

Caring for Persons with Tuberous Sclerosis

Tuberous Sclerosis Complex (TSC) is a genetic disorder causing noncancerous tumors in the brain, skin, heart, kidneys, lungs, and other organs, leading to varied symptoms like seizures, neuropsychiatric, vascular, organ and skin issues, often appearing in infancy or childhood. It occurs in 1:6,000-10,000 and 85-90% have a pathogenic variant in TSC1 or TSC2 gene; mostly occurs sporadically but if inherited usually as autosomal dominant.

System	Information	Follow-up
Genetics	Pathogenic variant in TSC1 (chromosome 9q34) or TSC2 gene (16p13.3) instruct making of proteins hamartin and tuberin to help regulate cell growth and division	After variant identified, offer testing to 1st degree family
Cognition	- TSC-associated neuropsychiatric disorders (TAND) include intellectual disability 50-60% (higher w/ epilepsy), autism 40-50%, ADHD 30-50% - Broader percent with executive function issues	- Developmental screening - Neuropsych testing and support services as indicated
Cardiovascular	- Rhabdomyomas often regress, ventricles > atria - Arrhythmias – bradycardia, SVT, VT, WPW, heart block - Aortic aneurysms as early as infants to young adults – ¼ abd, ¼ thoracic, also carotid, axillary, renal, high rupture risk	- Echo q 1-3 yr, EKG q 3-5 yr - Consider syncope when evaluating seizures - Screen vessels annually, treat early
Dental	Intraoral fibromas, enamel pits, jaw lesions	Regular exams, Tx as needed
GI	Rarer liver hamartomas, pancreatic neuroendocrine tumors	Abd MRI as below
GU	- HTN in childhood 23% - Angiomyolipomas (AML) 70% w/ hemorrhage risk esp. > 3 cm, inc. bleed w/ pregnancy, ½ stop growth as adult - Renal cysts, usually asx. – 20-30% - ADPKD 3% to ESRD at ~ age 30 - Malignant tumors 3% - renal cell vs. malignant AML	- BP screening - Abd MRI q 1-3 yr, U/S can miss fat poor lesions, surveillance for cyst growth - BUN/Cr, Ur protein annual
Mental Health	TAND include anxiety, depression	Mental health screening
Neurology	- Cortical or subcortical tubers = focal development malformations 80%, other neuronal migration defects, subependymal nodules 90% - Subependymal giant cell astrocytomas (SEGAs) 5-15% w/ hydrocephalus, tumor hemorrhage, rare to grow as adult - Seizures 70-80% w/ ⅓ to ¾ refractory, infantile spasms 50% (key to start Rx early)	- Brain MRI every 1-3 yr to age 25 - Everolimus / sirolimus for tumors = mTOR inhibitor (mammalian target of rapamycin) - Surgery, CNS shunts as needed - EEG prolonged sleep/wake q 6 wks to age 1, q 3 mos to age 2 - Vigabatrin preferred for infantile spasm
Pulmonary	- Lung disease 17% - Lymphangiomyomatosis (LAM) esp. reproductive females 30-40% - Multifocal micronodular pneumocyte hyperplasia (PMPH) - Pneumothorax (PNTX)	- Low dose CT q 5-7 yr – females to menopause, males for sx – cough, SOB - No estrogen Rx d/t worsening of LAM - Baseline PFT, if LAM - annual w/ walk test - Pleurodesis for 1st PNTX
Skin	Angiofibromas onset 3-5yo – butterfly face distribution, ashleaf patches, hypomelanotic macules, Shagreen patches – orange peel on teen lower back, subungual fibromas	Sun protection – UV induces angiofibroma mutations
Vision	Retinal astrocytic hamartomas 30-50%, retinal achromic patches, rare vision loss	Annual eye exam

Reference: Northrup H, et al. Updated Intl Tuberous Sclerosis Diagnostic, Surveillance, Management Recommendations. Ped Neurology 2021.

Summary by CYACC: August 2026

