Burden and Impact of Tardive Dyskinesia

NEUROCRINE® BIOSCIENCES

MED-MSL-TD-US-0308

Table of Contents

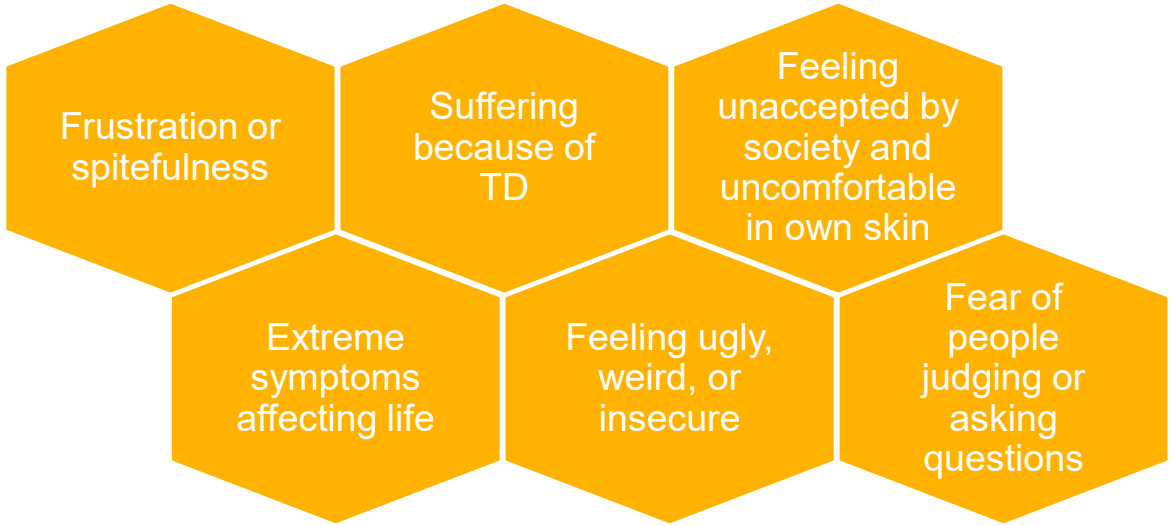
TD, tardive dyskinesia; VMAT2, vesicular monoamine transporter 2.

Burden of Tardive Dyskinesia

Tardive dyskinesia (TD) comprises abnormal, involuntary movements of the tongue, jaw, trunk, or extremities that can develop with the use of DRBAs[1]

- In some patients, TD is associated with[2-4]:
  - More severe psychopathology
  - Worse quality of life and functioning
  - Lower levels of daily and leisure activities
  - Lower productivity
  - Social stigma
  - Increased morbidity and mortality

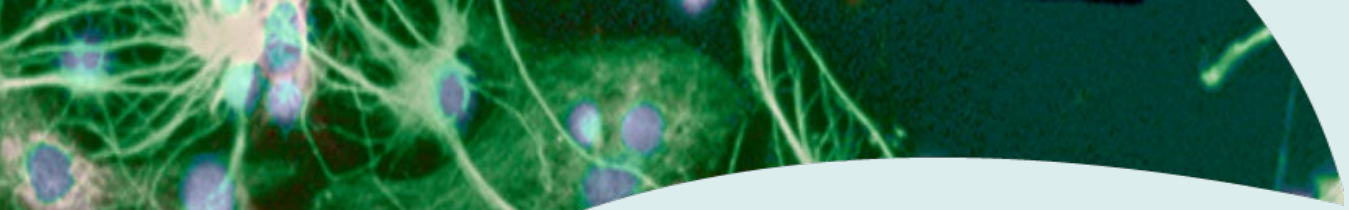
- TD may persist for years or decades, even after discontinuing the causative drug[5]
- In a social media listening study, patients with TD expressed a number of negative sentiments[6]:



A comprehensive search was performed for publicly available, English-language, online content posted between March 2017 and November 2019 on social media platforms, blogs, and forums. An analytics platform (NetBase™) identified posts containing patient or caregiver experiences of assumed TD using predefined search terms. All posts were manually curated and reviewed to ensure quality and validity of the post and to further classify key symptoms, sentiments, and themes. These sentiments may not apply to all patients with TD.

DRBA, dopamine receptor blocking agent; HRQoL, health-related quality of life; TD, tardive dyskinesia.

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 5th ed., text rev. Washington, DC: American Psychiatric Association; 2022. 2. Ascher-Svanum H, et al. *J Clin Psych.* 2008;69(10):1580-1588. 3. Boumans CE, et al. *Schizo Bull.* 1994;20(2):339-344. 4. Ballesteros J, et al. *J Clin Psychopharmacol.* 2000;20:188-194. 5. Gardos G, et al. *Am J Psych.* 1994;151:836-841. 6. Farrar M, et al. *BMC Psychiatry.* 2021;21:94.



RE-KINECT®: Real-World Dyskinesia Screening Study

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

CAREGIVER BURDEN ANALYSIS

OLDER ADULT (55+) ANALYSIS

RE-KINECT: Study Methods

- Real-world prospective screening study that included 37 outpatient psychiatry practices across the US
- **Objective: To assess the presence and impact of possible TD in antipsychotic-treated outpatients**
- Key eligibility criteria:
  - ≥18 years old
  - ≥3 months of cumulative lifetime exposure to ≥1 antipsychotic medication
  - Clinician confirmed psychiatric disorder meeting per DSM-5 criteria
- Simplified clinician assessment was used to identify presence, location, and severity of involuntary movements and confirm possible TD
- Both patients and clinicians evaluated functional status and health-related quality of life on qualitative scales, while patients also completed the EuroQOL 5-Dimension 5-Level questionnaire (EQ-5D-5L) and the Sheehan Disability Scale (SDS)
- No statistical hypothesis testing was performed. The sample size for this study is not powered for statistical comparisons, as the objectives are primarily descriptive in nature. All analyses are descriptive and based on observed outcomes.

DSM-5, Diagnostic and Statistical Manual Version 5;TD, tardive dyskinesia.

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

RE-KINECT: Study Cohorts

The following questions were used for possible TD symptom screening by HCPs:

- "Per your observation, does the subject currently experience uncontrollable or involuntary movements anywhere on their head/body?"
- "Do you [the clinician] feel the movements are consistent with TD?"

Based on the responses, the following cohorts were defined:

- **Cohort 1** — No TD*
- **Cohort 2** — Possible TD†

*Patients without visible signs of uncontrollable or involuntary body movements or with movements not deemed consistent with TD.
†Patients with visible signs of uncontrollable or involuntary body movements; confirmed as possible TD during clinician assessment.
HCP, healthcare provider; TD, tardive dyskinesia.

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

RE-KINECT: Demographics and Clinical Characteristics

	Cohort 1: No TD (N=535)	Cohort 2: Possible TD (N=204)	*P*-value*	Adjusted *P*-value*†
Age, mean (SD)	**47.6 (14.6)**	**54.6 (13.6)**	**<0.0001**	
Male, n (%)	225 (42.1)	100 (49.0)		
Female, n (%)	309 (57.8)	104 (51.0)		
White, n (%)	385 (72.0)	149 (73.0)	0.7981	
Black, n (%)	89 (16.6)	36 (17.6)	0.7508	
Schizophrenia or schizoaffective disorder, n (%)	174 (32.5)	111 (54.4)	<0.0001	<0.0001
Mood disorder or other psychiatric disorder‡, n (%)	401 (75.0)	112 (54.9)	<0.0001	0.0255
Lifetime exposure to antipsychotics, mean (SD), years	**7.8 (8.6)**	**15.0 (13.9)**	**<0.0001**	**<0.0001**
Number of antipsychotics, n (%)			**0.2607**	**0.1591**
One	73 (13.6)	24 (11.8)		
Two	120 (22.4)	35 (17.2)		
Three or more	334 (62.4)	140 (68.6)		
Missing	8 (1.5)	5 (2.5)		
Use of second-generation antipsychotics, n (%)	**442 (82.6)**	**169 (82.8)**	**0.9421**	**0.8138**

*For questions or items that allowed more than 1 response (i.e., categories not mutually exclusive), *P*-values are provided for each response. †Adjusted for age (<55 vs. ≥55 years), sex (male vs. female), and diagnosis (schizophrenia or schizoaffective disorder vs. other). Psychiatric diagnosis was adjusted for age and sex. ‡Includes anxiety disorder or symptoms, bipolar disorder, major depressive disorder, post-traumatic stress disorder, personality disorder, attention deficit hyperactivity disorder, substance use disorder, and other psychotic disorder.

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

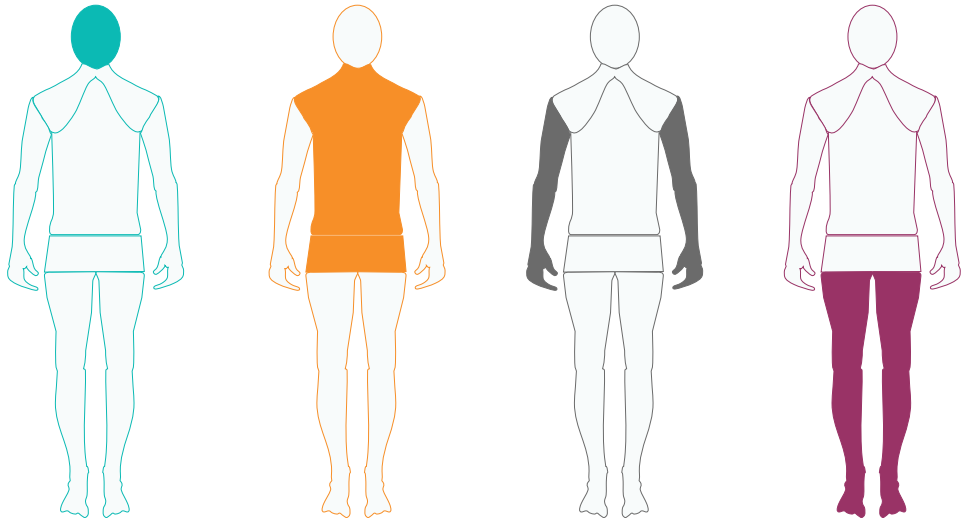
RE-KINECT: Results

Location and Severity of Uncontrollable Involuntary Movements in Patients with Possible TD

Patients with possible TD had uncontrollable involuntary movements in multiple body regions

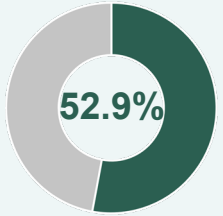
Body regions investigated

- **Head/face** (facial muscles, lips, tongue, jaw)
- **Neck/trunk** (neck, shoulders, chest, hips)
- **Upper extremities** (arms, hands, fingers)
- **Lower extremities** (legs, feet, toes)

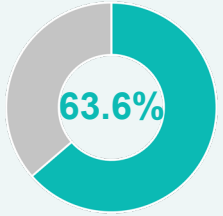


Proportion of patients with involuntary movements in ≥2 body regions

Per clinician ratings



Per patient ratings



Statistically significant positive correlations between clinician and patient ratings (*P*<0.001)

- Severity of involuntary movements in each body region
- Maximum severity score in any body region
- Total number of body regions with an involuntary movement

TD, tardive dyskinesia.

