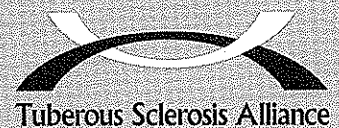


Types of Seizures Affecting Individuals with TSC

SEIZURE TYPE	WHAT IT LOOKS LIKE	WHAT IT IS NOT	WHAT TO DO	WHAT NOT TO DO
INFANTILE SPASMS	These are clusters of quick, sudden movements that typically start between 3 and 18 months, and almost always occur before age 2 years. The most frequent and common characteristic is a sudden flexion of the neck (head nod) and all four extremities and adduction of the arms (movement of the arms towards midline as if the infant is hugging him/herself). Extensor type spasms are less common and are characterized by sudden extension of the neck and lower extremities with extension and abduction (movement of the arms away from midline to the sides). In other cases, the spasms may be subtle and only abrupt head nods occurring in clusters are noticed. And in many cases, infantile spasms are a mix of characteristics.	Normal body movements. Colic.	No first aid, but doctor should be consulted.	Not Applicable
SIMPLE PARTIAL <i>(Also referred to as SPS)</i>	The major distinction between Simple Partial and Complex Partial (see Next Type) is that there is no alteration in consciousness in individuals with Simple Partial seizures. They may not be obvious to an onlooker. Simple Partial seizures have a diverse range of presentations that include but are not limited to: 1) involuntary jerking of one part of the body ("focal motor" signs)	Acting out, bizarre behavior. Hysteria. Mental illness. Psychosomatic illness. Parapsychological or mystical experience.	No first aid necessary unless seizure becomes convulsive, then first aid as above.	Not Applicable

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SEIZURE TYPE	WHAT IT LOOKS LIKE	WHAT IT IS NOT	WHAT TO DO	WHAT NOT TO DO
SIMPLE PARTIAL <i>(Also referred to as SPS)</i>	2) involuntary jerking of one part of the body ("focal motor" signs) 3) behaving out of character because they are hearing or seeing things that are not there; feeling unexplained fear, sadness, or joy; feeling tingling sensations; feeling nauseous; or looking pale and sweating; or appear to be "drugged" because of pupillary dilatation. Jerking may begin in one area of body, arm, leg, or face. Can't be stopped, but person stays awake and aware. Jerking may proceed from one area of the body to another and sometimes spreads to become a convulsive seizure.		No immediate action needed other than reassurance and emotional support. Medical evaluation should be recommended.	Not Applicable
COMPLEX PARTIAL <i>(Also referred to as CPS)</i>	Usually starts with blank stare, followed by chewing (or lip smacking, swallowing), then random activity. Person appears unaware of surroundings. May seem dazed and mumble. Unresponsive. Actions clumsy, not directed. May pick at clothing, pick up objects, try to take clothes off. May run, appear afraid. May struggle or flail at restraint. Once pattern established, same set of actions usually occur with each seizure. Lasts a few minutes, but post-seizure confusion can last substantially longer. No memory of what happened during seizure period.	Drunkenness. Intoxication on drugs. Mental illness. Disorderly conduct.	Speak calmly and reassuringly to patient and others. Guide gently away from obvious hazards. Stay with person until completely aware of environment. Offer to help getting home.	Don't grab hold unless sudden danger (such as a cliff edge or an approaching car) threatens. Don't try to restrain. Don't shout. Don't expect verbal instructions to be obeyed.
PARTIAL SEIZURES SECONDARILY GENERALIZED	Onset may either be a SPS or CPS as described above, which then evolves to a generalized seizure (commonly tonic-clonic as described below).	Heart attack. Stroke. Diabetic condition.	Look for medical identification. Protect from nearby hazards. Loosen ties or shirt collars. Protect head from injury.	Don't put any hard implement in the mouth. Don't try to hold tongue. It can't be swallowed.
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<p>PARTIAL SEIZURES SECONDARILY GENERALIZED</p>	<p>Onset may either be a SPS or CPS as described above, which then evolves to a generalized seizure (commonly tonic-clonic as described below).</p>	<p>Heart attack. Stroke. Diabetic condition.</p>	<p>Look for medical identification. Protect from nearby hazards. Loosen ties or shirt collars. Protect head from injury. Turn on side to keep airway clear. Reassure when consciousness returns. If single seizure lasted less than 5 minutes, ask if hospital evaluation wanted. If multiple seizures, or if one seizure lasts longer than 5 minutes, call an ambulance. If person is pregnant, injured or diabetic, call for aid at once.</p>	<p>Don't put any hard implement in the mouth. Don't try to hold tongue. It can't be swallowed. Don't try to give liquids during or just after seizures. Don't use artificial respiration unless breathing is absent after muscle jerks subside or unless water has been inhaled. Don't restrain.</p>
<p>GENERALIZED TONIC-CLONIC (Old Term: Grand Mal)</p>	<p>Stiffening (tonic) of limbs/body, and often a cry (caused by air forced through contracted vocal cord). Limbs may be extended, flexed, or each in succession. This phase is followed by muscle jerks, shallow breathing or temporarily suspended breathing, bluish skin, possible loss of bladder or bowel control, usually lasts a couple of minutes. There may be deviation of the eyes or head to one side. There may be drooling or foaming resulting from lack of swallowing and excessive salivation. There may also be biting of the tongue, cheek, or lip causing bleeding. Normal breathing then starts again. There may be some confusion and/or fatigue lasting minutes to hours followed by return to full consciousness.</p>	<p>Heart attack. Stroke. Diabetic condition.</p>	<p>Look for medical identification. Protect from nearby hazards. Loosen ties or shirt collars. Protect head from injury. Turn on side to keep airway clear. Reassure when consciousness returns.</p>	<p>Do not put any hard implement in the mouth. Don't try to hold tongue. It can't be swallowed. Don't try to give liquids during or just after seizures.</p>

