MED-MSL-TD-US-0129_v4

Vesicular Monoamine Transporter 2 (VMAT2) Inhibitors Chart Extraction/Clinician Survey

NEUROCRINE® BIOSCIENCES

VMAT2 Inhibitors Chart Extraction/Clinician Survey: Study Methodology

- Objective: to describe the impact of TD and treatment outcomes (social and physical/functional) in patients who were treated with a VMAT2 inhibitor for TD
- Clinicians who prescribed valbenazine within the past 24 months were invited to complete a survey and provide 1–10 patient charts (treated with a VMAT2 inhibitor for TD) from 7/24/2019 - 8/30/2019 for data extraction
- Patient inclusion criteria: ≥18 years old, ≥2 months of being treated with a VMAT2 inhibitor (valbenazine, deutetrabenazine, or tetrabenazine)
- Survey data included:
  - TD symptomatology and impact
  - Psychiatric condition (primary and comorbid)
  - Treatment outcomes (social and physical)
- Chart data included:
  - Demographics
  - Treatment with any VMAT2 inhibitor (valbenazine, deutetrabenazine, tetrabenazine)
  - Antipsychotic treatment

TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2.

Lundt L et al. AAN 2020. May 2020

VMAT2 Inhibitors Chart Extraction/Clinician Survey: Patient Characteristics[1,2]

Characteristics	Patients (N=601)
Mean age, years	50.6
Currently taking antipsychotics[a]	70%
TD attributed to metoclopramide	2.5%
Primary psychiatric condition[b]	
Schizophrenia	32%
Bipolar disorder	29%
Schizoaffective disorder	23%
Major depressive disorder	11%
Psychiatric comorbidities	
Depression	28%
Anxiety disorder	33%
Substance abuse	18%
VMAT2 inhibitor	
Valbenazine	69%
Deutetrabenazine	28%
Tetrabenazine	3%

- 163 clinicians (113 psychiatry, 46 neurology, 4 primary care) provided data for 601 adult TD patients
- 50% of patients were female; 67% were ≥45 years old

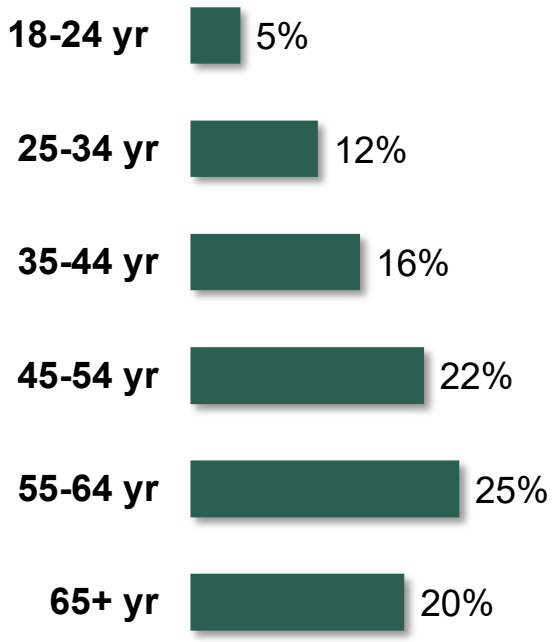
[a]Based on the past 12 months. 20% of patients discontinued antipsychotics in the past 12 months; 10% received no antipsychotics.
[b]Based on 542 patients who took an antipsychotic in the past 12 months. Categories were not mutually exclusive for comorbidities.

VMAT2, Vesicular Monoamine Transporter 2..

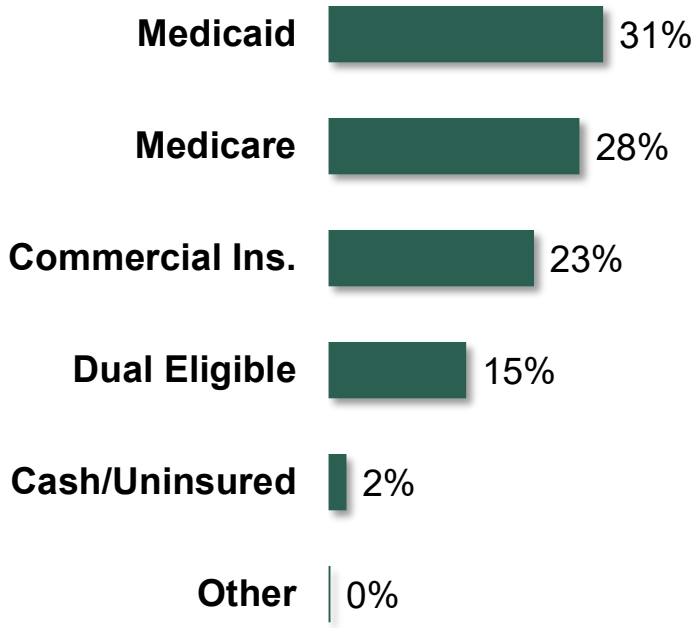
1. Lundt L et al. AAN 2020. May 2020. 2. Data on File. Neurocrine Biosciences, Inc.