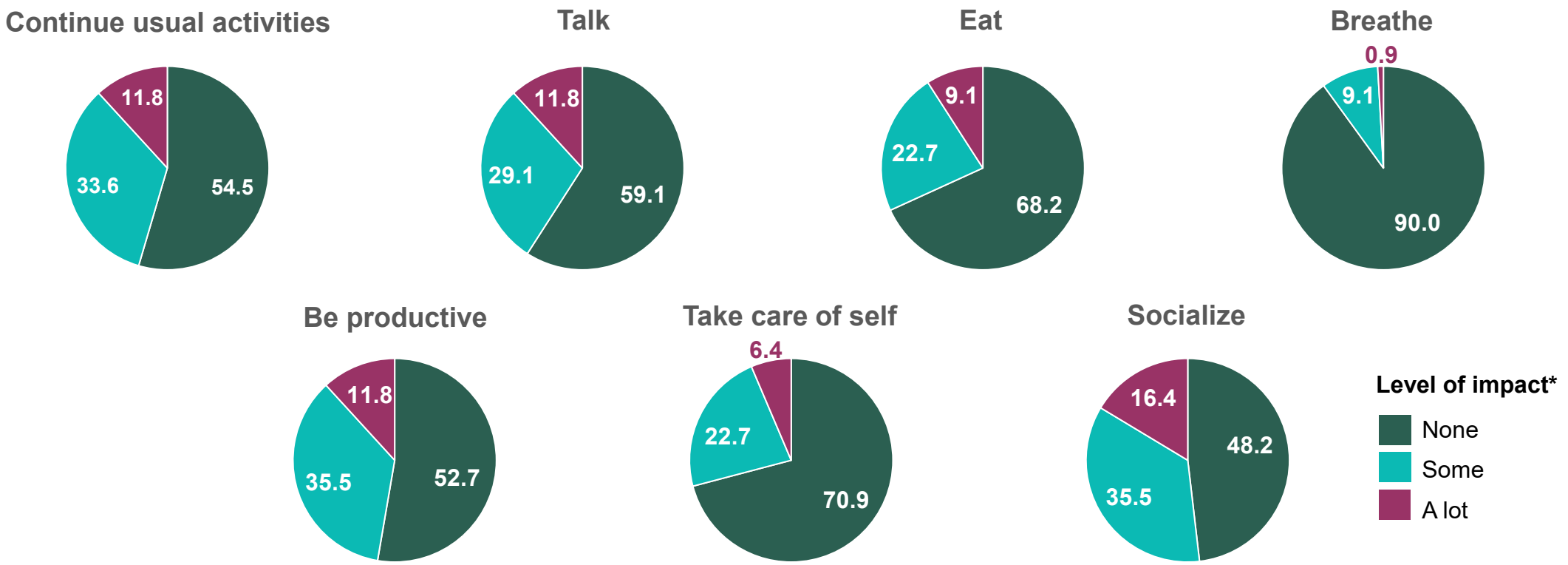
Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

RE-KINECT: Health-Related Quality of Life Analysis

Impact of Uncontrollable Involuntary Movements in Patients with Possible TD

30-50% of patients with possible TD reported at least some impact of involuntary movements on certain daily activities

Patient-reported impact of involuntary movements on daily activities over the past 4 weeks*



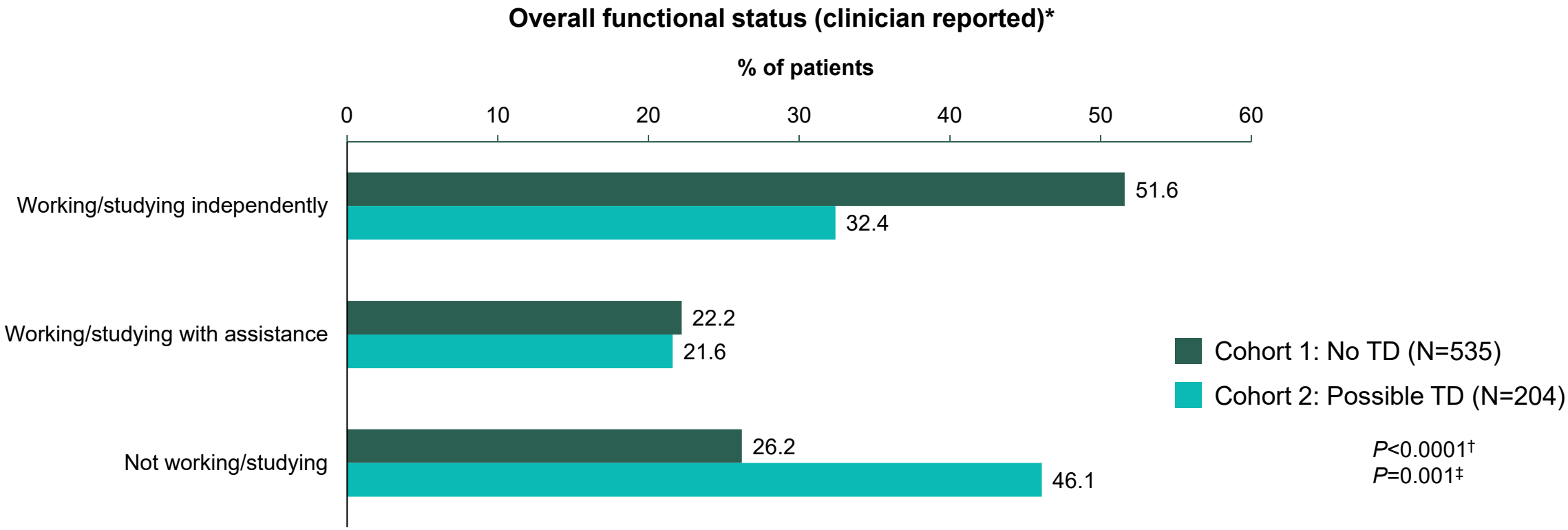
*Includes patients who were aware of involuntary movements in the past 4 weeks that they could not control; N=110.

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

RE-KINECT: Health-Related Quality of Life Analysis

Functional Status

About half of patients with possible TD were not working or studying, according to clinician reports



TD, tardive dyskinesia.

*Status since the last usual-care visit, based on the clinician's best knowledge. †For Cohort 2 vs. Cohort 1 unadjusted comparison of overall functional status. ‡Adjusted for age (<55 vs. ≥55 years), sex (male vs. female) and diagnosis (schizophrenia or schizoaffective disorder vs. other).

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

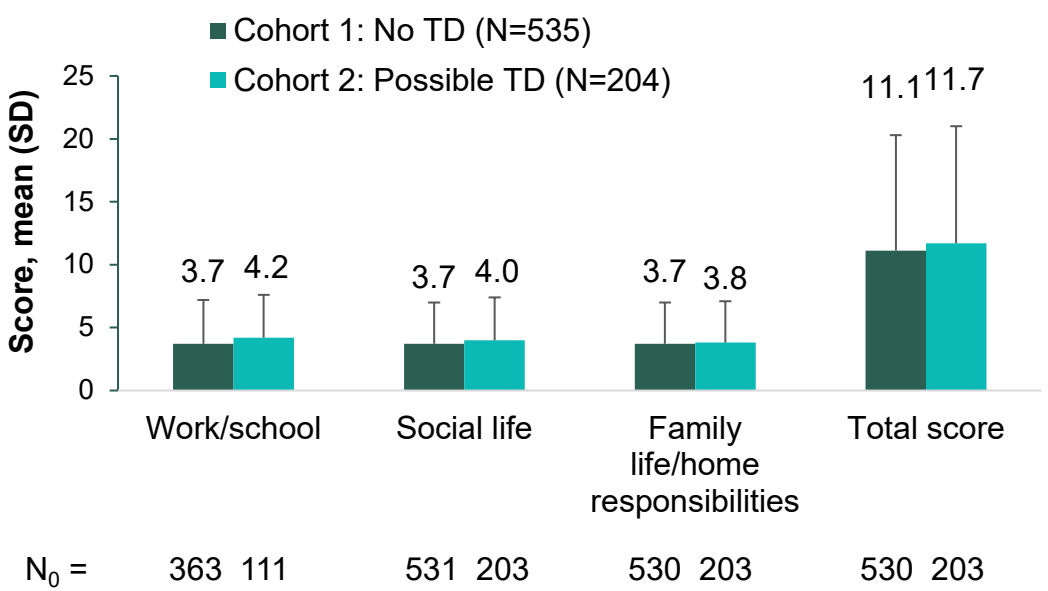
RE-KINECT: Health-Related Quality of Life Analysis

Health-Related Quality of Life

Patients with possible TD had worse health-related QoL based on EQ 5D-5L scores

Sheehan disability scale (patient reported)*†

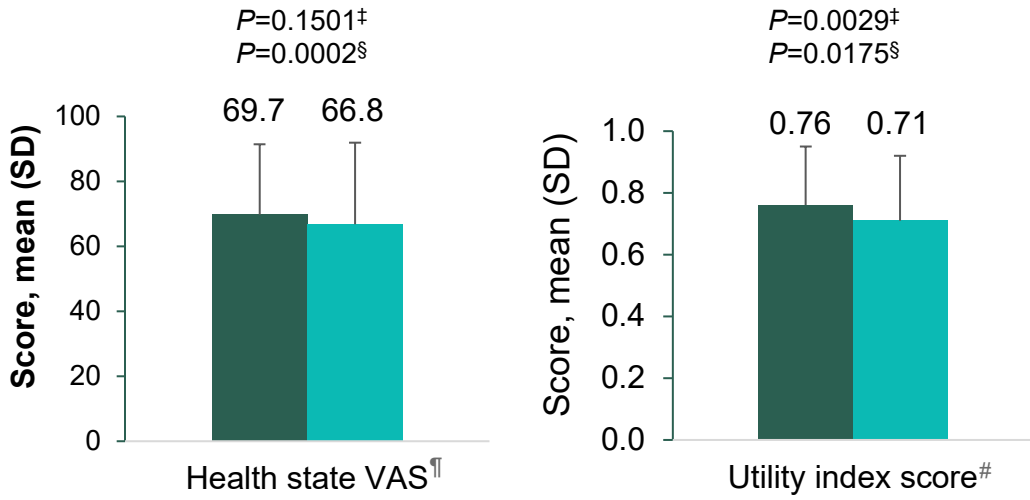
Increased scores indicate higher disability



