that multiple genes and environmental factors contribute to the condition. In these families, the risk for seizure disorders is greater for first-degree relatives (parents, sibling, and children) of the affected individual and is lower for more distant relatives.

Affected Relative	Recurrence Risk
Sibling	2.5%
Sibling <10 years	6%
Sibling >25 years	1-2%
Identical twin	~60%
Non-identical twin	~10%
Parent	4%
Both parents	~15%
1 Parent & 1 Sibling	~10%

These recurrence risks are estimated to be greater if there are two or more relatives with a seizure disorder. Additionally, these recurrence risks may be influenced by several factors including: the seizure type, the age of onset of the affected individual, and which parent is affected. Overall, recurrence risks are greater for generalized seizures than for focal seizures.

Despite these risks, it is important to remember that greater than 90% of people with seizure disorders do not have any affected relatives and most parents with seizure disorders do not have children with seizure disorders.

Febrile seizures (seizures that occur with fever) occur in 2-3% of the population. The risk of febrile seizures is increased in siblings, offspring, nieces and nephews of individuals with febrile seizures. The risk to siblings ranges from 8-15%. A child who has febrile seizures has a 2.5% lifetime risk of developing a seizure disorder.

Testing: Prenatal diagnosis is available for only a few genetic syndromes that include seizures. Other types of seizure disorders cannot be diagnosed during pregnancy.

Additional Information

Additional information about seizure disorders can be found at Medline Plus: <http://www.nlm.nih.gov/medlineplus/seizures.html>.