BRIVIACT® (brivaracetam) CV - Testimony

Good morning/afternoon. My name is	and I am the	for UCB
------------------------------------	--------------	---------

This Testimony will discuss Briviact, a unique SV2A anticonvulsant.

For more than 2 decades, UCB has been focused on developing new medicines and solutions for people with epilepsy.

- o In the U.S., 3.4 million Americans are living with epilepsy. 1,2
- NEVADA has 31,600 residents currently living with epilepsy.³
- Epilepsy is a complex and heterogeneous disease with numerous causes, seizure types, and serious comorbidities^{4,5} which result in substantial socioeconomic and cost burden.⁶
- Estimated direct costs of epilepsy are approximately \$28 billion per year in the U.S.⁷⁻⁹
- O Healthcare costs can be influenced by type of AED selected for treatment as well as titration periods.^{10,11} One recent retrospective U.S. chart review analysis found the time to reach an AED maintenance dose (the titration period) may be increase healthcare costs. Epilepsy resource use cost was increased by 47% during the titration phase compared to the 6 month post-maintenance period.¹¹

Despite the availability of over 25 antiepileptic drugs (AEDs), more than 30% of patients continue to experience seizures and are considered refractory. 12

- Treatment of refractory epilepsy relies on combining numerous AED options with diverse mechanisms of action (MOAs) to target various pathways in tandem. Further, AEDs within the same mechanistic class may be needed to optimize seizure control in any given patient.¹³⁻¹⁶
- Many common AEDs may take 7-126 days to reach a target dose.¹⁷⁻²³

Gradual dose escalation is not required with BRIVIACT.²⁴ A therapeutic dose can be initiated on the first day of treatment.

o 100% of BRIVIACT utilization is in patients with epilepsy.²⁵

BRIVIACT is indicated for the treatment of partial-onset seizures in patients 4 years of age and older and is a Schedule V controlled substance. As the safety of BRIVIACT injection has not been established in pediatric patients, BRIVIACT injection is indicated for the treatment of partial-onset seizures in adults (16 years of age and older). ²⁴

- o *In vitro* studies have shown that BRIVIACT has a 15- to 30-fold higher affinity to SV2A compared to levetiracetam (LEV) and that BRIVIACT lacks activity at high voltage activated calcium channels and AMPA receptors.²⁶⁻²⁹ The clinical significance of these *in vitro* data is unknown.
- Positron Emission Tomography (PET) studies in healthy human volunteers have shown that BRIVIACT enters the brain faster than levetiracetam.³⁰

BRIVIACT has demonstrated efficacy in reducing seizure frequency in three placebocontrolled adjunctive studies of 1,550 adult patients with uncontrolled partial-onset seizures.²⁴

 All three studies included patients with prior LEV exposure. In Study 3, a pre-specified analysis examined efficacy in the 54% of patients who had prior LEV exposure, with BRIVIACT demonstrating efficacy over placebo among those patients.²⁵

For detailed information on BRIVIACT's safety profile, including important warnings and precautions, please refer to the Package Insert. The most common adverse reactions are somnolence and sedation, dizziness, fatigue, and nausea and vomiting.²⁴

Please consider providing open access to all AEDs, including BRIVIACT for appropriate Medicaid patients with partial-onset seizures.