N_0 =	363	111	531	203	530	203	530	203

EQ-5D-5L (patient reported)†

Decreased scores indicate lower QoL



N_0 =	531	526	204	197

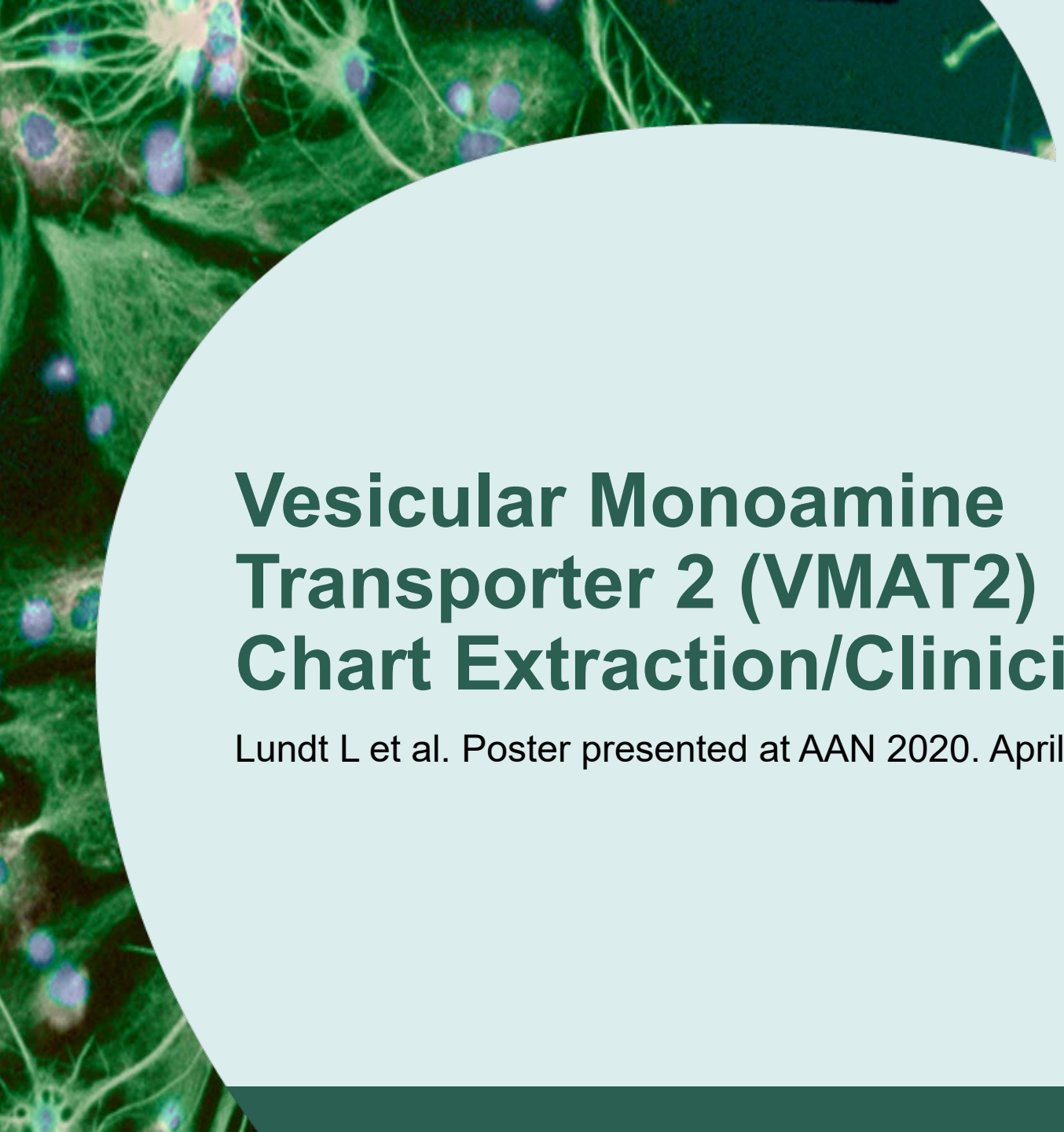
EQ-5D-5L, EuroQoL 5-Dimension 5-Level questionnaire; N_0, number of available assessments; SD, standard deviation; TD, tardive dyskinesia; VAS, visual analog scale.
*Domain scores ranged from 0 (no problems) to 10 (extreme problems). Total score (i.e., sum of domain scores) was calculated for patients who had ≥2 available domains. When only 1 domain was missing, the average of his/her observed scores was imputed to the missing record. †No statistical hypothesis testing was performed. The sample size for this study is not powered for statistical comparisons, as the objectives are primarily descriptive in nature. All analyses are descriptive and based on observed outcomes. ‡For Cohort 2 vs. Cohort 1 unadjusted comparison. For questions or items that allowed more than 1 response (categories not mutually exclusive), *P*-values are provided for each response. §Adjusted for age (<55 vs. ≥55 years), sex (male vs. female) and diagnosis (schizophrenia or schizoaffective disorder vs. other). ¶Health state VAS scores ranged from 0 (worst health you can imagine) to 100 (best health you can imagine). #Utility index scores, derived from dimension scores, ranged from 0 (health state equivalent to death) to 1 (perfect health).

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

RE-KINECT: Summary[1]

- In this naturalistic, real-world sample of patients who were treated with an antipsychotic, 27.6% (n=204) had possible TD, confirmed by a clinician assessment
  - This is consistent with 25.3% estimate of global prevalence of TD[2]
  - The method used in RE-KINECT may offer reliable way for clinicians and/or staff to look for involuntary movements during every patient encounter
- Based on clinician and patient ratings, respectively, 52.9% and 63.6% of patients with possible TD had involuntary movements in 2 or more body regions
- Based on patient questionnaire, more than 40% of patients with possible TD (n=204) reported that involuntary movements had “some” or “a lot” of impact on their ability to continue usual activities (45%), talk (41%), be productive (47%), and socialize (52%)
- Based on clinicians’ assessment, patients with possible TD had significantly lower overall functional status compared to those without TD, even when adjusted for age, sex, and psychiatric diagnosis (*P*=0.001)
- For all EQ-5D-5L domains (mobility, self-care, usual activities, pain/discomfort, anxiety/depression), a higher percentage of Cohort 2 patients (vs. Cohort 1) had moderate problems or worse (score ≥3)
- The burden of possible TD, as well as a visual scan of the entire body (not just the face or hands), should be considered when treating patients exposed to antipsychotics

1. Caroff SN et al. *J Clin Psychopharmacol*. 5/6/2020:259-268. 2. Carbon M et al. *J clin Psychiatry*. 2017;78:e264-2278..



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

Lundt L et al. Poster presented at AAN 2020. April 25-May 1, 2020; Toronto, Canada

VMAT2i Chart Extraction/Survey: Study Methods

- **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 charts of patients with TD treated with a VMAT2 inhibitor from 7/24/2019 - 8/30/2019 for data extraction
- Patient inclusion criteria:
  - ≥18 years old
  - Treated with a VMAT2 inhibitor (valbenazine, deutetrabenazine, or tetrabenazine) for ≥2 months

Survey data

- TD symptomatology and impact
- Psychiatric condition (primary and comorbid)
- Treatment outcomes (social and physical)

Chart data

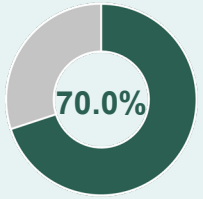
- Demographics
- Treatment with any VMAT2 inhibitor (valbenazine, deutetrabenazine, tetrabenazine)
- Antipsychotic treatment

TD, tardive dyskinesia; VMAT2, vesicular monoamine transporter 2.

Lundt L et al. AAN 2020. May 2020

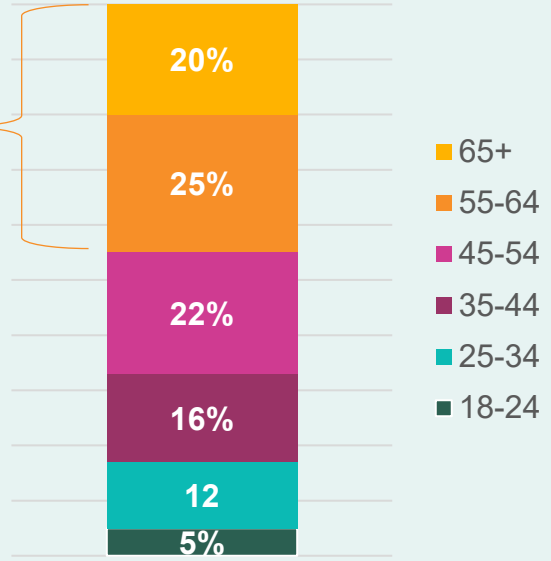
VMAT2i Chart Extraction/Survey: Demographics and Clinical Characteristics

Characteristics	Patients (N=601)
Mean age, years	**50.6**
Currently taking antipsychotics*, %	**70%**
TD attributed to metoclopramide, %	**2.5%**
Primary psychiatric condition, %†	
Schizophrenia	32%
Bipolar disorder	29%
Schizoaffective disorder	23%
Major depressive disorder	11%
Comorbid substance abuse disorder	18%
Primary payor, %	
Medicaid	31
Medicare	28
Commercial insurance	23
Dual eligible	15
Cash uninsured	2

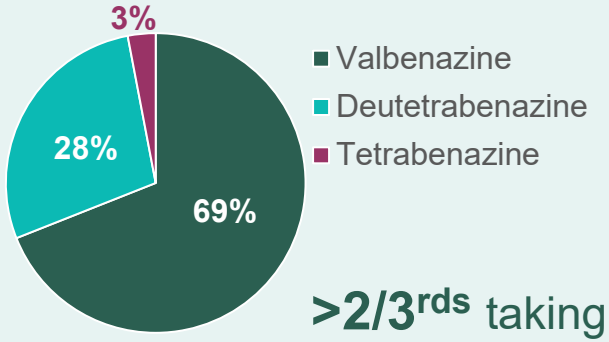


currently taking an antipsychotic at time of study

45% ≥55 years old



VMAT2 inhibitor use

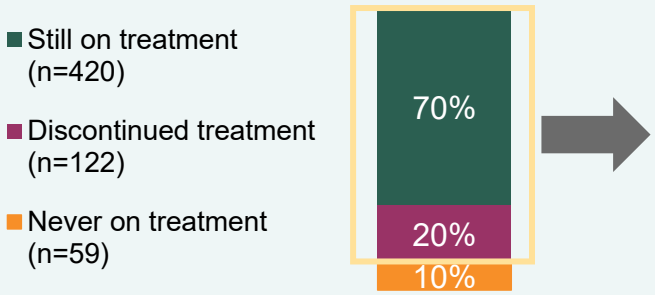


>2/3rds taking valbenazine as their VMAT2 inhibitor

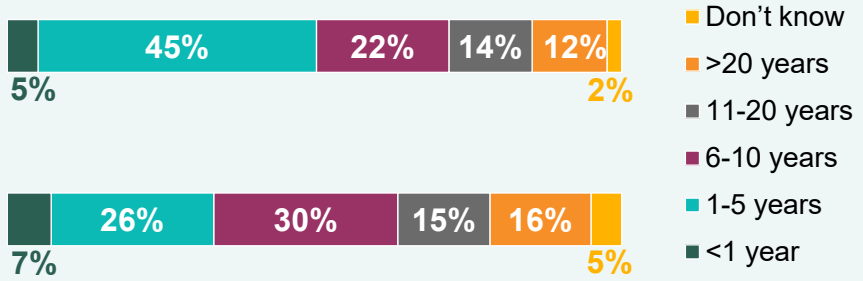
TD, tardive dyskinesia; VMAT2, vesicular monoamine transporter 2.
*Based on the past 12 months. 20% of patients discontinued antipsychotics in the past 12 months; 10% received no antipsychotics.
†Based on 542 patients who took an antipsychotic in the past 12 months. Categories were not mutually exclusive for comorbidities.
Lundt L et al. AAN 2020. May 2020

VMAT2i Chart Extraction/Survey: Demographics and Clinical Characteristics (cont'd)

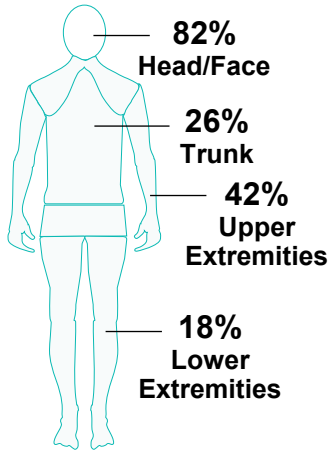
AP treatment[1]



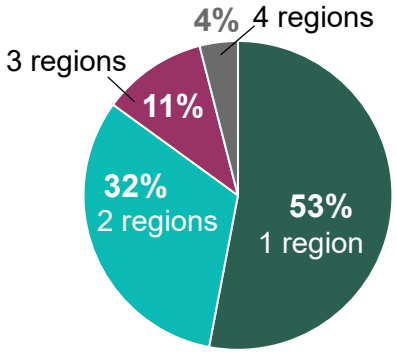
Duration of AP treatment[1]



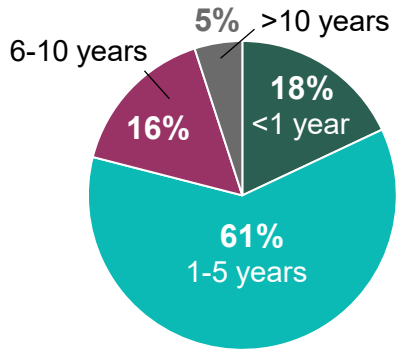
TD symptoms by body region (N=601)[2]



Number of body regions (N=601)[2]



Duration of TD symptoms (N=601)[2]



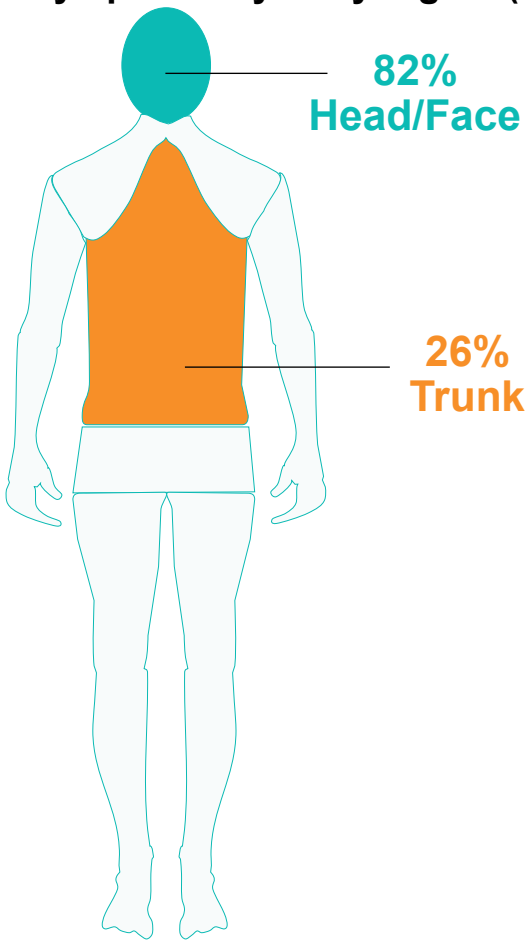
AP, antipsychotic; TD, tardive dyskinesia; VMAT2, vesicular monoamine transporter 2.

