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**Epilepsy Foundation of America**

**Testimony – Committee on Energy and Commerce**

**Subcommittee on Health**

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Thank you, Chairman Pitts and Ranking Member Pallone for allowing me to testify on behalf of the more than 2.8 million Americans living with epilepsy and their families. Specifically, as Chair of the Epilepsy Foundation's Professional Advisory Board, I am here to support a legislative initiative that I know is important to this committee – the *Improving Regulatory Transparency for New Medical Therapies Act* (H.R. 4299). The Epilepsy Foundation is extremely grateful for the leadership of the Chairman and Ranking Member in introducing what we believe is not only important, but a reasonable legislative solution that we hope will garner many supporters as it moves towards passage.

The Epilepsy Foundation is the leading national voluntary health organization that speaks on behalf of more than 2.8 million Americans with epilepsy. The Foundation fosters the well-being of children and adults affected by seizures through research programs, educational activities, advocacy, and direct services. I am pleased to serve as chair of our medical advisors and as a practicing epileptologist. I would like to share information about epilepsy with this committee, so that you might better understand why our organization is steadfast in our support for H.R.

4299 and why we think this is a reasonable and workable solution to current delays for our patients.

Epilepsy is a medical condition that produces seizures affecting a variety of mental and physical functions; it is also called a *seizure disorder*. A person is considered to have epilepsy if they have two or more seizures.<sup>1</sup> Epilepsy is a family of more than 40 syndromes<sup>2</sup> including Dravet syndrome, hypothalamic hamartomas (HH), and Lennox-Gastaut syndrome (LGS). Dravet syndrome, also known as Severe Myoclonic Epilepsy of Infancy, is a rare and catastrophic form of intractable epilepsy that begins in infancy and includes developmental declines and a higher incidence of sudden unexplained death in epilepsy (SUDEP).<sup>3</sup> HH are benign tumors or lesions in or around the hypothalamus. They can be difficult to diagnose and treat and can lead to daily seizures, developmental delays, and/or precocious puberty.<sup>4</sup> LGS is a debilitating form of childhood-onset epilepsy that is characterized by multiple seizure types, cognitive impairment, and an abnormal EEG.<sup>5</sup>

Epilepsy affects more than 2.8 million Americans<sup>6</sup> and 65 million people worldwide.<sup>7</sup> This condition will develop in approximately one out of 26 people at some point in their lives<sup>8</sup> making it the fourth most common neurological disorder in the United States after Alzheimer's

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<sup>1</sup> Kobau R, Price P. Knowledge of epilepsy and familiarity with this disorder in the U.S. population: Results from the 2002 HealthStyles survey. *Epilepsia*. 2003;44(11):1449–1454.

<sup>2</sup> National Institute of Neurological Disorders and Stroke. Web site, <http://www.ninds.nih.gov/>

<sup>3</sup> Dravet Syndrome Foundation. Web site, [www.dravetfoudnation.org](http://www.dravetfoudnation.org)

<sup>4</sup> Hope for Hypothalamic Hamartomas. Web site, [www.hopeforhh.org](http://www.hopeforhh.org)

<sup>5</sup> LGS Foundation. Web site [www.lgsfoundation.org](http://www.lgsfoundation.org)

<sup>6</sup> Projection based on Begley CE, et al. The cost of epilepsy in the United States: An estimate from population-based clinical and survey data. *Epilepsia*. 2000;41(3):342–351 and U.S. Census Bureau 2010 population estimate of 308,000,000.

<sup>7</sup> Annual Report 2003: Global Campaign Against Epilepsy, p. 2. Published by World Health Organization, International Bureau for Epilepsy and International League Against Epilepsy.

