

Cost-Effectiveness of Valbenazine versus Deutetrabenazine for the management of Huntington Chorea



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Background

- Huntington Disease (HD) is a neurodegenerative disorder with a global prevalence of 4.88 per 100,000 people.¹
- Its most defining symptom is chorea, which is involuntary muscle contraction that migrate all over body randomly.²
- Two medications in the class of vesicular monoamine transporter 2 inhibitor (VMAT2i) approved for Huntington chorea: **deutetrabenazine (DTBZ)** and **tetrabenazine (TBZ)**.
- **Valbenazine (VBZ)** is a VMAT2i indicated for tardive dyskinesia and its sNDA is being reviewed for Huntington chorea.³

Purpose

- To estimate the cost-effectiveness of **valbenazine** in HD chorea compared to **deutetrabenazine** based on their clinical trial data using patient perspective.

Methods

- Markov model Overview
 - 20-year time horizon with weekly cycles.
 - Patients diagnosed with Huntington Disease experiencing chorea.
 - Valbenazine vs Deutetrabenazine
- Clinical Data
 - Transition probabilities: clinical trials^{4,5,6}.
 - General mortality and HD progression rate: literature.^{7,8}
- Other Data
 - Utilities: Time trade-off.⁹
 - Medication costs: wholesale acquisition cost
 - Non-medication healthcare costs: literature.¹⁰
 - Discount rate: 3%
- Key Assumptions
 - Chorea symptom severity progression aligns with HD disease progression, in Figure 1.
 - All non-medication costs were assumed to be equal due to their equivalent safety profile.

Figure 1 - Health States

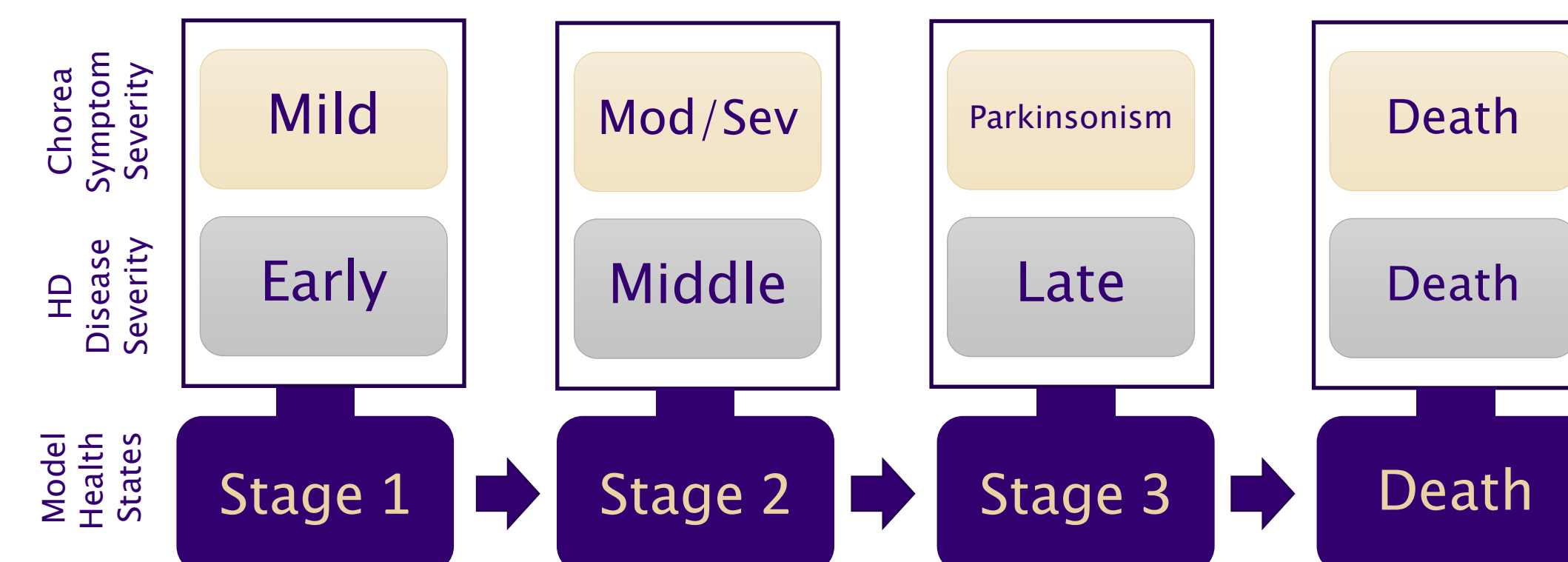


Table 1 - Model Inputs

Parameter	Base Case	Lower	Upper	Source
General Mortality, per person-week	0.000158	0.000126 ^a	0.000190 ^a	Rodrigues, et al ⁷
Utilities, time trade-off	Stage 1 0.64 Stage 2 0.26 Stage 3 0.07	Stage 1 0.57 ^b Stage 2 0.22 ^b Stage 3 0.00 ^{b,c}	Stage 1 0.71 ^b Stage 2 0.30 ^b Stage 3 0.15 ^b	Claassen, et al ⁹
Annual Cost of DTBZ ^d , US dollars	140,771	133,732 ^a	147,809 ^a	Neurocrine Biosciences
Annual Cost of VBZ ^d , US dollars	88,860	84,417 ^a	93,303 ^a	
Non-medication healthcare costs, US dollars	27,388	25,721 ^b	29,053 ^b	Exuzides, et al ¹⁰

^a+/-20% of base case
^b95% confidence interval used per literature
^cTruncated to fit only positive values
^dDosing based on dose distribution of all participants from each study
 DTBZ = deutetrabenazine, VBZ = valbenazine

Discussion and Limitations

- **Valbenazine is dominant over deutetrabenazine under current clinical study results and market pricing.**
- Chorea severity distribution in each HD stage will allow transition probability calculation to better reflect the real world.
- One standardized chorea symptomology outcome will allow more consistent symptom assessment.

References

1) Medina A, et al. *Mov Disord.* 2022;37(12):2327-35. 2) Termsarasab P. *AAN.* 2019;25(4):1001-35. 3) Bachoud-Levi A, et al. *Front. Neurol.* 2019;10:710. 4) Phase 3 data for KINECT-HD study. Neurocrine Biosciences. 2022. Available at: <https://neurocrine.gcs-web.com/news-releases/news-release-details/neurocrine-biosciences-presents-phase-3-data-kinect-hd-study>. 5) Huntington Study Group. *JAMA.* 2016;316(1):40-50. 6) Frank S, et al. *CNS Drugs.* 2022;36(11):1207-16. 7) Rodrigues FB, et al. *Mov Disord.* 2017;4(5):737-42. 8) Marder K, et al. *Neurol.* 2000;54(2):452-8. 9) Claassen D, et al. *Adv Ther.* 2022;39(4):1784-93. 10) Exuzides A, et al. *J. Med. Econ.* 2021;24:1327-36.

Results

Table 2 - ICER results*

	Cost	QALYs	ICER
Valbenazine	\$1,163,338 (\$899,088, \$1,504,990)	1.5295 (0.8667, 2.5702)	
Deutetrabenazine	\$1,872,696 (\$1,422,126, \$2,580,628)	1.5248 (0.8622, 2.5662)	
Incremental	-\$709,358 (-\$1,436,826, -\$79,378)	0.00471 (0.0028, 0.0074)	-\$153,696,109 (-\$348,140,493, -\$21,283,108)

*PSA mean (min, max)

DOMINANT

Figure 2 - PSA model results