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

VMAT2i Chart Extraction/Survey: Results

TD Severity & Awareness in Patients with TD Symptoms in the Head/Face or Trunk

TD symptoms by body region (N=601)[2]



Head/Face[2]

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

Asymptomatic | Severe Symptoms | Moderate Symptoms | Mild Symptoms

Trunk[2]

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

Asymptomatic | Severe Symptoms | Moderate Symptoms | Mild Symptoms

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

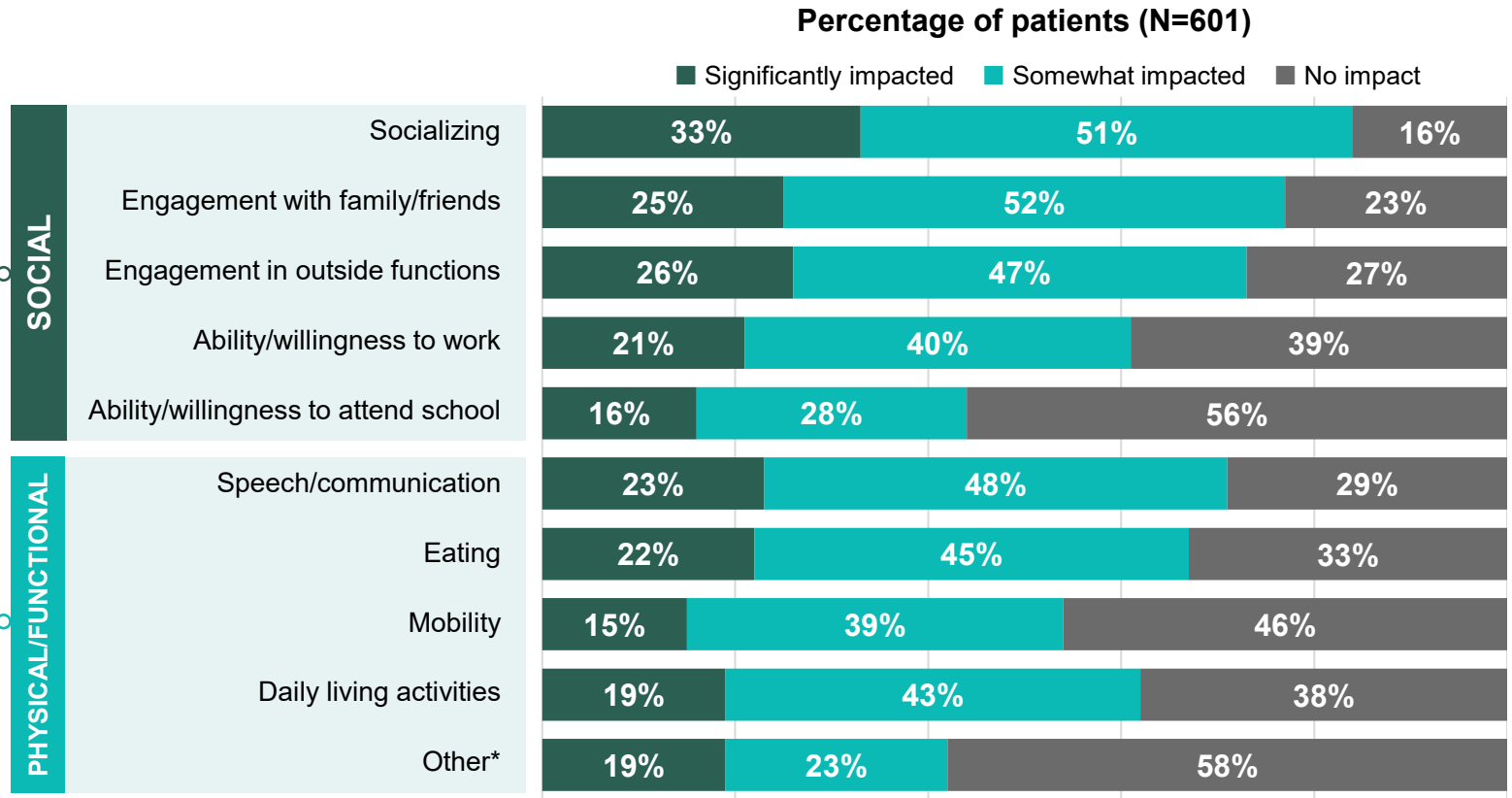
VMAT2i Chart Extraction/Survey: Results

Impact of TD on Patients Prior to TD Treatment

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

Over half of patients had difficulties in physical/functional areas



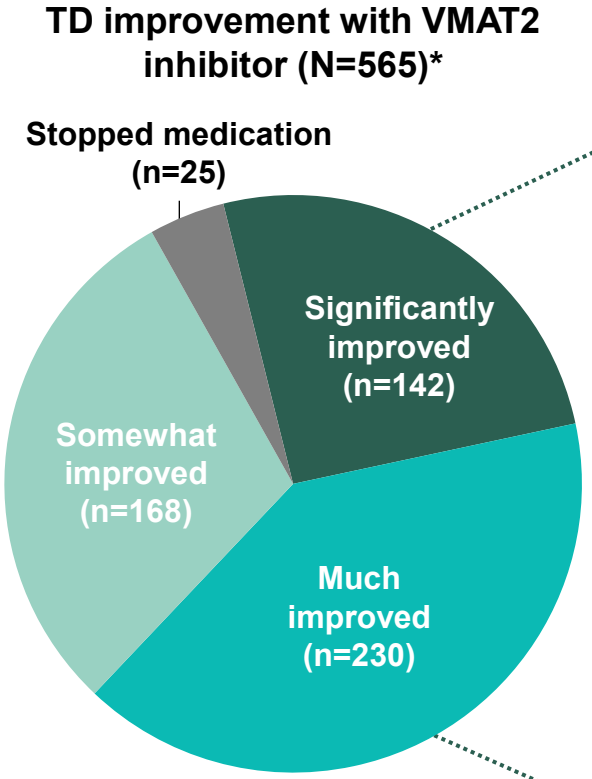
TD, tardive dyskinesia; VMAT2, vesicular monoamine transporter 2.
*Based on 43 patients.

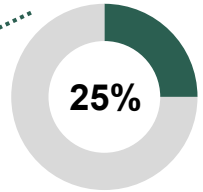
Lundt L et al. AAN 2020. May 2020

VMAT2i Chart Extraction/Survey: Results of TD Symptoms

TD Improvement After Starting a VMAT2 Inhibitor

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

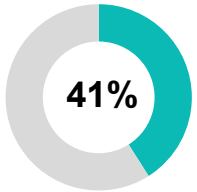




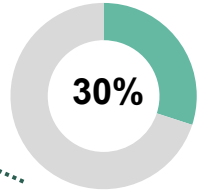
Significantly improved

Of those:

- **~80-95%** had social improvements
- **~90-95%** had physical/functional improvements
- **73%** had psychiatric improvements



Much improved

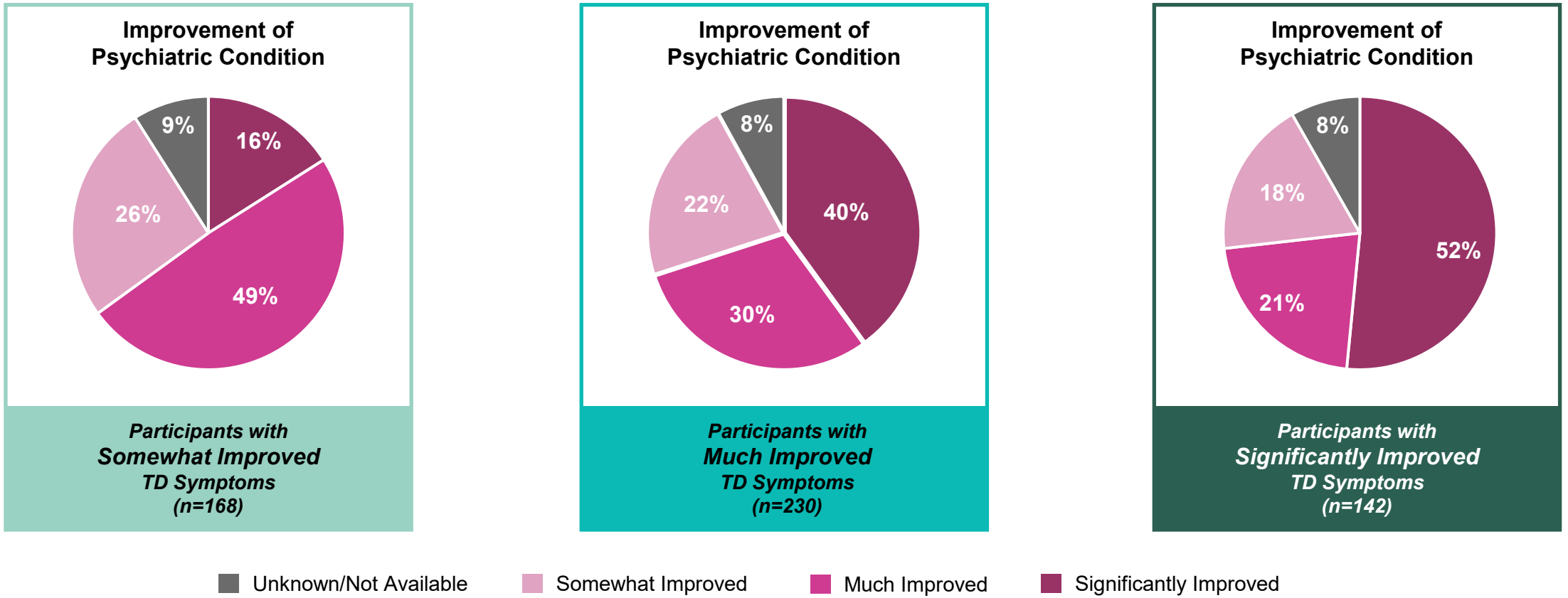


Somewhat improved

TD, tardive dyskinesia; VMAT2, vesicular monoamine transporter 2.
*Excludes 36 patients who were still titrating.
Lundt L et al. AAN 2020. May 2020

VMAT2i Chart Extraction/Survey: Psychiatric Condition Outcomes

Clinician's assessment on changes in patient's psychiatric condition(s) since starting treatment with a VMAT2 inhibitor stratified by TD symptoms improvement[1,2]



TD, tardive dyskinesia; VMAT2, vesicular monoamine transporter 2.