VMAT2 Inhibitors Chart Extraction/Clinician Survey: Patient Characteristics

Age (n=601, % of patients)



Primary Payor (n=601, % of patients)



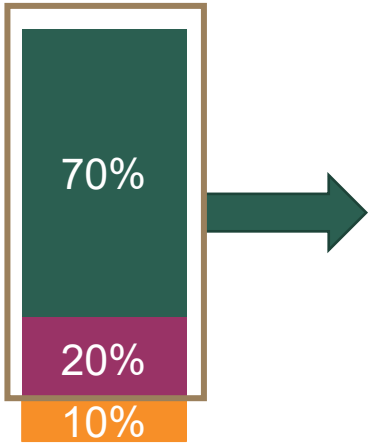
VMAT2, Vesicular Monoamine Transporter 2.

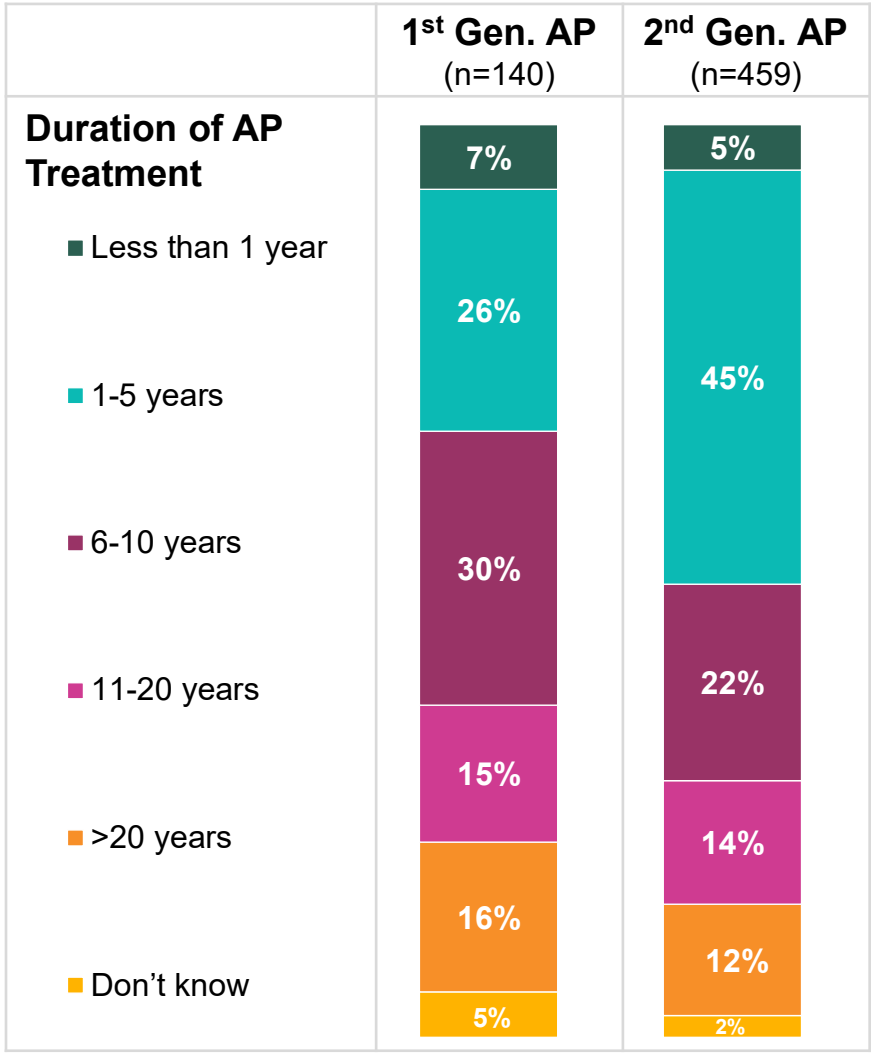
1. Data on File. Neurocrine Biosciences, Inc.

VMAT2 Inhibitors Chart Extraction/Clinician Survey: Patient Characteristics

Antipsychotic (AP) Treatment

- Still on treatment (n=420)
- Discontinued treatment (n=122)
- Never on treatment (n=59)



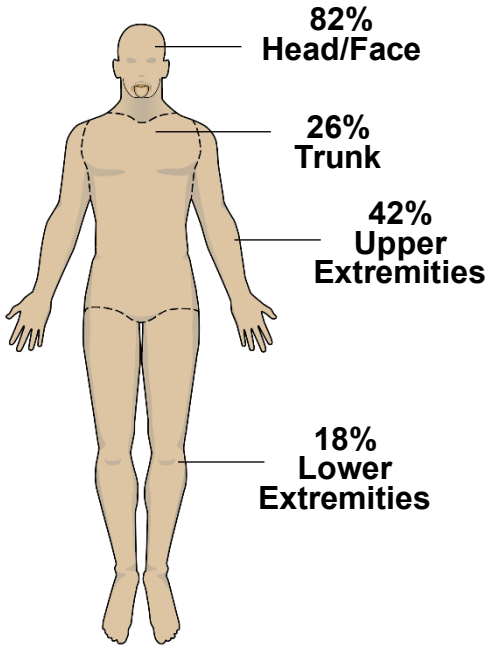


TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2.