<sup>8</sup> M.J. England et al. / *Epilepsy & Behavior* 25 (2012) 266–276. Web site, <http://iom.edu/~media/Files/Report%20Files/2012/Epilepsy/epilepsyEBarticleFinal.pdf>

disease, stroke, and migraines.<sup>9</sup> This year 200,000 people in the U.S. will be diagnosed with epilepsy<sup>10</sup>, with the very young and the very old being the most affected. Currently, 326,000 children under the age of fifteen have epilepsy, and more than 90,000 of them have severe seizures that cannot be adequately treated.<sup>11</sup> Meanwhile, as the baby boomer generation approaches retirement age the number of cases in the elderly population is beginning to soar, with more than 570,000 adults age 65 and above living with epilepsy in the United States.<sup>12</sup> Epilepsy imposes an annual economic burden of \$19.2 billion<sup>13</sup> on this nation in associated health care costs and losses in employment, wages, and productivity. Along with the financial costs, epilepsy and its treatment may impact someone's quality of life with side effects such as pain, depression, anxiety, reduced vitality, and insufficient sleep or rest.<sup>14</sup> Depression is significantly linked to epilepsy with more than a third of all people with epilepsy affected by the mood disorder, and people with a history of depression are 3 to 7 times more likely to develop epilepsy than the average person.<sup>15</sup> These side effects are compounded when it is considered that many people with epilepsy live with significant co-morbidities. Research has shown that 25.4 percent of people with autism have epilepsy, as well as 13 percent of those with cerebral palsy, 13.6 percent of those with Down syndrome, and 25.5 percent of those with mental retardation live with epilepsy. The percentage increases when you look at those who have both cerebral palsy and mental retardation, with 40 percent living with epilepsy.<sup>16</sup>

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<sup>9</sup> Hauser A. Epidemiology of seizures and epilepsy in the elderly. In: Rowan A, Ramsay R, eds. *Seizures and epilepsy in the elderly*. Boston:Butterworth-Heinemann, 1997:7–18.

<sup>10</sup> See note 6 above

<sup>11</sup> See note 6 above

<sup>12</sup> See note 6 above

<sup>13</sup> Begley, op.cit. Reported cost of \$12.5 billion for prevalent cases in 1995 is converted here to 2014 dollar value using Bureau of Labor Statistics automated online constant dollars conversion calculator.

<sup>14</sup> From Centers for Disease Control and Prevention. Health-related quality of life among persons with epilepsy. *JAMA*, 2001;285(7):878.

<sup>15</sup> Kanner AM. Depression and epilepsy: A new perspective on two closely related disorders. *Epilepsy Currents*. 2006;6(5):141-46.

<sup>16</sup> McDermott S, Moran R. Prevalence of epilepsy in adults with mental retardation and related disabilities in primary care. *American Journal of Mental Retardation*. 2005;10(1):48-56

Those living with epilepsy also face serious barriers to proper care and first aid. A lack of knowledge about proper seizure first aid exposes affected individuals to injury from unnecessary restraint and from objects needlessly forced into their mouths.<sup>17</sup> Besides poor first aid, those living with epilepsy are also forced to live with uncontrollable epilepsy for an exceptionally long period of time when an effective treatment may be available. On average, it is 14 years between the onset of epilepsy and surgical intervention for seizures that are uncontrollable through medication. American physicians may be unaware of the safety and efficacy of epilepsy surgery, making it among the most underused of proven, effective therapeutic interventions in the field of medicine.<sup>18</sup>

Access to new therapies is particularly important for the 20 to 30 percent of people living with epilepsy who experience intractable or uncontrolled seizures or have significant adverse effects to medication. Patients who have drug resistant epilepsy, defined as a failure to achieve seizure freedom after adequate trials of two tolerated, appropriately chosen and used anti-epilepsy drug schedules (whether as monotherapies or in combination), can develop brain damage or experience other life-threatening effects. As Director of the epilepsy program at the University of Virginia School of Medicine, I am very familiar with the impact of epilepsy for those who have found seizure control, and those patients who are still searching for the hope that a new treatment may offer.

