

Supporting CDKL5



Melatonin therapy for circadian rhythm sleep disorders in children with multiple disabilities: what have we learned in the last decade? *Developmental Medicine & Child Neurology* 2004.

Sleep is thought to be a learned neurological process that develops in response to cues from the environment. This is a process that we all go through, but which is impaired in children with neurodevelopmental problems. As a result they can retain their fragmented "baby" pattern of sleeping, potentially throughout their life.

Circadian rhythm sleep disorders (CRSD) occur when there is a dissociation between sleep-wake behaviour and the environment. Parents should promote the sleep learning process through "highly regulated strict sleep hygiene". Melatonin is produced by the pineal gland in the brain, and although previous research has established that it can induce and maintain sleep, its exact mechanism of action remains unclear. It does not promote sleep in the same way as a hypnotic (sleeping tablet) does, but may act by inhibiting neuronal excitability in the central nervous system. Exposure to light tends to decrease melatonin secretion while darkness promotes it. CRSD's tend to be associated with disturbance in melatonin secretion.

There are also non-circadian rhythm sleep disorders due to pain from such things as reflux or orthopaedic problems, or from nocturnal seizures or related drug treatment. In the treatment of CRSD it is important to choose the correct melatonin formulation depending on the particular sleep disorder. Discontinuation for a few days is also recommended as children can acquire normal sleep patterns over time. Some studies suggest that children with neurodevelopmental disabilities, who have CRSD can show a 70-90% quick response. However, not all children respond equally and there may be some with certain conditions who may not benefit. No major side-effects of melatonin have been reported in paediatric studies.

Note - This review contains a lot of information about sleep disorders and the role of melatonin. One of the authors published the original study on the role of melatonin in sleep disorders, and so the enthusiasm for melatonin is understandable. They do state that much of the skepticism regarding melatonin was based on lack of quality control, unsubstantiated benefit claims, misconceptions about the action of melatonin and oversimplification about the relationship between melatonin and CRSD's. Perhaps the most relevant points for parents and carers are made in the first few paragraphs where they state that the majority of children with neurodevelopmental disabilities are said to have long-standing sleep disorders, and that the management is often neglected due to the inadequate training of doctors in these problems.