Living with CDKL5 deficiency disorder
key facts

What is CDD?

A rare, severe developmental and epileptic encephalopathy that begins in **early infancy** and is characterized by multiple types of drug-resistant seizures, plus neurodevelopmental delays that impact cognitive, motor, speech, and visual function.

What causes CDD?

Cyclin-dependent kinase like-5 (CDKL5) deficiency disorder is a genetic condition that is caused by changes (pathogenic variants) in the CDKL5 gene, which is located on the X chromosome.[1,2]

The CDKL5 gene instructs the body how to make the CDKL5 protein which is required for normal brain development and function.[2] It is characterized by seizures that begin in infancy, followed by significant delays in many aspects of development.[1,2]

The full extent of CDD is not known

CDKL5 gene mutations have been found in children diagnosed with Infantile Spasms, West Syndrome, Lennox-Gastaut syndrome, Rett Syndrome, cerebral palsy, autism, and intractable epilepsy of unknown origin.[2,4]

The impact of CDD

Prevalence:
Rare condition affecting approximately between 1 in 40,000 to 60,000 live births.[1-3]

Ethnicity:
Impacts people of many different ethnicities.[2]

Gender:
Affects four times as many females than males.[1,2] The course of the disease is usually more severe among males and is often fatal in the first or second decade of life.[1,3]

Family:
Although CDD is generally not inherited from either parent (de novo mutations), cases of family history of CDKL5 mutations have been reported.[2]

What are the symptoms?

CDD leads to a broad, complex range of clinical symptoms that can differ in severity between patients.[4] Early manifestation and diagnosis have a huge impact on the quality of life of patients and their families, as timely identification allows for earlier intervention and support.[5]

Seizures

In more than 90% of patients, seizures begin in the first year of life and often as early as at six weeks of age and persist into adulthood.[5,6] Despite available medication, CDD remains drug resistant and most patients continue to experience 1 to 5 seizures per day.[5,6]

The type of seizures experienced can vary throughout a CDD patient's lifetime.[5,6]

At disease onset: Most common seizure types include tonic seizures, infantile (or epileptic) spasms, generalized tonic-clonic seizures, and focal seizures.[5,6]

Over time: Epileptic spasms, tonic, myoclonic, and generalized tonic-clonic become the most common seizure types.[5,6]

Intellectual and Developmental problems

Developmental milestones are severely delayed in affected individuals including:[1,5]

- Little or no development of speech.[2]
- Musculoskeletal problems such as scoliosis.[2]
- Delays or failure to achieve gross motor skills and the use of larger muscles needed for whole-body movements such as sitting, standing, and walking.[1,2]
- Challenges with fine motor skills, the coordination of smaller muscles for everyday tasks such as the ability to pick up small objects.[2]

