## What is the Cerebral Cavernous Malformation CCM1 Common Mutation?

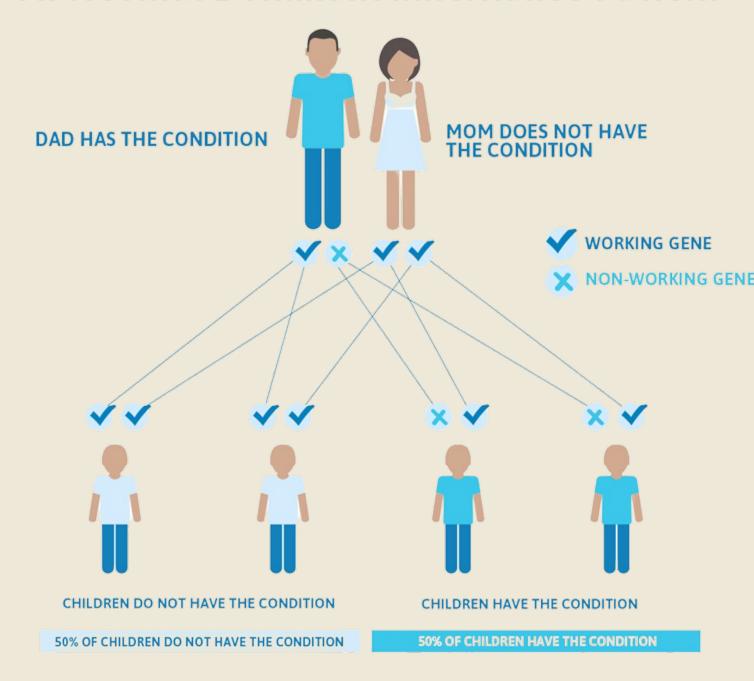
#### **Information for Patients**





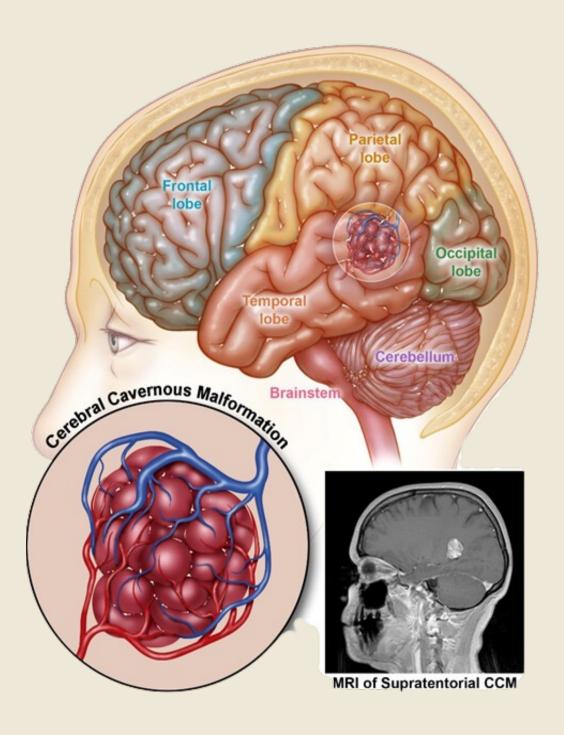


## **Autosomal Dominant Inheritance Pattern**

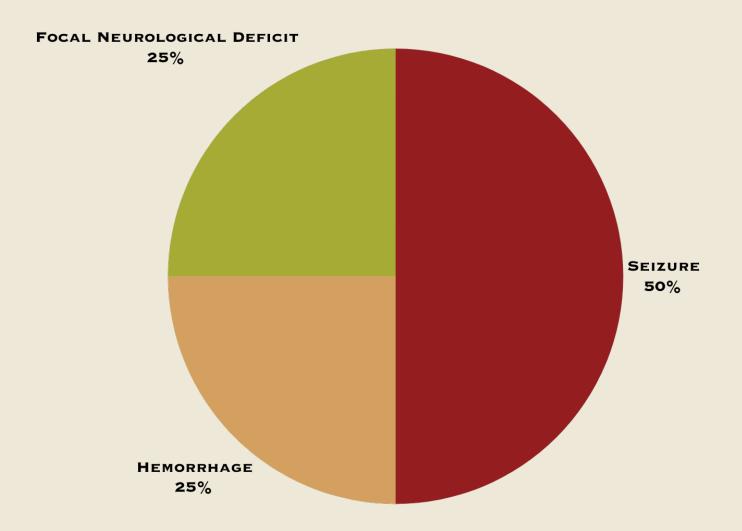


## **CAVERNOUS MALFORMATIONS**

are mulberry-shaped, thin-walled, leaky blood vessels with slow blood flow.