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

VMAT2i Chart Extraction/Survey: Summary

- In this real-world sample of patients (n=601), valbenazine (69%) was used more frequently than deutetrabenazine (28%) to treat TD
  - Prior to TD treatment, 93% of patients showed impairment in ≥1 social domain and 88% were impaired in ≥1 physical domain
- Clinician's assessment on the impact of TD showed that 96% (565/590) of patients had TD improvement (somewhat, much, or significantly improved) with VMAT2 inhibitor use
- 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, and ability/willingness to attend school
  - 85-95% of patients had physical/functional improvements in the following areas: speech/communications, eating, mobility, and 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

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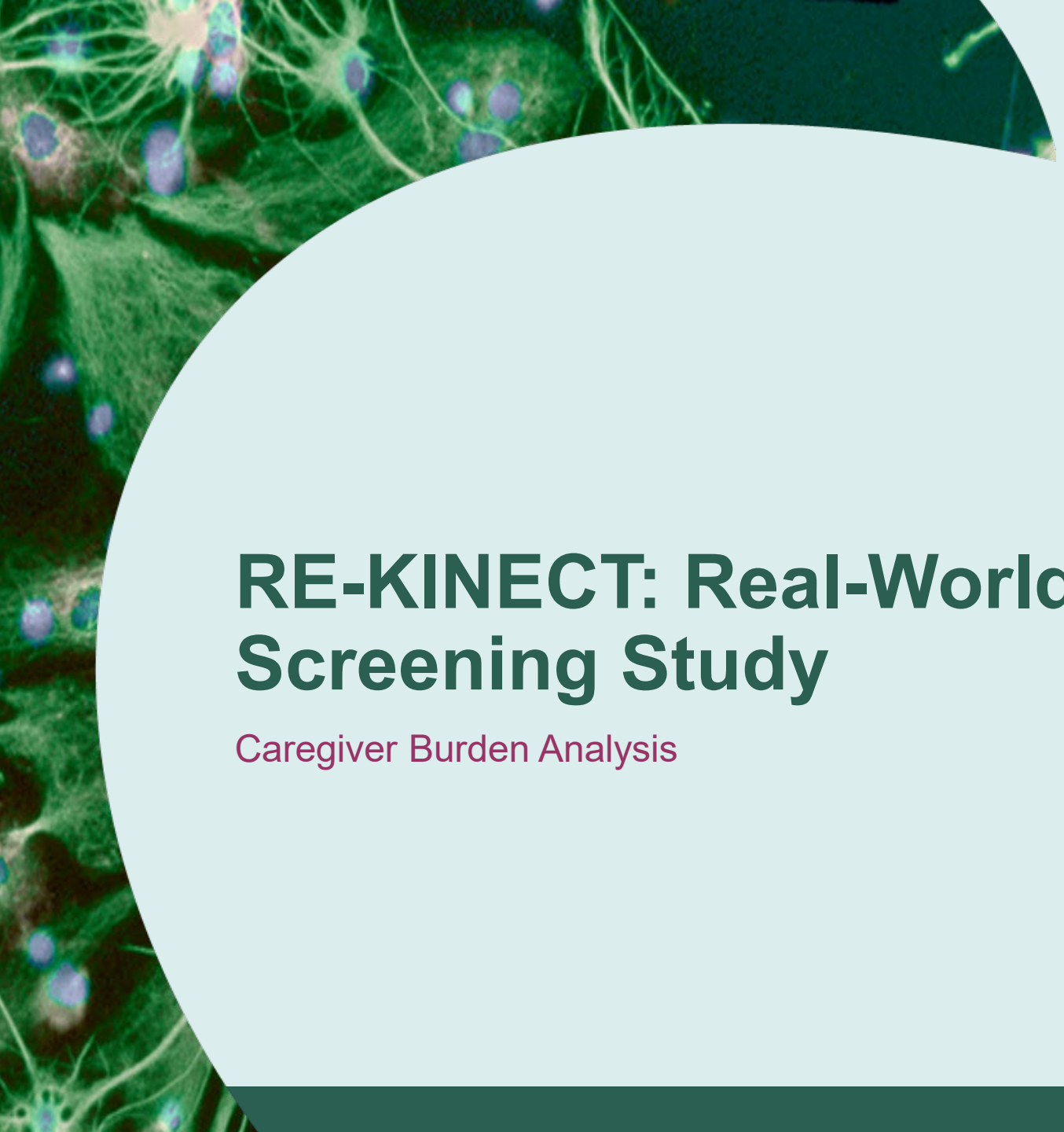
1-877-641-3461

Appendix



RE-KINECT: Real-World Dyskinesia Screening Study

Caregiver Burden Analysis

RE-KINECT: Caregiver Burden Analysis

Baseline Characteristics of Caregivers

Of 204 patients in Cohort 3, 41 had a caregiver who consented to enrollment

	Cohort 2 Caregivers* (N=41)
Race, n (%)	
White	27 (65.9)
Black	7 (17.1)
Asian	7 (17.1)
Marital status, n (%)	
Single	5 (12.2)
Married	28 (68.3)
Divorced	6 (14.6)
Other†	2 (4.9)
Current living/domestic situation, n (%)	
Living alone	3 (7.3)
Living with a partner, spouse, family, or friends	35 (85.4)
Other	3 (7.3)

	Cohort 2 Caregivers* (N=41)
Employment status, n (%)	
Employed, full-time	16 (39.0)
Employed, part-time	4 (9.8)
Unemployed	4 (9.8)
Retired	11 (26.8)
Disabled	5 (12.2)
Other	1 (2.4)
Relationship to patient, n (%)	
Family member	29 (70.7)
Friend	4 (9.8)
Someone the patient lives with	1 (2.4)
Other	7 (17.1)

*Caregivers of patients with clinician-confirmed possible TD. †Includes widowed or other (not specified).

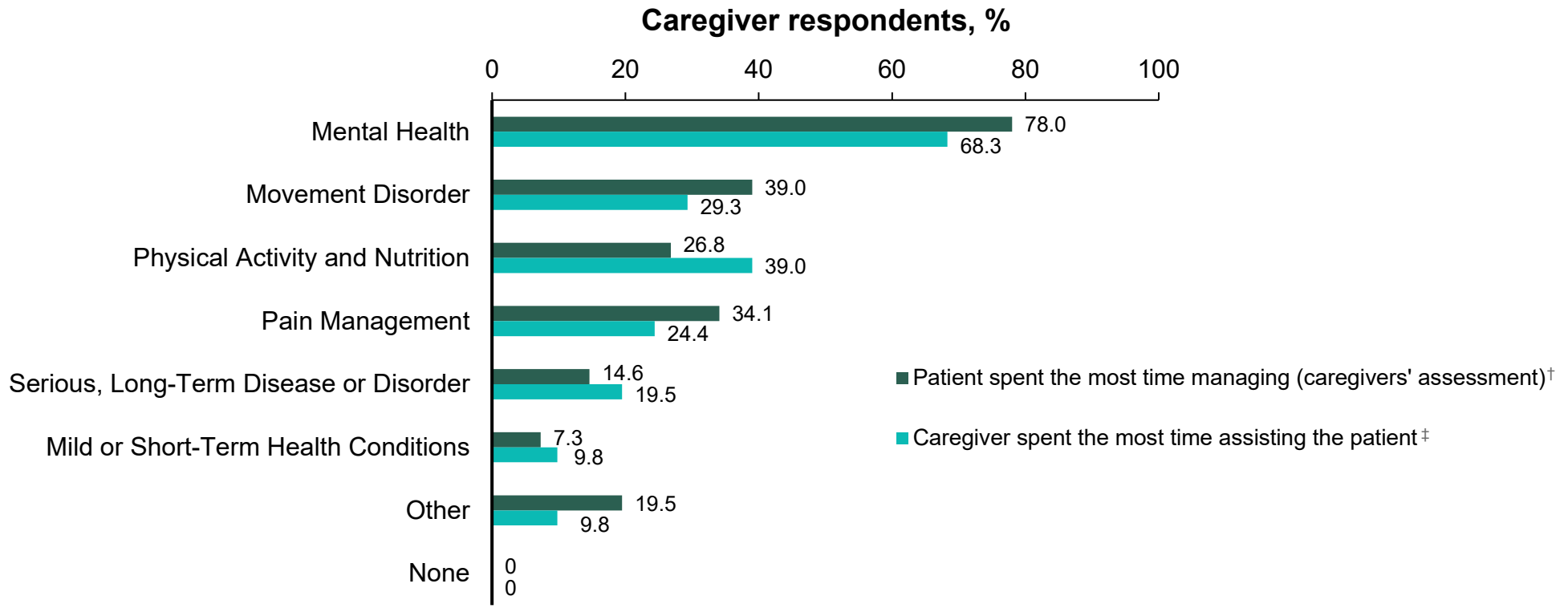
Cutler A, et al. APA 2018; New York, NY.

RE-KINECT: Caregiver Burden Analysis

Assessment of Health Conditions Requiring the Most Time at Baseline

Caregivers reported that mental health conditions took the most time to manage

Health conditions requiring the most time (caregivers' assessment at baseline)*



*Conditions are not mutually exclusive. †Per caregiver responses, health conditions the Cohort 2 patient spent the most time managing. ‡Per caregiver responses, health conditions the Cohort 2 caregiver spent the most time assisting.

Cutler A, et al. APA 2018; New York, NY.

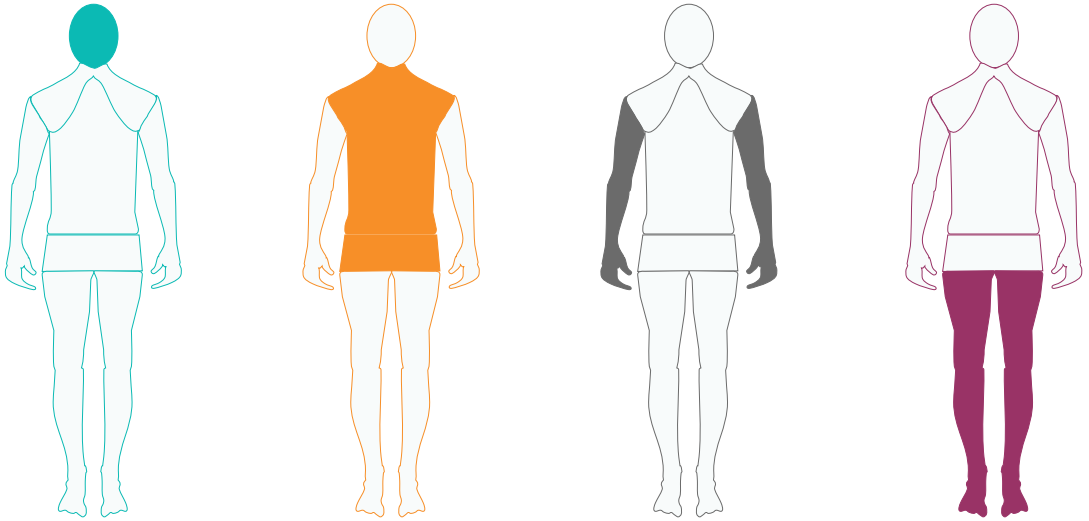
Re-KINECT: Caregiver Burden Analysis

Location of Uncontrollable Movements on Caregivers' Lives

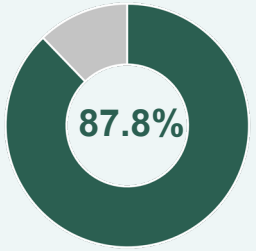
Caregivers reported uncontrollable involuntary movements in multiple body regions among their patients

% of caregivers reporting 'a lot of' visible uncontrollable movements in each region

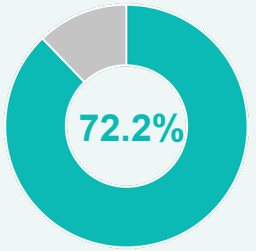
Head/face (facial muscles, lips, tongue, jaw)	Neck/trunk (neck, shoulders, chest, hips)	Upper extremities (arms, hands, fingers)	Lower extremities (legs, feet, toes)
25.0%	11.1%	19.4%	16.7%