1. Data on File. Neurocrine Biosciences, Inc.

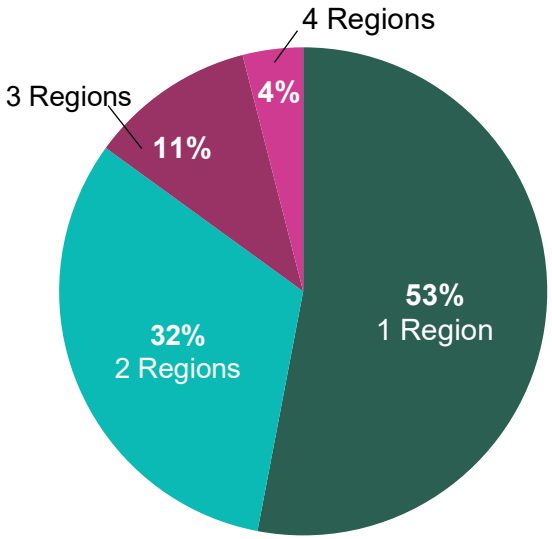
VMAT2 Inhibitors Chart Extraction/Clinician Survey: Patient's TD Characteristics

82% had TD symptoms in the head/face



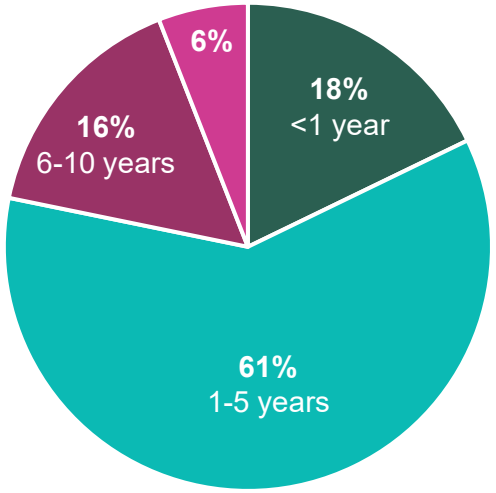
TD Symptoms by Body Region (N=601)

47% had TD symptoms in >1 region



Number of Body Regions (N=601)

61% had TD symptoms for 1-5 years



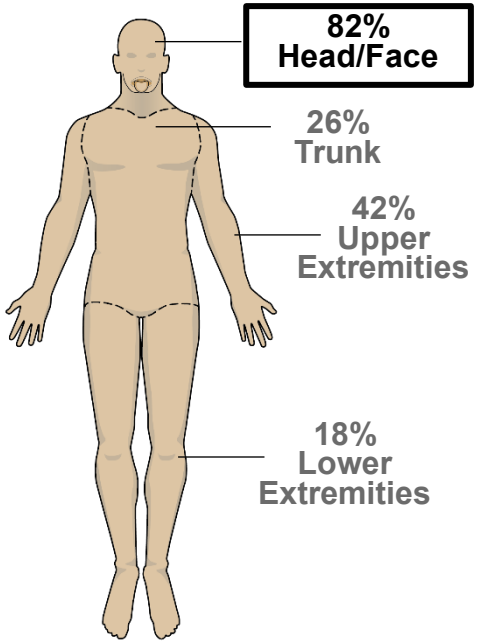
Duration of TD Symptoms (N=601)

TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2.

Lundt L et al. AAN 2020. May 2020

VMAT2 Inhibitors Chart Extraction/Clinician Survey: TD Severity & Awareness in Patients with TD Symptoms in the Head/Face

82% had TD symptoms in the head/face



TD Symptoms by Body Region (N=601)

Head/Face[2]
(82% of patients)

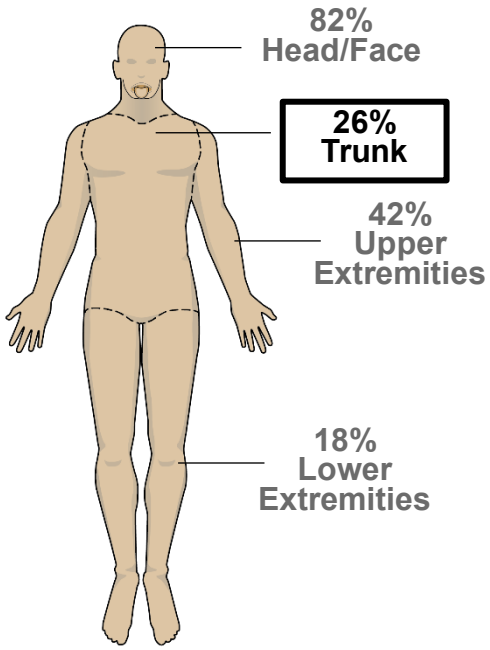
	Face	Lips	Jaw	Tongue
Severity of TD Symptoms (% of patients) (n=494)				
Mild	36%	34%	29%	32%
Moderate	34%	42%	36%	41%
Severe	8%	15%	9%	13%
% Asymptomatic	*21%*	*10%*	*27%*	*14%*
Patient Awareness of TD Symptoms (% of symptomatic patients)	75%	79%	76%	77%

TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2.

1. Lundt L et al. AAN 2020. May 2020. 2. Data on File. Neurocrine Biosciences, Inc.

VMAT2 Inhibitors Chart Extraction/Clinician Survey: TD Severity & Awareness in Patients with TD Symptoms in the Trunk

26% had TD symptoms in the trunk



TD Symptoms by Body Region (N=601)

Trunk[2]
(26% of patients)

	Neck	Shoulders	Hips
Severity of TD Symptoms (% of patients) (n=154)			
Mild	34%	32%	31%
Moderate	42%	34%	29%
Severe	13%	14%	8%
% Asymptomatic	*10%*	*19%*	*32%*
Patient Awareness of TD Symptoms (% of symptomatic patients)	75%	69%	62%

TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2.