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<p>GENERALIZED TONIC-CLONIC (Old Term: Grand Mal)</p>			<p>If single seizure lasted less than 5 minutes, ask if hospital evaluation wanted. If multiple seizures, or if one seizure lasts longer than 5 minutes, call an ambulance. If person is pregnant, injured or diabetic, call for aid at once.</p>	<p>Don't use artificial respiration unless breathing is absent after muscle jerks subside or unless water has been inhaled. Don't restrain.</p>
<p>TONIC</p>	<p>Prolonged stiffening of both upper and/or lower limbs; often occurs during sleep usually lasting seconds. There may be deviation of the head and/or eyes to one side. Lips may turn bluish; breathing may be irregular. Loss of bladder or bowel control may occur.</p>	<p>Heart attack. Stroke.</p>	<p>Turn on side to keep airway clear.</p> <p>Seek medical help if individual has repeated tonic seizures and/or is unresponsive after the seizure has stopped.</p> <p>If this is the first observation of this type of seizure, a medical evaluation is recommended.</p>	<p>Do not put anything in the mouth during the seizure.</p>
<p>ATONIC (also called Drop Attacks)</p>	<p>A child or adult suddenly loses postural tone, which may result in a head nod or jaw drops (milder form), or falling to the ground (stronger form). Consciousness is usually impaired. The individual usually recovers after a few seconds to a minute.</p>	<p>Clumsiness. Normal childhood "stage." In a child, lack of good walking skills. In an adult, drunkenness, acute illness.</p>	<p>No first aid needed unless seizure is severe enough to cause injury. If this a first-time occurrence, a thorough medical evaluation is recommended.</p>	<p>Not Applicable</p>

SEIZURE TYPE	WHAT IT LOOKS LIKE	WHAT IT IS NOT	WHAT TO DO	WHAT NOT TO DO
MYOCLONIC SEIZURES	A sudden, involuntary, brief shock-like muscle contraction that usually involves both sides of the body, with synchronous jerks most often affecting the neck, shoulders, upper arms, body, and upper legs. May cause person to spill what they were holding or fall off a chair.	Clumsiness. Poor coordination. Nervous tics.	No first aid needed, but should be given a thorough medical evaluation.	Not Applicable
ATYPICAL ABSENCE	Stare may begin and end gradually, usually lasts 5-30 seconds, and is not generally provoked by hyperventilation. Child may be partially responsive during episode. Eye-blinking or slight twitching movements of the lips may be seen. Children with this type of seizure often have global cognitive impairment and therefore it may be difficult to distinguish a seizure between the child's usual behavior	Daydreaming. Lack of attention. Child deliberately ignores adult instructions.	No first aid necessary, but if this is the first observation of the seizure(s), medical evaluation should be recommended.	Not Applicable
THE FOLLOWING TYPE OF SEIZURE DOES NOT OCCUR IN INDIVIDUALS WITH TSC				
TYPICAL ABSENCE (Old Term: Petit Mal)	A blank stare, beginning and ending abruptly, usually lasting 3-20 seconds, most common in children (usually 4 to 14 years, and usually resolve by age 18 years). May be accompanied by rapid blinking, some chewing movements of the mouth. Child is unaware of what's going on during the seizure, but quickly returns to full awareness once it has stopped. Typical absence seizures are often provoked by hyperventilation. Children with this type of seizure usually have normal development and intelligence. May result in learning difficulties if not recognized and treated.	Daydreaming. Lack of attention. Child deliberately ignores adult instructions.	No first aid necessary, but if this is the first observation of the seizure(s), medical evaluation should be recommended.	Not Applicable

Tuberous sclerosis children may have mixed seizures such as atypical absence, tonic and generalized tonic clonic, myoclonic, or atonic seizures. This condition is called Lennox-Gastaut syndrome and many of these patients may have a history of infantile spasms and later transitioned into this syndrome.

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Pediatric Epilepsy Diagnosis and Therapy, 2nd Edition. Pellock JM, Dodson WE, Bourgeois BF Eds. New York, NY: Demos, 2001.

Edited by Susan Koh, M.D., Co-Director of TSC Clinic at UCLA. June 2006.

***Tuberous Sclerosis Alliance Information Sheets are intended to provide basic information about TSC. They are not intended to, nor do they, constitute medical or other advice. Readers are warned not to take any action with regard to medical treatment without first consulting a physician. The TS Alliance does not promote or recommend any treatment, therapy, institution or health care plan.*

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