Of the 41 enrolled caregivers:



noticed uncontrollable movements in their patient



reported that the patient experienced involuntary movements in ≥2 body regions

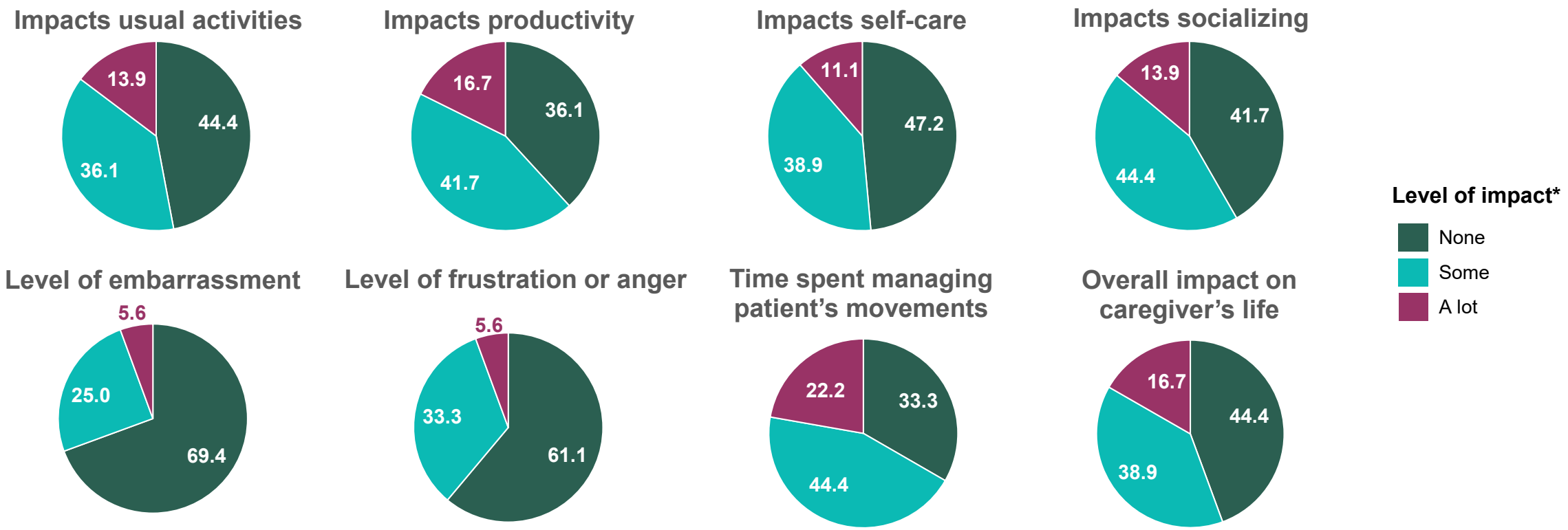
Cutler A, et al. APA 2018; New York, NY.

RE-KINECT: Caregiver Burden Analysis

Impact of Uncontrollable Involuntary Movements

Up to half of caregivers reported some impact of their patients' involuntary movements on certain daily activities

Effect of patients' uncontrollable movements on caregivers' lives



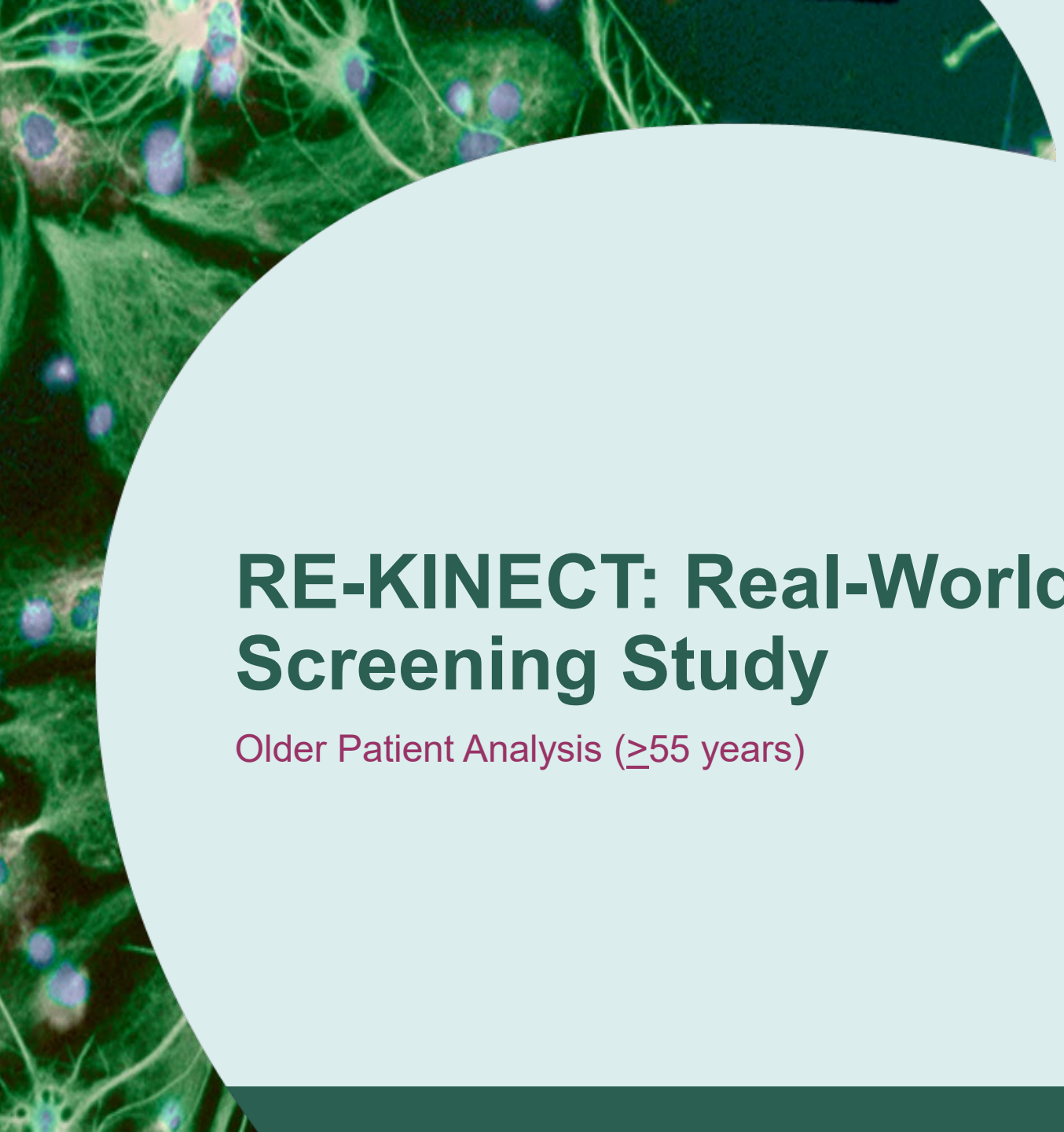
*Based on caregivers' ratings ("none", "some", "a lot") of how patient's uncontrollable movements affected their own daily activities, emotional distress, and overall impact on life. Some missing caregiver data were observed (1 for self-care and socializing; 2 for usual activities and productivity).

Cutler A, et al. APA 2018; New York, NY.

RE-KINECT: Caregiver Burden Analysis – Summary

- Most caregivers were family members and assisted patients with multiple health conditions, including movement disorders
- Based on caregivers' reports, >70% of cohort 2 patients (with clinician-confirmed possible TD) had uncontrollable movements in 2 or more body regions
- Based on caregivers' assessment, most caregivers and patients spent the most time managing the patient's mental health or a movement disorder vs managing other health conditions[2]
- Caregivers reported that uncontrollable movements in their patients had impacts on the lives of caregivers[2]

Cutler A, et al. APA 2018; New York, NY.



RE-KINECT: Real-World Dyskinesia Screening Study

Older Patient Analysis (≥55 years)

RE-KINECT: Older Patient Analysis (≥55 years)

Baseline Characteristics

	Cohort 1: No TD (N=186)	Cohort 2: Possible TD (N=114)	*P*-value*
Age, mean (SD)	**62.8 (7.5)**	**64.3 (7.6)**	**0.118**
Female, n (%)	**123 (66.1)**	**65 (57.0)**	**0.118**
Race, n (%)			
White	148 (79.6)	84 (73.7)	0.249
Black	20 (10.8)	19 (16.7)	0.159
Other/Missing	18 (9.7)	11 (9.6)	0.994
Psychiatric condition, n (%)			
Schizophrenia or schizoaffective disorder	45 (24.2)	54 (47.4)	<0.001
Mood disorder or other psychiatric disorder†	157 (84.4)	78 (68.4)	0.002
Lifetime exposure to antipsychotics, mean (SD), years	**12.2 (11.0)**	**19.1 (15.3)**	**<0.001**
Overall health status, mean (SD)‡	**442 (82.6)**	**169 (82.8)**	**0.9421**

SD, standard deviation.
*Post-hoc analysis in older patients (≥55 years old). †Responses are not mutually exclusive.
Caroff SN, et al. AAGP 2019; Atlanta, GA.

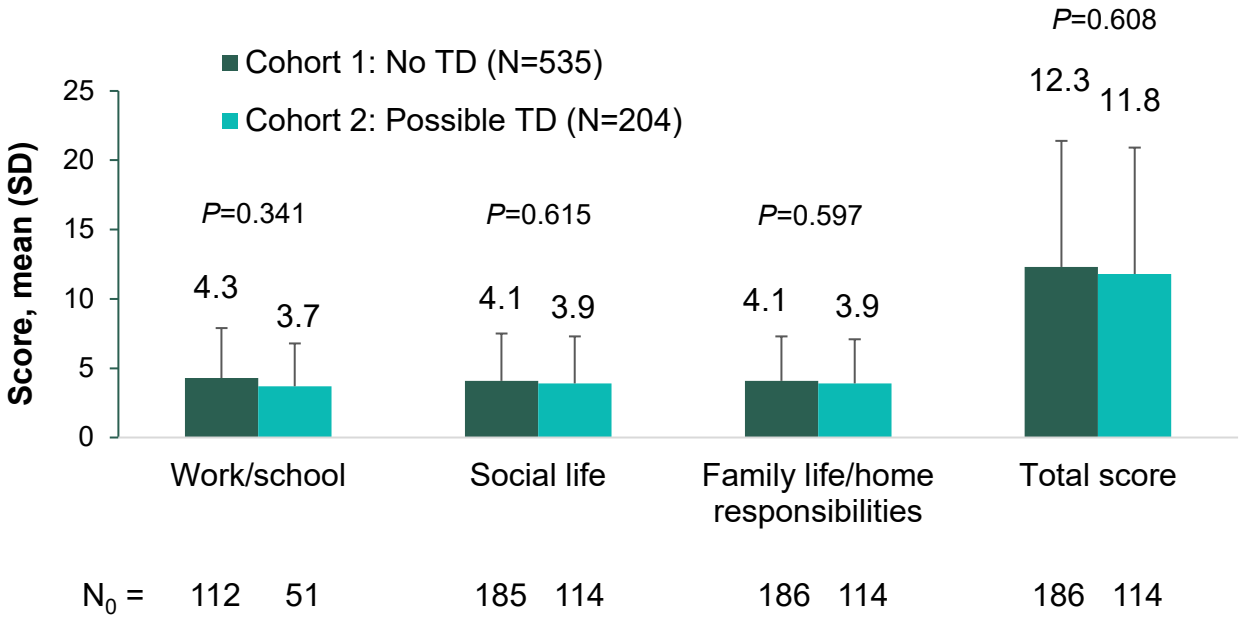
RE-KINECT: Older Patient Analysis (≥55 years)

Health-Related Quality of Life

Results suggest a somewhat greater impact on health-related QoL for patients with possible TD

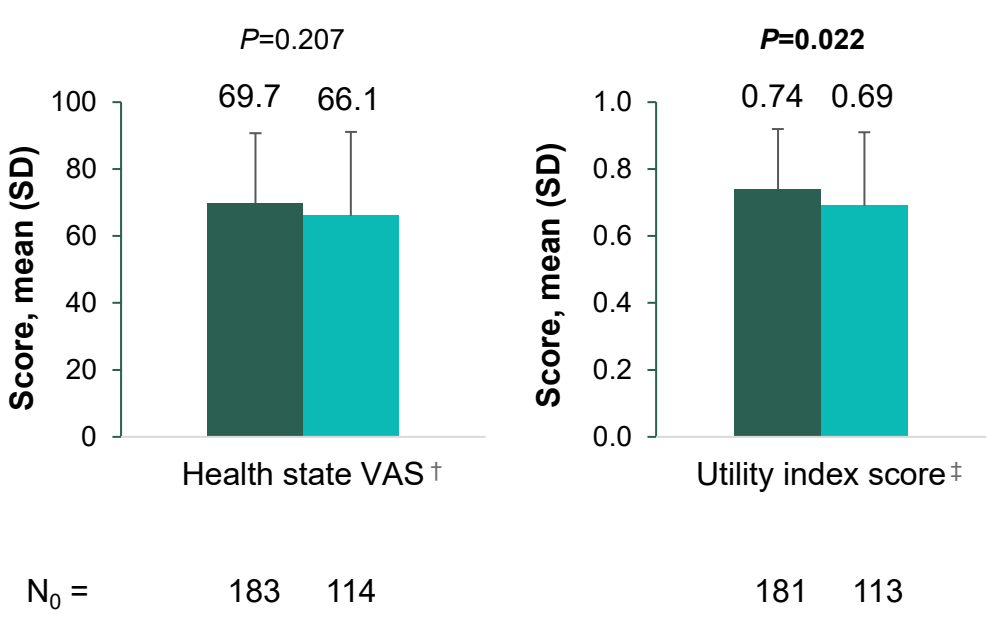
Sheehan disability scale (patient reported)*