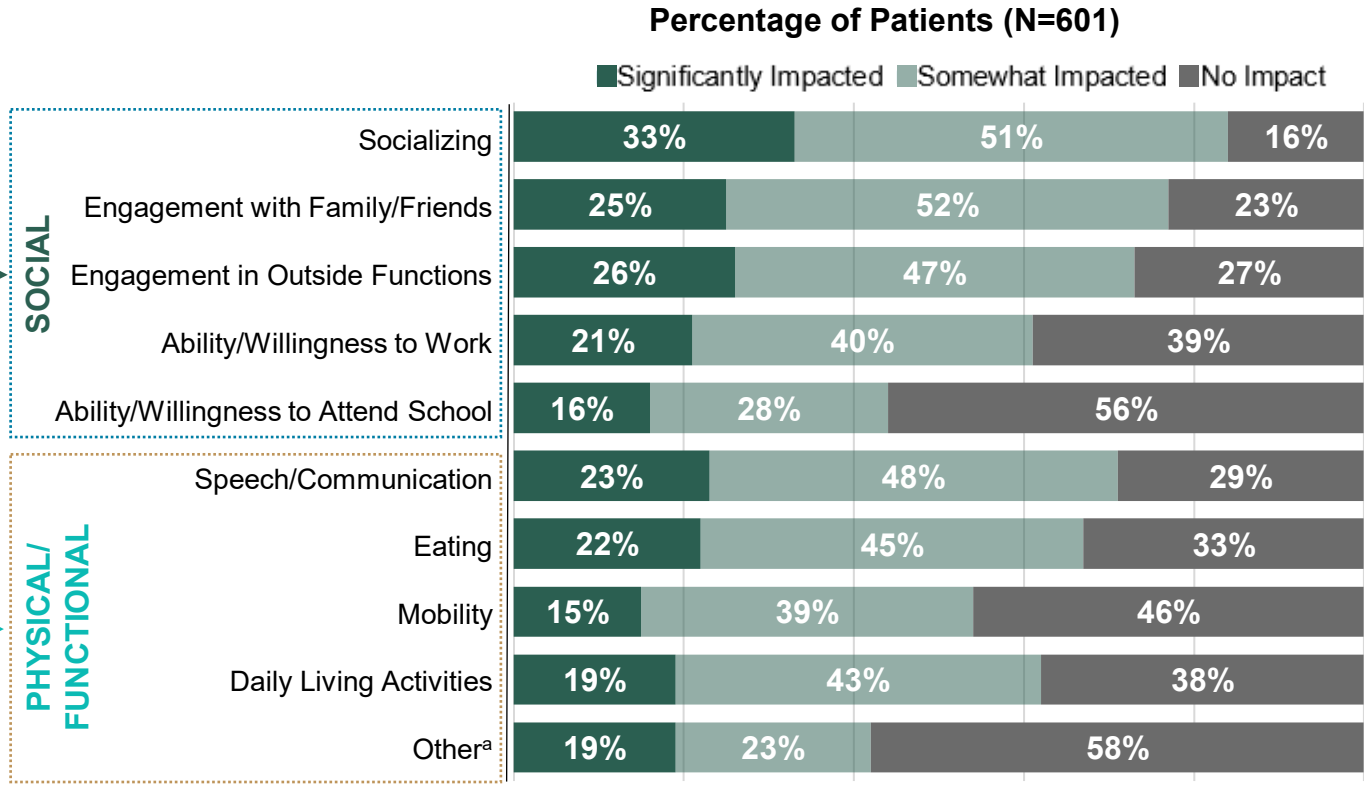
1. Lundt L et al. AAN 2020. May 2020. 2. Data on File. Neurocrine Biosciences, Inc.

VMAT2 Inhibitors Chart Extraction/Clinician Survey: Impact of TD on Patients

Clinician's assessment on the impact of TD on patients

In this group of patients, >70% had difficulties in socializing, engagement with family/friends, and engagement in outside functions

>50% had difficulties in physical/functional areas



[a] Based on 43 patients

TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2.

Lundt L et al. AAN 2020. May 2020

VMAT2 Inhibitors Chart Extraction/Clinician Survey: TD Improvement after Starting a VMAT2 Inhibitor

Clinician's assessment on changes in patient's TD symptoms since starting treatment with a VMAT2 inhibitor

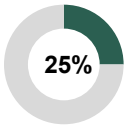
TD Improvement with VMAT2 Inhibitor (N=565)[1a]

[a]Excludes 36 patients who were still titrating.