## SYMPTOMS THAT LEAD TO DIAGNOSIS

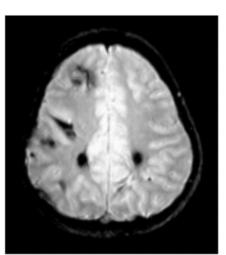


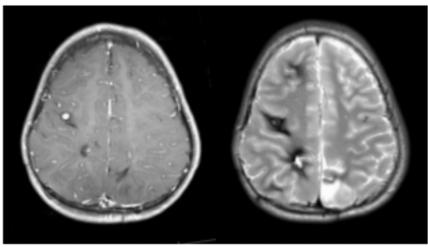
A focal neurological deficit is any symptom tied to a specific area of the brain or spinal cord. Examples: arm or leg weakness, blurry vision, or facial paralysis.

At least half of those with the CCM1 Common Hispanic Mutation never have a symptom.



## DIAGNOSING CCM: MEDICAL IMAGING





MRI with multiple cavernous malformations as seen on SWI (T2\*), T1, and T2 sequences.

People who are suspected of having CCM should have Magnetic Resonance Imaging (MRI) for a definite diagnosis.

Cavernous malformations can look like **popcorn** with a dark ring in some scan images. With other settings, they look like dark or light spots.



### POSSIBLE CCM1 SYMPTOMS



Focal seizures – uncontrolled movement in a limb or the face, smelling something that's not there.



Limb weakness, tingling, burning



Vision issues – double vision, jumpy vision, eye turning in, loss of part of visual field



Balance or coordination problems, dizziness that won't stop



Facial paralysis that resembles Bell's Palsy



Diaphragm spasms (resemble hiccups) that continue for an extended period. This is an emergency.



Projectile vomiting and loss of consciousness are also emergencies.



# ACTIONS THAT MAY HELP REDUCE RISK OF HEMORRHAGE

Remove artificial preservatives from your diet. Use the FIG app to identify problem ingredients.

Take a Vitamin D supplement if your levels are low.

Ask for a sleep study and treat sleep apnea if you suspect you may have it.

Limit hormone replacement therapy and oral contraceptives.

Reduce inflammation: stop smoking, limit infectious disease (hand-washing, vaccination).



# **CCM Treatments in Development**

**Pre-Clinical: Animals** expected 3rd Qtr 2024 Atorvastatin – Phase 2a completed enrollment 9/22, results

Phase One: Safety

**Phase Two: Effect** 

**RHO KINASE** 

INHIBITORS

NRL-1049 - Entering Phase 2

OV-888 — Entering Phase 2

expected 3rd Qtr 2024 REC-994 Phase IIa completed enrollment 6/23, results

SUPEROXIDE DISMUTASE

Low Dose Rapamycin – Ph 2 beginning in China

Alpelisib – pediatric Ph 2a pilot with CCM1 underway

BETA BLOCKER

MTOR/PIK3CA INHIBITORS

FOCUSED ULTRASOUND

underway

**ANTI-PLATELET** 

TYROSINE KINASE INHIBITOR

Microbubble Breakthrough – trial planning

Propranolol – Small Italian Trial Complete. Pediatric pilot at CCHMC

Low dose aspirin – seeking EU funding

Ponatinib – seeking support outside of US



#### **GENETIC TESTING**

How: Performed with saliva, gum swab, or blood sample. Takes about 4-6 weeks for results.

Where: Available thru UNM Neurology (505) 272-3160

Protection: Genetic Non-Discrimination Act prevents discrimination in insurance & employment.

Why test? Testing reduces the risk of misdiagnosis of symptoms.

Why test? Testing provides information to take precautions & have early access to treatments.