Sudden Unexpected Death in Epilepsy, known as SUDEP, encompasses non-traumatic, non-drowning related deaths in people with epilepsy that may or may not be associated with a recent

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<sup>17</sup> Repeated surveys by the Epilepsy Foundation, the previously cited CDC report, and numerous other surveys have documented the low level of public knowledge about seizures and epilepsy, including persistent misconceptions about seizure first aid.

<sup>18</sup> Engel, JR Jr. A greater role for surgical treatment of epilepsy: Why and when? *Epilepsy Currents*. 2003;3(2):37-40.

seizure, but are not due to prolonged seizures.<sup>19</sup> In definite SUDEP, an autopsy reveals no evidence of an anatomical or toxicological cause of death.<sup>20</sup> As noted in the 2012 Institute of Medicine report, *Epilepsy Across the Spectrum*<sup>21</sup>, not only do people with epilepsy succumb to sudden death at a rate over 20 times higher than the general population<sup>22</sup>, but SUDEP is also the leading cause of epilepsy-related death.<sup>23</sup> It accounts for the deaths of 40% of people with severe epilepsy and 4% of those with all types of epilepsy.<sup>24</sup> Among people with both cognitive impairments and refractory epilepsy, the cumulative risk of SUDEP can exceed 10%.<sup>25</sup> While much more research is needed into the causes and prevention of SUDEP, the strongest evidence suggests that the occurrence of seizures increases the risk.<sup>26</sup>

The Epilepsy Foundation's SUDEP Institute was established to increase awareness, prevent Sudden Unexpected Death in Epilepsy (SUDEP) through research, and support people confronting the fear and loss of a loved one. The SUDEP Institute carries out SUDEP education and awareness programs for people touched by epilepsy and medical professionals, drives and supports research into the causes of and ways to prevent SUDEP, offers a support network providing counseling, community, and resources for individuals and families affected by

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<sup>19</sup> Nashef, L., E. L. So, P. Ryvlin, and T. Tomson. 2012. Unifying the definitions of sudden unexpected death in epilepsy. *Epilepsia* 53(2):227-233.

<sup>20</sup> Ibid.

<sup>21</sup> National Academies, Institute of Medicine. *Highlights from Epilepsy Across the Spectrum: Promoting Health and Understanding A Focus on Mortality and Sudden Unexpected Death in Epilepsy, 2012*. Accessed at: <http://www.iom.edu/~media/Files/Report%20Files/2012/Epilepsy/IOM%20Report%20Highlights%20for%20PAME%20Conference.pdf>

<sup>22</sup> Ficker DE, So EL, Shen WK, et al. "Population-based study of the incidence of sudden unexplained death in epilepsy." *Neurology* 1998;51:1270-1274.

<sup>23</sup> Tomson, T., L. Nashef, and P. Ryvlin. 2008. Sudden unexpected death in epilepsy: Current knowledge and future directions. *Lancet Neurology* 7(11):1021-1031.

<sup>24</sup> Tellez-Zenteno JF, Ronquillo LH, Weibe S. "Sudden unexpected death in epilepsy: Evidence-based analysis of incidence and risk factors." *Epilepsy Research* 2005;65(1-2):101-115.

<sup>25</sup> Sillanpää, M., and S. Shinnar. 2010. Long-term mortality in childhood-onset epilepsy. *New England Journal of Medicine* 363(26):2522-2529. Sillanpää, M., S. Lastunen, H. Helenius,

<sup>26</sup> Hesdorffer, D. C., T. Tomson, E. Benn, J. W. Sander, L. Nilsson, Y. Langan, T. S. Walczak, E. Beghi, M. J. Brodie, and W. A. Hauser. 2012. Do antiepileptic drugs or generalized tonic-clonic seizure frequency increase SUDEP risk? A combined analysis. *Epilepsia* 53(2):249-252.

SUDEP, and works together with many epilepsy organizations to find the answers to SUDEP and help families with epilepsy. Since the risk for SUDEP is higher in people with recurring seizures, our mission includes improving pathways to new treatments that can bring seizure control to more patients. Delays in access to these potential therapies are clearly against the patients' interest for those with treatment needs and ultimately result in loss of life.