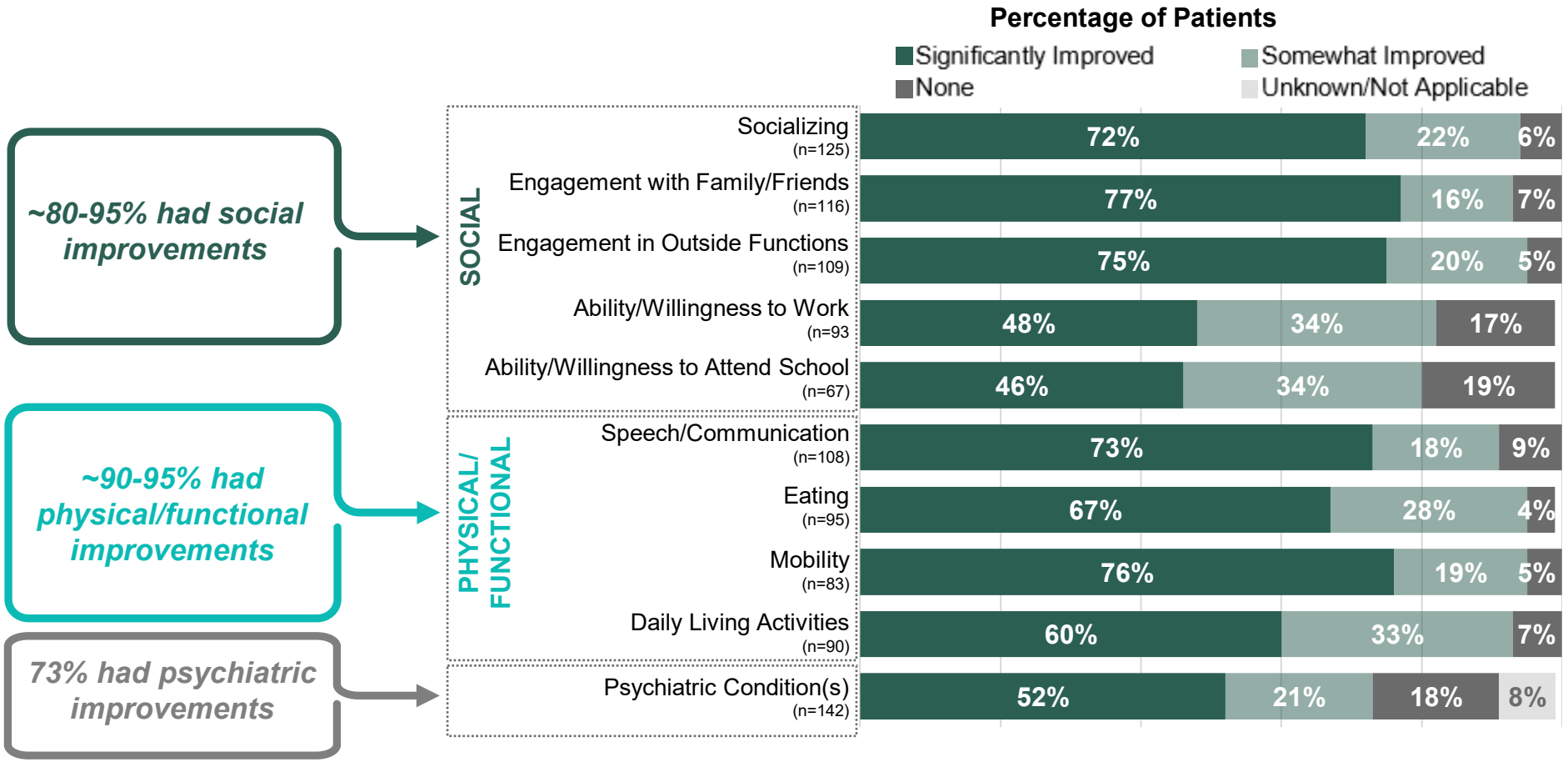
TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2.

Lundt L et al. AAN 2020. May 2020

VMAT2 Inhibitors Chart Extraction/Clinician Survey: Treatment Outcomes in "Significantly Improved" TD Group



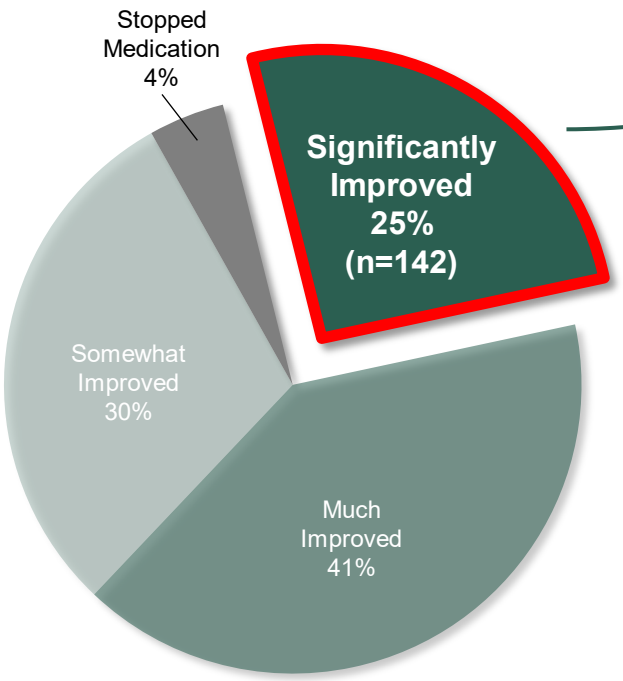
Social and physical/functional outcomes of TD patients who had "significant improvement" in their TD symptoms as a consequence of treatment with a VMAT2 inhibitor



TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2.