Increased scores indicate higher disability



EQ-5D-5L (patient reported)

Decreased scores indicate lower QoL



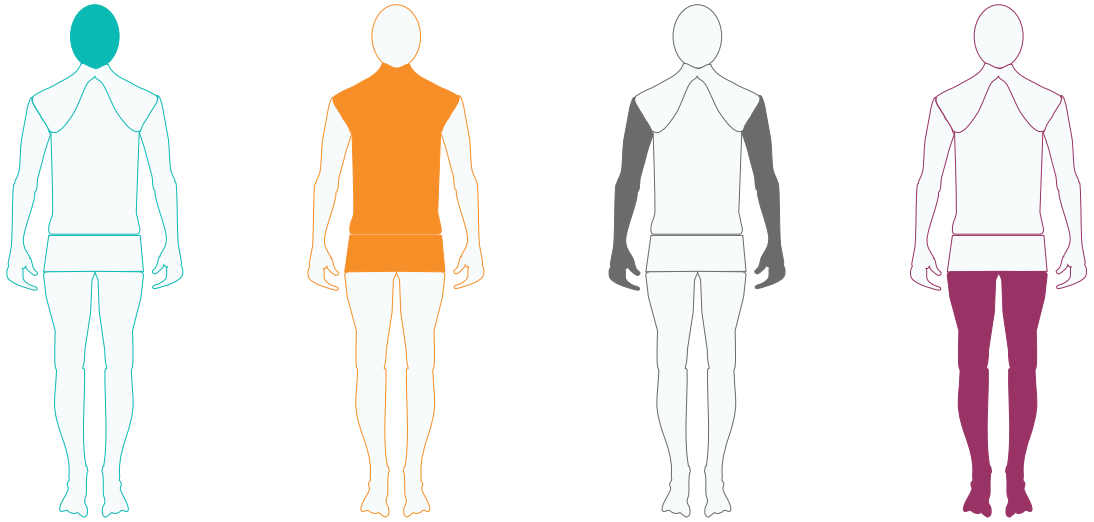
EQ-5D-5L, EuroQoL 5-Dimension 5-Level questionnaire; QoL, quality of life; SD, standard deviation; TD, tardive dyskinesia.
*Domain score range, 1 (no disruption) to 10 (extreme disruption); total score defined as the sum of domain scores. †VAS range, 0 ("worst health you can imagine") to 100 ("best health that you can imagine").
‡Utility range, 0 (health state equivalent to death) to 1 (perfect health).

Caroff SN, et al. AAGP 2019; Atlanta, GA.

RE-KINECT: Older Patient Analysis (≥55 years)

Location of Uncontrollable Involuntary Movements

Head/face (facial muscles, lips, tongue, jaw)	Neck/trunk (neck, shoulders, chest, hips)	Upper extremities (arms, hands, fingers)	Lower extremities (legs, feet, toes)
25.4%	4.4%	14.0%	7.9%
35.4%	6.2%	23.1%	9.2%



% of clinicians reporting 'a lot of' visible uncontrollable movements in each region for their patient

There was significant correlation between clinician and patient reports across regions (P<0.001)

% of patients reporting 'a lot of' visible uncontrollable movements in each region

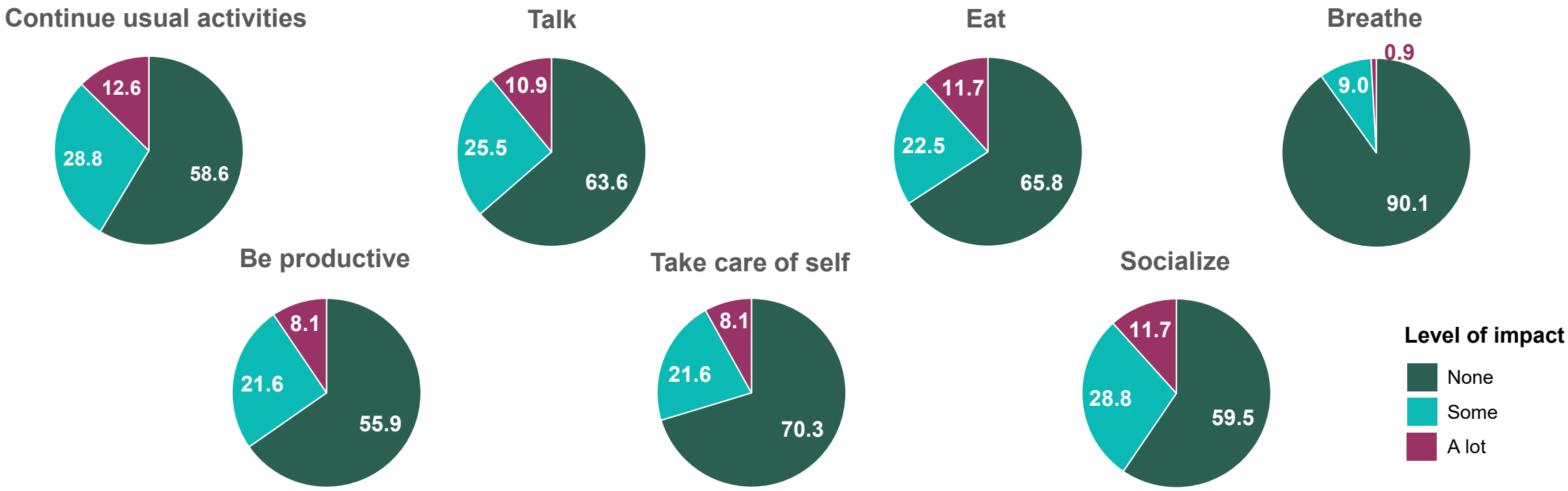
Caroff SN, et al. AAGP 2019; Atlanta, GA.

RE-KINECT: Older Patient Analysis (≥55 years)

Impact of Uncontrollable Involuntary Movements

Up to 1/3 of older patients with possible TD reported some impact of involuntary movements on certain daily activities

Patient-reported impact of involuntary movements on daily activities over the past 4 weeks*



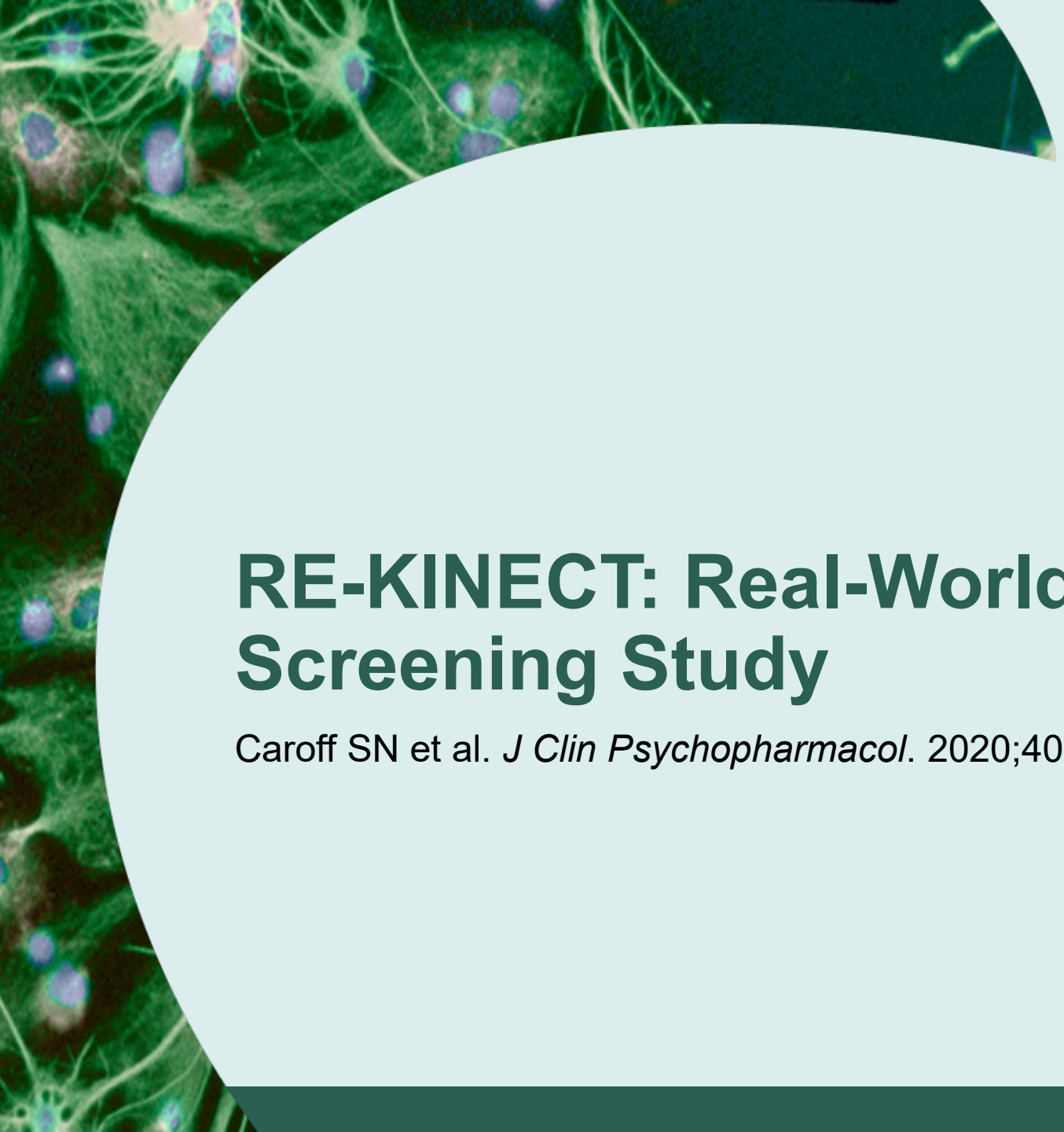
*Based on available data (n=111), with 1 missing assessment for ability to talk (n=110).

Caroff SN, et al. AAGP 2019; Atlanta, GA.