As you can see, a delay in treatment that may control an individual's seizures is not just a mere convenience or a better side effect profile. Seizures inflict potential damage to the brain and this can be especially concerning for children in developmental stages of life. Seizures can increase risk of injury, and ultimately, as shared, can lead to death for some individuals. As I hope you can understand, the concerns from our community about access to new or better treatments is meaningful and important.

When a new treatment receives approval from the Food and Drug Administration the epilepsy community is filled with hope. This hope can be short lived when consumers learn that the product will not reach them or their loved one due to a delay at the Drug Enforcement Administration (DEA). It is further troubling as a patient advocacy organization that we cannot offer a clear explanation of why this delay occurs since DEA review has never changed the drug schedule recommendation; nor can we offer a timeline or explanation of why there is no timeline. Patients, parents, families wait and we have no answer other than a bureaucratic process. It does not instill faith in our government and undermines the value that patients and their families place on the FDA approval process.

The process to schedule a new molecular entity lacks transparency and timelines, and involves many parties including the FDA, the National Institute on Drug Abuse (NIDA), the Assistant Secretary of Health (ASH) in the Department of Health and Human Services (HHS), as well as DEA. Without apparent cause or justification, the time period between initial drug approval by FDA and final scheduling by DEA has been increasing over the years. Between 1997-1999 and 2009-2013, **the average time between FDA approval and DEA's final scheduling increased from an average of 49.3 days to an average of 237.6 days, an almost five-fold increase.**

While the FDA human drug review process is largely transparent, with predictable timelines, the DEA has no set timeline or transparency requirements to make scheduling determinations. Unfortunately, as DEA's unpredictable and often lengthy review occurs, patients are denied access to important medicines that can improve, and in some cases save, their lives.

Recently, the Epilepsy Foundation merged with the Epilepsy Therapy Project to create a unified organization driving education, awareness, support, and new therapies for people and families living with epilepsy. This merger brings together the mission and assets of both organizations, including [www.epilepsy.com](http://www.epilepsy.com), the leading portal for people, caregivers, and professionals dealing with epilepsy; 47 affiliated Epilepsy Foundations around the country dedicated to providing free programs and services to people living with epilepsy and their loved ones; a track record of identifying and supporting important new science, translational research programs, and the most promising new therapies; and the Epilepsy Pipeline Conference, a leading global forum organized in partnership with the Epilepsy Study Consortium that showcases the most exciting new drugs, devices, and therapies.

Innovation is critical for the Epilepsy Foundation both for patients continuing to live with uncontrolled seizures and those who have more seizure freedom but would like to have fewer side effects from medications. Our focus on innovation, research, and new treatments, devices, and technologies for people with epilepsy is another reason why the DEA delay concerns the Epilepsy Foundation. Due to the unpredictable delay caused by the DEA, companies cannot accurately predict the amount of time they will have left on their patent once the drug goes to market, or the amount of time for which they will have data exclusivity. They cannot accurately predict or plan for their product reaching consumers and physicians. This is a disincentive to innovation in an already challenging area of neurological development.

This bill is a simple solution to the problem and will ensure that drugs will not sit around waiting to be scheduled and patients won't be forced to wait on potentially life-changing drugs. HR 4299 will allow more innovative treatments to reach the market and give a clear timeline for drug availability from FDA through DEA.

The Epilepsy Foundation sees no public health reason for these delays; especially after full safety and efficacy reviews and thorough abuse potential analysis by the FDA. We urge all Members to consider full support of the Chair and Ranking Member's proposal. New products that would benefit from this change would continue to have DEA oversight. We would further argue that epilepsy treatments are not the cause for prescription drug abuse programs, or the public health concern overall. Predictable and timely access to new therapies would be a phenomenal accomplishment for epilepsy patients and all Americans suffering from conditions like Epilepsy.. I thank the Committee for its time and attention today.