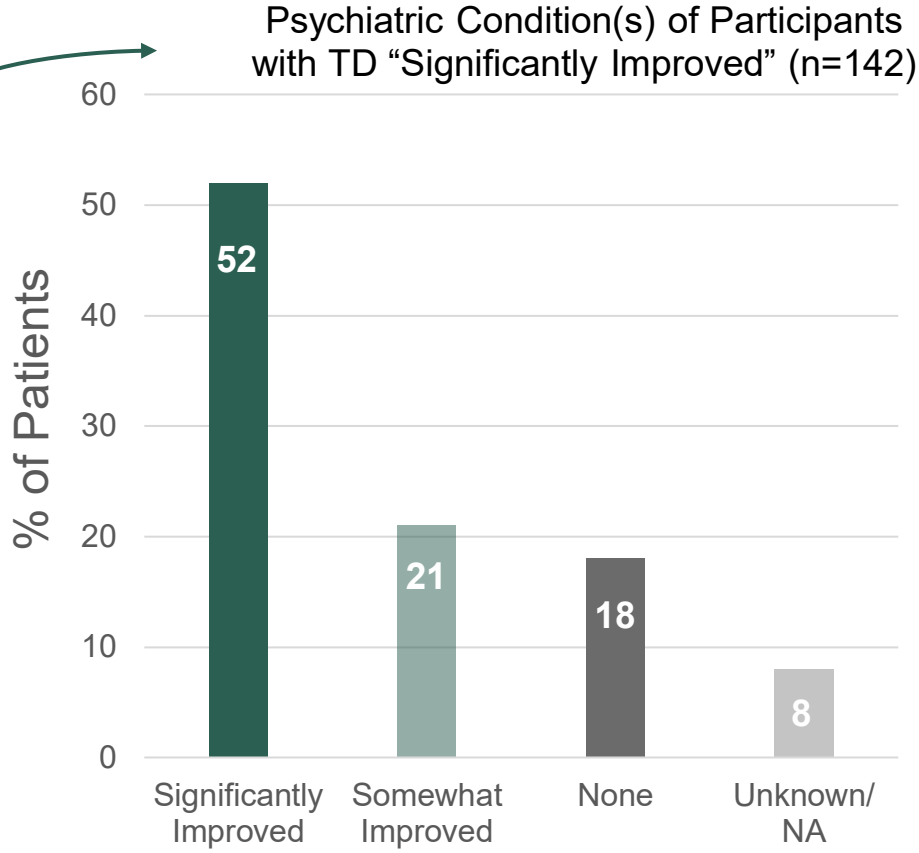
Lundt L et al. AAN 2020. May 2020

VMAT2 Inhibitors Chart Extraction/Clinician Survey: Psychiatric Condition(s) Outcomes in Participants with TD "Significantly Improved" after Starting a VMAT2 Inhibitor



TD Improvement with VMAT2 Inhibitor (N=565)[1a]

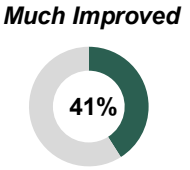
[a]Excludes 36 patients who were still titrating.



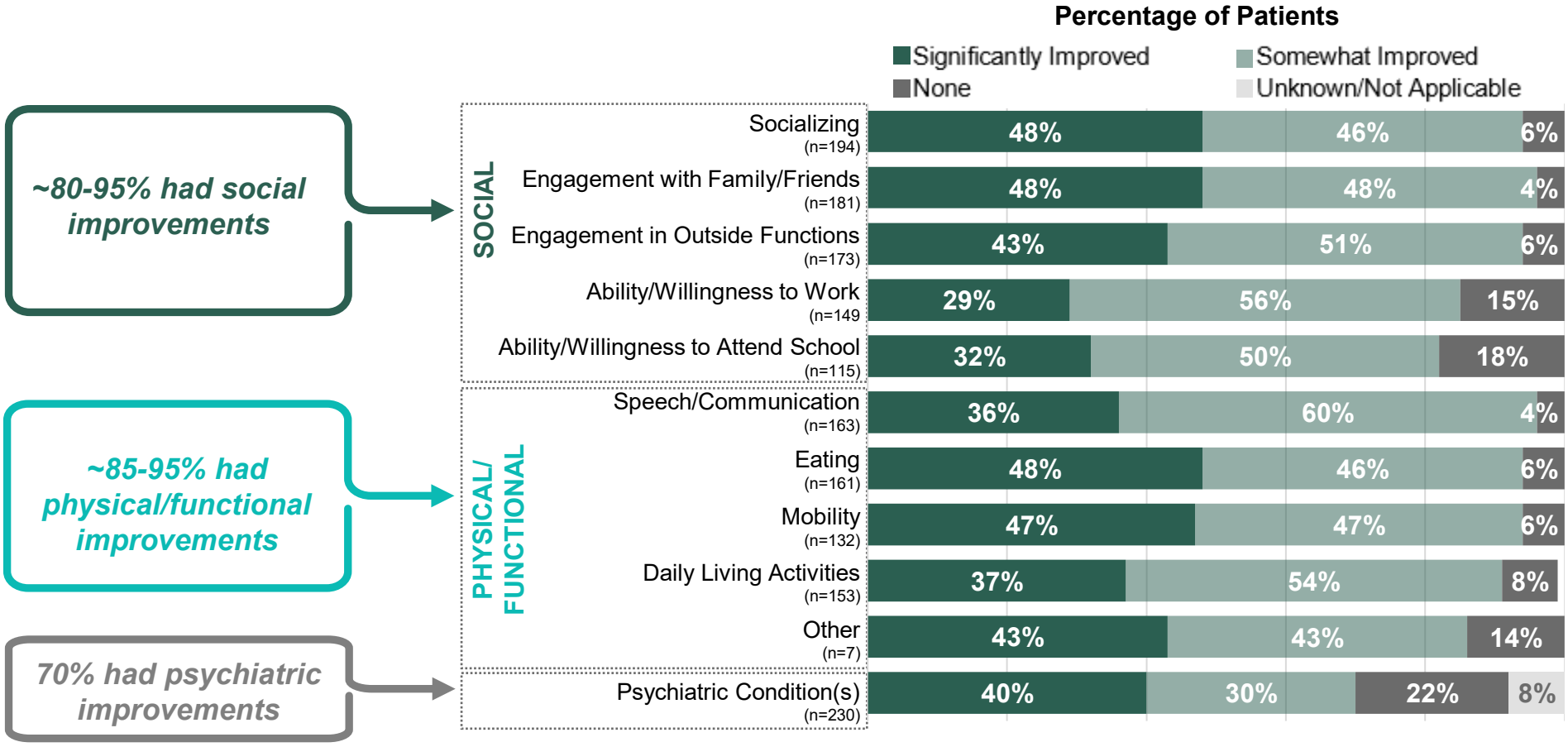
TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2; NA, not applicable.