REFERENCES

- Epilepsy Foundation of America. Epilepsy and Seizure Statistics. http://www.epilepsy.com/learn/epilepsy-statistics. Accessed June 3, 2016.
- 2. Zack MM, Kobau R. National and State Estimates of the Numbers of Adults and Children with Active Epilepsy United States, 2015. . In. *MMWR Morb Mortal Wkly Rep.* Vol 66: CDC; 2017:821-825.
- Centers for Disease Control and Prevention. Epilepsy Data and Statistics. https://www.cdc.gov/epilepsy/data/index.html. Accessed 27Jun2019.
- 4. National Institute of Neurological Disorders and Stroke (NINDS). The epilepsies and seizures: hope through research. https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Hope-Through-Research/Epilepsies-and-Seizures-Hope-Through. Accessed September 25, 2017.
- 5. Cardarelli WJ, Smith BJ. The burden of epilepsy to patients and payers. *The American journal of managed care*. 2010;16(12 Suppl):S331-336.
- 6. Cramer JA, Wang ZJ, Chang E, et al. Healthcare utilization and costs in children with stable and uncontrolled epilepsy. *Epilepsy Behav.* 2014;32:135-141.
- 7. Begley CE, Durgin TL. The direct cost of epilepsy in the United States: A systematic review of estimates. *Epilepsia*. 2015;56(9):1376-1387.
- 8. Chen SY, Wu N, Boulanger L, Sacco P. Antiepileptic drug treatment patterns and economic burden of commercially-insured patients with refractory epilepsy with partial onset seizures in the United States. *J Med Econ.* 2013;16(2):240-248.
- 9. Examining the economic impact and implications of epilepsy. Clinical Brief. *The American journal of managed care.* 2020;February 2020.
- 10. Borghs S, Thieffry S, Noack-Rink M, et al. Health care cost associated with the use of enzyme-inducing and non-enzyme-active antiepileptic drugs in the UK: a long-term retrospective matched cohort study. *BMC Neurol.* 2017;17(1):59.
- 11. Fishman J, Kalilani L, Song Y, Swallow E, Wild I. Dose titration of AED treatments and related healthcare resource use and costs: a retrospective chart review in the US [Poster]. AMCP Managed Care and Speciality Pharmacy Annual Meeting 2017 (AMCP); March 27-30, 2017, 2017.
- 12. Brodie MJ, Kwan P. Staged approach to epilepsy management. *Neurology.* 2002;58(8 Suppl 5):S2-8.
- 13. White H, Rho J. Mechanisms of Action of Antiepileptic Drugs2010. Located at: Professional Communications, Inc.

- 14. Hirtz D, Thurman DJ, Gwinn-Hardy K, Mohamed M, Chaudhuri AR, Zalutsky R. How common are the "common" neurologic disorders? *Neurology*. 2007;68(5):326-337.
- 15. England MJ, Liverman CT, Schultz AM, Strawbridge LM. Epilepsy across the spectrum: promoting health and understanding. A summary of the Institute of Medicine report. *Epilepsy Behav*. 2012;25(2):266-276.
- 16. Kotsopoulos IA, van Merode T, Kessels FG, de Krom MC, Knottnerus JA. Systematic review and meta-analysis of incidence studies of epilepsy and unprovoked seizures. *Epilepsia*. 2002;43(11):1402-1409.
- 17. TEGRETOL® [package insert]. In. East Hanover, NJ: Novartis Pharmaceuticals Corporation; 2015.
- 18. Zonegran [package insert]. In. Woodcliff Lake, NJ: Eisai Inc.,; July 2015.
- 19. Gabitril [package insert]. In. Frazer, PA: Cephalon Inc.; November 2015.
- 20. Topamax [package insert]. In. Titusville, NJ: Janssen Pharmaceuticals, Inc.; March 2014.
- 21. Trileptal [package insert]. In. East Hanover, NJ;. Novartis Pharmaceuticals CorporationJuly 2014.
- 22. Lamictal [package insert]. In. Research Triangle Park, NC: laxoSmithKline; May2015.
- 23. Dilantin [package insert]. In. New York, NY: Pfizer; February 2017.
- 24. UCB Inc. BRIVIACT (brivaracetam) [Package Insert].
- 25. UCB Inc. Data on File.
- 26. Gillard M, Fuks B, Leclercq K, Matagne A. Binding characteristics of brivaracetam, a selective, high affinity SV2A ligand in rat, mouse and human brain: relationship to anti-convulsant properties. *European journal of pharmacology*. 2011;664(1-3):36-44.
- 27. Kostyuk P, Lukyanets E, Klitgaard H, Margineanu D. UCB 34714 (Brivaracetam), a new pyrrolidone derivative without impact on high- or low-voltage-activated calcium currents in rat isolated neurons. 58th Annual Meeting of the American Epilepsy Society (AES); 2004; New Orleans, USA.
- 28. Rigo J, Nguyen L, Hans G, Belachew S, Moonen G, Klitgaard H. UCB34714: effect on inhibitory and excitatory neurotransmission. *Epilepsia*. 2004:45:56.
- 29. UCB Inc. KEPPRA (levetiracetam) [Package Insert].
- 30. Finnema SJ, Rossano S, Naganawa M, et al. A single-center, open-label positron emission tomography study to evaluate brivaracetam and levetiracetam synaptic vesicle glycoprotein 2A binding in healthy volunteers. *Epilepsia*. 2019;60(5):958-967.