RE-KINECT: Older Patient Analysis (≥55 years) – Summary

- Compared to older patients without possible TD, those with possible TD were more likely to be unmarried, reside in assisted living, have a diagnosis of schizophrenia or schizoaffective disorder, and experience a longer lifetime exposure to antipsychotics
- Older patients with possible TD had a significantly worse quality of life (EQ-5D-5L utility score) compared to patients with no TD
  - However, daily functioning (SDS scores) was similarly impaired in both cohorts
- About 40% of older patients reported that uncontrollable movements had an impact (“some” or “a lot”) on usual activities, productivity, and socialization
- In older patients, patient and clinician ratings of severity of possible TD were significantly correlated

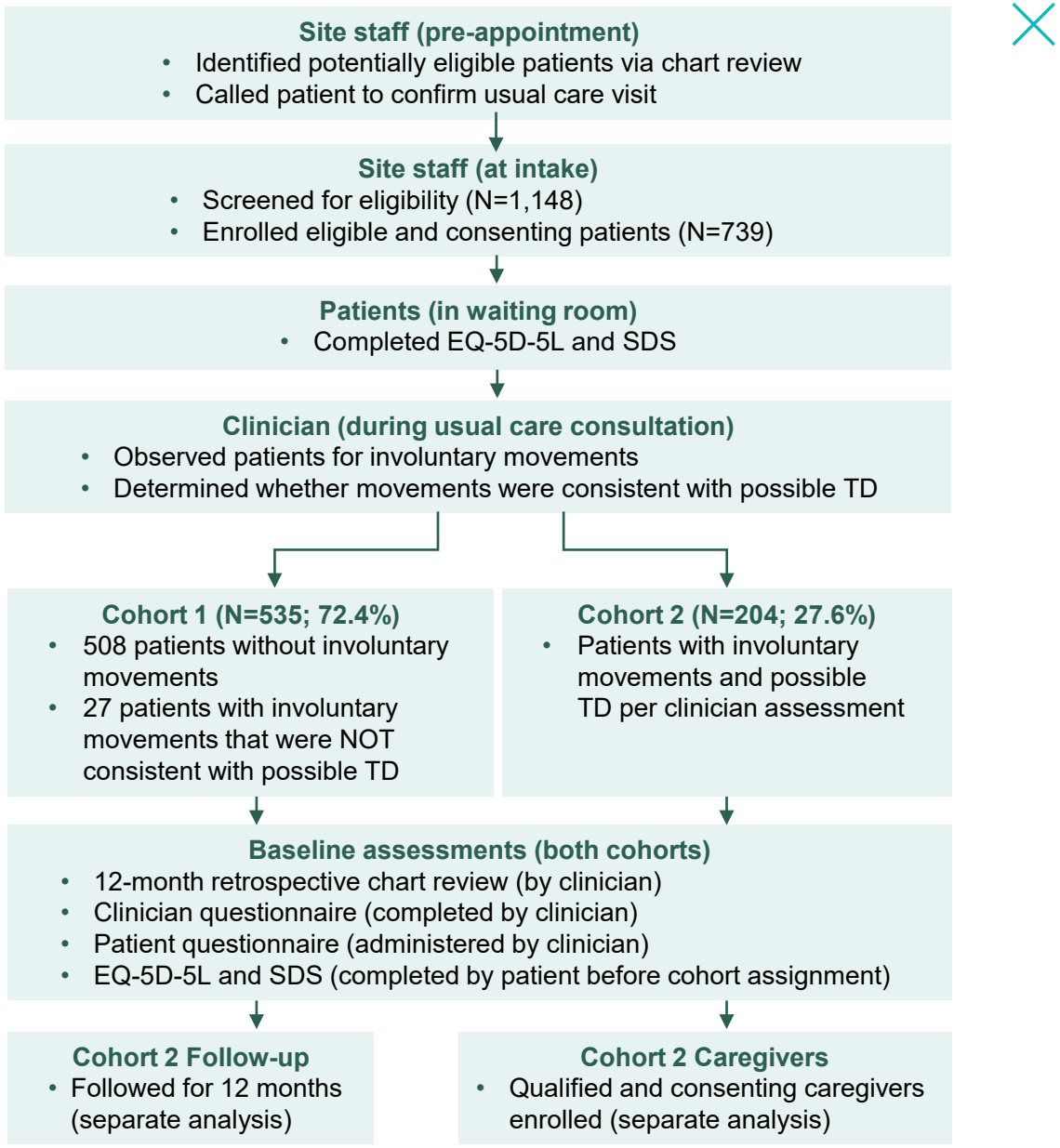
Caroff SN, et al. AAGP 2019; Atlanta, GA.



RE-KINECT: Real-World Dyskinesia Screening Study

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

Study Overview and Cohort Assignment



RE-KINECT: Additional Demographics and Clinical Characteristics

	Cohort 1: No TD (N=535)	Cohort 2: Possible TD (N=204)	*P*-value*	Adjusted *P*-value*†
Marital status, n (%)			**0.0524**	**0.6329**
Single	253 (47.3)	97 (47.5)		
Married	152 (28.4)	43 (21.1)		
Divorced	86 (16.1)	46 (22.5)		
Widowed	20 (3.7)	6 (2.9)		
Separated	18 (3.4)	12 (5.9)		
Other	5 (0.9)	0		
Missing	1 (0.2)	0		
Current living/domestic situation, n (%)			**0.0009**	**0.1874**
Living alone	120 (22.4)	57 (27.9)		
Living with a partner, spouse, family, or friends	351 (65.6)	105 (51.5)		
Other‡	63 (11.8)	41 (20.1)		
Missing	1 (0.2)	1 (0.5)		

*For questions or items that allowed more than 1 response (i.e., categories not mutually exclusive), *P*-values are provided for each response. †Adjusted for age (<55 vs. ≥55 years), sex (male vs. female), and diagnosis (schizophrenia or schizoaffective disorder vs. other). Psychiatric diagnosis was adjusted for age and sex. ‡Includes assisted living, group home, or living with other caregiver.

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

RE-KINECT: Additional Demographics and Clinical Characteristics (cont'd)

	Cohort 1: No TD (N=535)	Cohort 2: Possible TD (N=204)	*P*-value*	Adjusted *P*-value*†
Employment status, n (%)				
Employed, full-time	85 (15.9)	14 (6.9)	0.0012	0.1226
Employed, part-time	61 (11.4)	25 (12.3)	0.7528	0.3720
Homemaker	16 (3.0)	3 (1.5)	0.3062	0.2648
Student	22 (4.1)	1 (0.5)	0.0081	0.1155
Unemployed	85 (15.9)	19 (9.3)	0.0211	0.0132
Retired	48 (9.0)	32 (15.7)	0.0089	0.1676
Disabled	225 (42.1)	111 (54.4)	0.0027	0.0553
Other	8 (1.5)	3 (1.5)	>0.9999	0.7350
Missing	1 (0.2)	1 (0.5)		
Education level, n (%)				
Elementary/primary school	31 (5.8)	12 (5.9)	0.9681	0.9094
High school	165 (30.8)	89 (43.6)	0.0011	0.0211
Some college	172 (32.1)	58 (28.4)	0.3216	0.7012
College degree	113 (21.1)	31 (15.2)	0.0674	0.1157
Postgraduate degree	44 (8.2)	8 (3.9)	0.0404	0.0995
Other	24 (4.5)	11 (5.4)	0.6078	0.4785
Missing	1 (0.2)	0		

*For questions or items that allowed more than 1 response (i.e., categories not mutually exclusive), *P*-values are provided for each response. †Adjusted for age (<55 vs. ≥55 years), sex (male vs. female), and diagnosis (schizophrenia or schizoaffective disorder vs. other). Psychiatric diagnosis was adjusted for age and sex.

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

RE-KINECT: Additional Demographics and Clinical Characteristics (cont'd)

	Cohort 1: No TD (N=535)	Cohort 2: Possible TD (N=204)	*P*-value*	Adjusted *P*-value*†
Severity of psychiatric condition per clinician impression, n (%)			0.0022	0.0682
Normal, not ill	57 (10.7)	7 (3.4)		
Minimally ill	115 (21.5)	27 (13.2)		
Mildly ill	135 (25.2)	68 (33.3)		
Moderately ill	152 (28.4)	67 (32.8)		
Markedly ill	54 (10.1)	26 (12.7)		
Severely ill	20 (3.7)	9 (4.4)		
Among the most severely ill	2 (0.4)	0		

*For questions or items that allowed more than 1 response (i.e., categories not mutually exclusive), *P*-values are provided for each response. †Adjusted for age (<55 vs. ≥55 years), sex (male vs. female), and diagnosis (schizophrenia or schizoaffective disorder vs. other). Psychiatric diagnosis was adjusted for age and sex.

Caroff SN et al. *J Clin Psychopharmacol*. 2020;40(3):259-268.

RE-Kinect: Additional Demographics and Clinical Characteristics

Older Patients

	Cohort 1: No TD (N=186)	Cohort 2: Possible TD (N=114)	*P*-value*
Marital status, n (%)			
Single	52 (28.0)	37 (32.5)	0.415
Divorced	49 (26.3)	35 (30.7)	0.422
Married	63 (33.9)	26 (22.8)	0.037
Widowed or separated	22 (11.8)	16 (14.0)	0.585
Current living/domestic situation, n (%)			
Living with other (eg, spouse)	110 (59.1)	49 (43.0)	0.007
Living alone	55 (29.6)	40 (35.1)	0.326
Other†	21 (11.3)	25 (21.9)	0.020
Employment status, n (%)‡			
Disabled	88 (47.3)	56 (49.1)	0.762
Retired	44 (23.7)	31 (27.2)	0.499
Unemployed	22 (11.8)	11 (9.6)	0.552
Employed part-time	15 (8.1)	10 (8.8)	0.832
Employed full-time	12 (6.5)	5 (4.4)	0.435
Homemaker	8 (4.3)	1 (0.9)	0.049
Student	2 (1.1)	0	0.158
Other	3 (1.6)	0	0.083

*Post-hoc analysis in older patients (≥55 years old). †Living with children, parents, assisted living, group home, paid caregiver, or other non-family member. ‡Responses are not mutually exclusive.

Caroff SN, et al. AAGP 2019; Atlanta, GA.

RE-KINECT: Additional Demographics and Clinical Characteristics (cont'd)

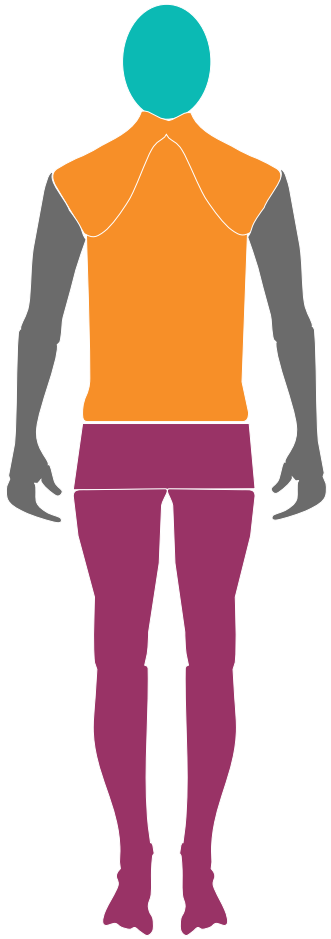
Older Patients

	Cohort 1: No TD (N=186)	Cohort 2: Possible TD (N=114)	*P*-value*
Type of mood or other disorder, n (%)†			
Attention-deficit/hyperactivity disorder	12 (6.5)	4 (3.5)	0.240
Adjustment disorder	2 (1.1)	1 (0.9)	0.865
Anxiety disorder	36 (19.4)	26 (22.8)	0.482
Bipolar disorder	52 (28.0)	27 (23.7)	0.411
Eating disorder	2 (1.1)	0	0.158
Major depressive disorder	85 (45.7)	28 (24.6)	<0.001
Personality disorder	6 (3.2)	1 (0.9)	0.135
Substance use disorder	1 (0.5)	3 (2.6)	0.192
Other mood disorder	2 (1.1)	1 (0.9)	0.865
Other depressive disorder	5 (2.7)	3 (2.6)	0.977

*Post-hoc analysis in older patients (≥55 years old). †Responses are not mutually exclusive.

Caroff SN, et al. AAGP 2019; Atlanta, GA.

Location and Severity of Uncontrollable Involuntary Movements of Patients with Possible TD



	Percentage of Cohort 2 Patients		Spearman Correlation, ρ
	Per Clinician Report (N=204)	Per Patient Report (N=110)	
Head/face: facial muscles, lips, tongue, jaw			
None	33.8	30.0	0.76*
Some	45.6	43.6	
A lot	20.1	25.5	
Missing	0.5	0.9	
Neck/trunk: neck, shoulders, chest, hips			
None	77.9	75.5	0.61*
Some	16.2	16.4	
A lot	4.4	7.3	
Missing	1.5	0.9	
Upper extremities: arms, hands, fingers			
None	40.7	36.4	0.75*
Some	48.5	41.8	
A lot	10.3	20.9	
Missing	0.5	0.9	
Lower extremities: legs, feet, toes			
None	57.4	54.5	0.75*
Some	34.3	31.8	
A lot	7.8	13.6	
Missing	0.5	0	

Patient-reported ratings includes patients who were aware of involuntary movements in the past 4 weeks that they could not control. Correlation analyses were based on available clinician-reported and patient-reported ratings. *P<0.001 for correlation between clinician and patient report.