Lundt L et al. AAN 2020. May 2020

VMAT2 Inhibitors Chart Extraction/Clinician Survey: Treatment Outcomes in "Much Improved" TD Group



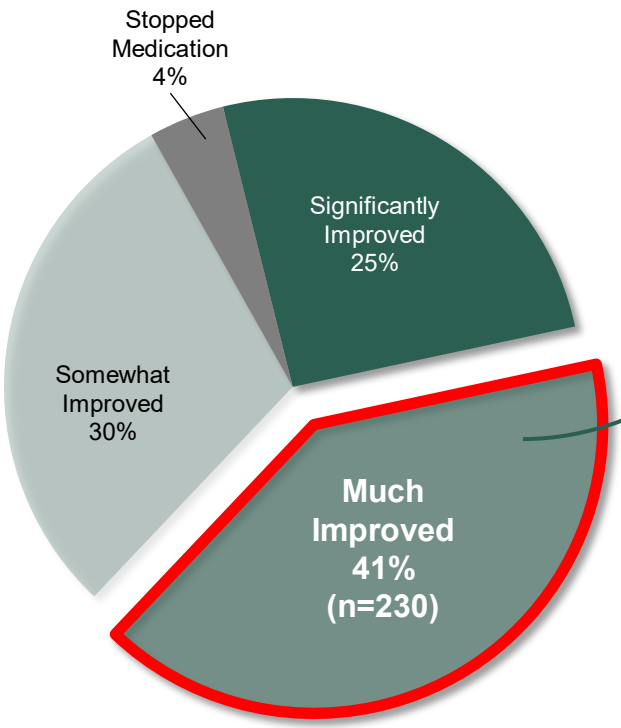
Social and physical/functional outcomes of TD patients who had "much improvement" in their TD symptoms as a consequence of treatment with a VMAT2 inhibitor



TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2.

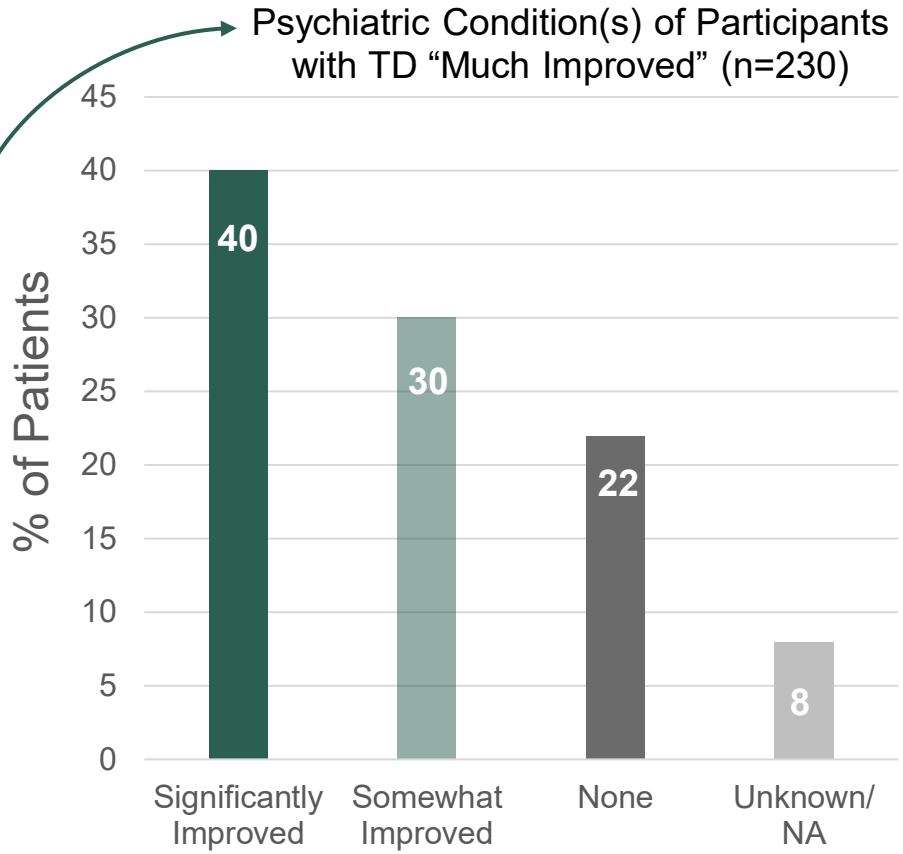
Lundt L et al. AAN 2020. May 2020

VMAT2 Inhibitors Chart Extraction/Clinician Survey: Psychiatric Condition(s) Outcomes in Participants with TD "Much Improved" after Starting a VMAT2 Inhibitor



TD Improvement with VMAT2 Inhibitor (N=565)[1a]