Non-seizure symptoms

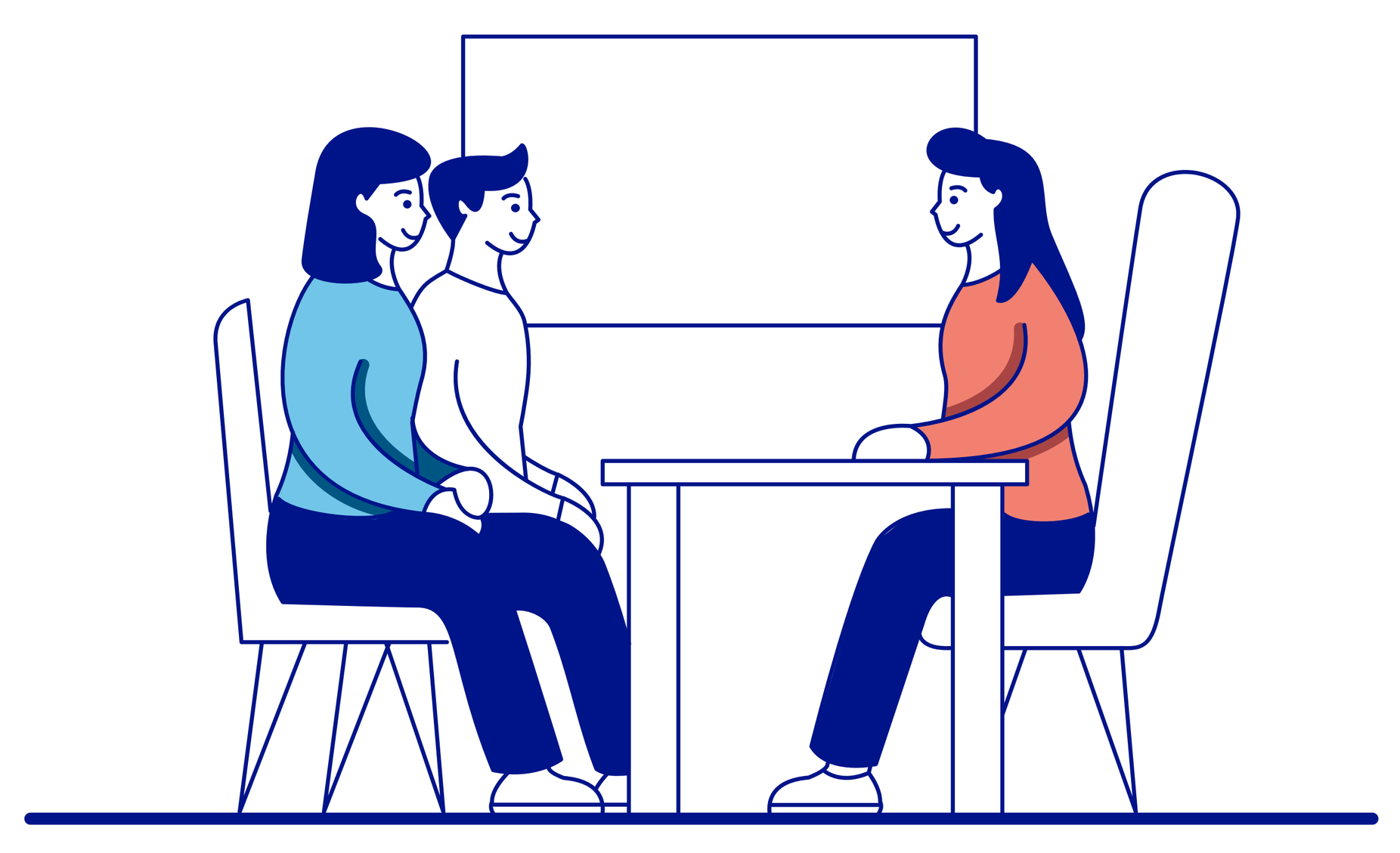
Other non-seizure symptoms can include:

- Problems with vision, breathing, sleeping, feeding, and teeth grinding.[2]
- Gastrointestinal symptoms are also common and may include constipation, reflux, and air swallowing.[2,3]

Impact on caregivers:

Frequent and severe epileptic episodes and non-seizure symptoms such as increased sleep disturbance and behavioral issues can significantly impact family and caregiver's quality of life.[7] These individuals often have to give up their careers to provide their children with a wide range of treatment and multidisciplinary care to manage the symptoms of CDD.[7]

As the diagnosis of CDD and the subsequent access to syndrome-specific family support are often considerably delayed, this can further amplify the emotional burden of the condition on those supporting patients.[8]



How is CDD managed?

Current management of the condition is primarily symptom-based and requires a multidisciplinary approach to care, including:[9]

- Physiotherapy[9]
- Occupational therapy[9]
- Speech therapy[9]
- Nutritional guidance[9]

Seizures show high drug resistance and are often difficult to control.[10]

47% of individuals (N=122) are on three or more antiseizure medications (ASMs)[10]

6 The median number of ASMs taken throughout a patient's life.*[10]

Despite this, many patient's seizures remain uncontrolled.[10]

Other treatment options include dietary therapy, neurostimulation or callosotomy.[6]

* Data taken from a cohort of the international CDKL5 disorder database

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