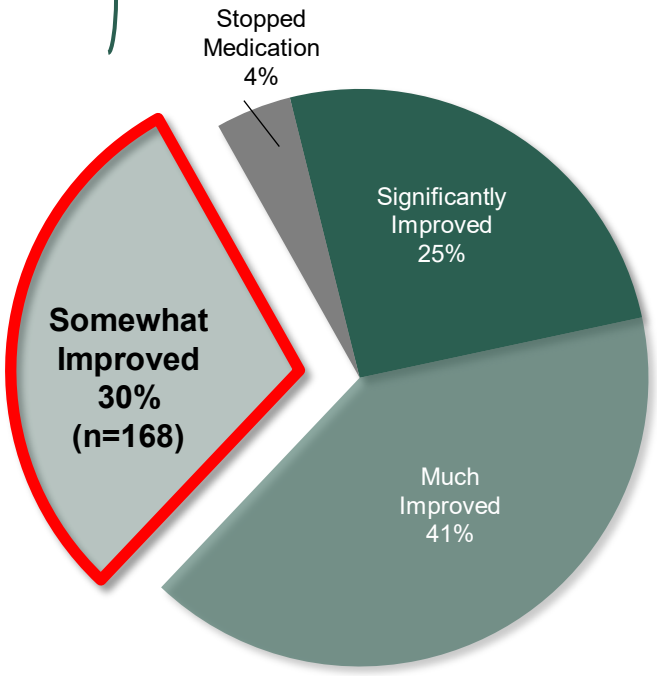
[a]Excludes 36 patients who were still titrating.



TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2; NA, not applicable.

Lundt L et al. AAN 2020. May 2020

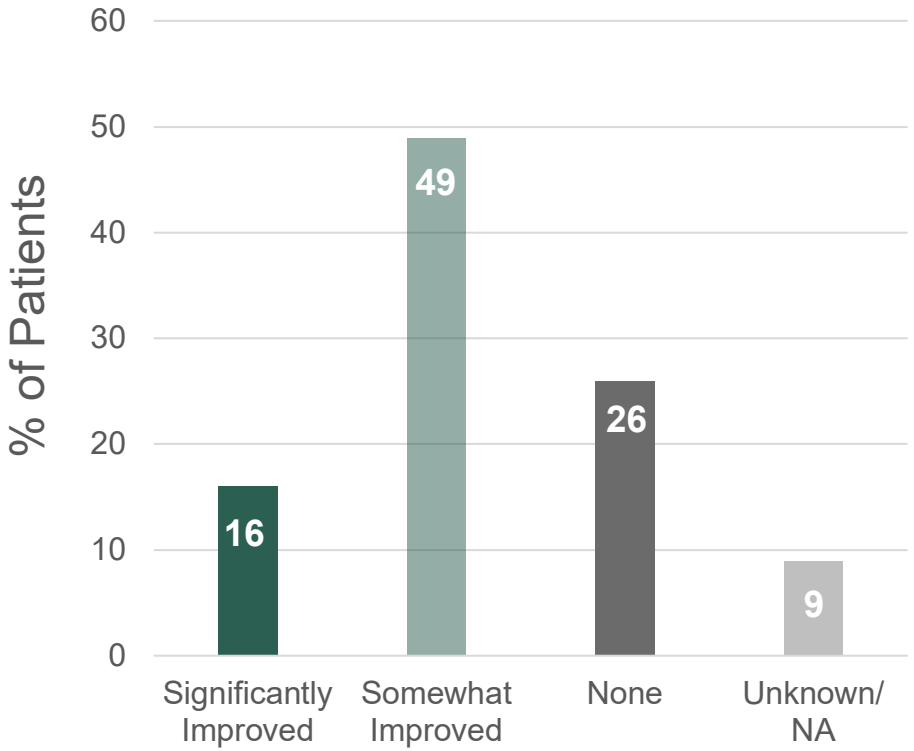
VMAT2 Inhibitors Chart Extraction/Clinician Survey: Psychiatric Condition(s) Outcomes in Participants with TD "Somewhat Improved" after Starting a VMAT2 Inhibitor



TD Improvement with VMAT2 Inhibitor (N=565)[1a]

[a]Excludes 36 patients who were still titrating.

Psychiatric Condition(s) of Participants with TD "Somewhat Improved" (n=168)[2]



TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2; NA, not applicable.

1. Lundt L et al. AAN 2020. May 2020. 2. Data on File. Neurocrine Biosciences, Inc.

VMAT2 Inhibitors Chart Extraction/Clinician Survey: Summary

- In this real-world sample of patients (n=601), valbenazine (69%) was used more frequently than deutetrabenazine (28%) to treat TD
- Clinician's assessment on the impact of TD showed that 96% (565/590) of patients had TD improvement (somewhat, much or significantly improved) with valbenazine or other VMAT2 inhibitor
- Patients who had improvements in TD symptoms (significantly improved [n=142] or much improved [n=230]) also had improvements in social and physical/functional aspects:
  - 80-95% had social improvements in the following areas: socializing, engagement with family/friends, engagement in outside functions, ability/willingness to work, ability/willingness to attend school
  - 85-95% of patients had physical/functional improvements in the following areas: speech/communications, eating, mobility, daily living activities
- Clinicians/payers/professional organizations should consider symptom impact and other treatment outcomes when evaluating TD therapy access and continuation

TD, tardive dyskinesia; VMAT2, Vesicular Monoamine Transporter 2.

Lundt L et al. AAN 2020. May 2020