RE-KINECT™: Real-World Dyskinesia Screening Study

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RE-KINECT™ Overview

- Prospective screening study that included 37 outpatient psychiatry practices across the US
- Objective: Assess the presence and impact of possible tardive dyskinesia (TD) in antipsychotic-treated outpatient practices
- Key eligibility criteria:
  - ≥18 years old
  - ≥3 months of cumulative lifetime exposure to ≥1 antipsychotic medication(s)
  - Clinician confirmed psychiatric disorder meeting DSM-5 criteria
- Simplified clinician assessment was developed to identify the presence, location, and severity of involuntary movements and confirm possible TD for Cohort assignment

Caroff SN et al. *J Clin Psychopharmacol*. 5/6/2020:259-268.

RE-KINECT Study Methodology

- Cohort 1: patients without visible signs of involuntary movement or with movements not deemed consistent with TD
- Cohort 2: patients with visible signs of involuntary movement (i.e. clinician-confirmed possible TD)
  - Followed for 12 months
- Health-related quality of life (HRQoL) measurements completed by patients while in the waiting room prior to evaluation (not anchored by disease) included:
  - EuroQoL 5-Dimension 5-Level (EQ-5D-5L)
  - 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.

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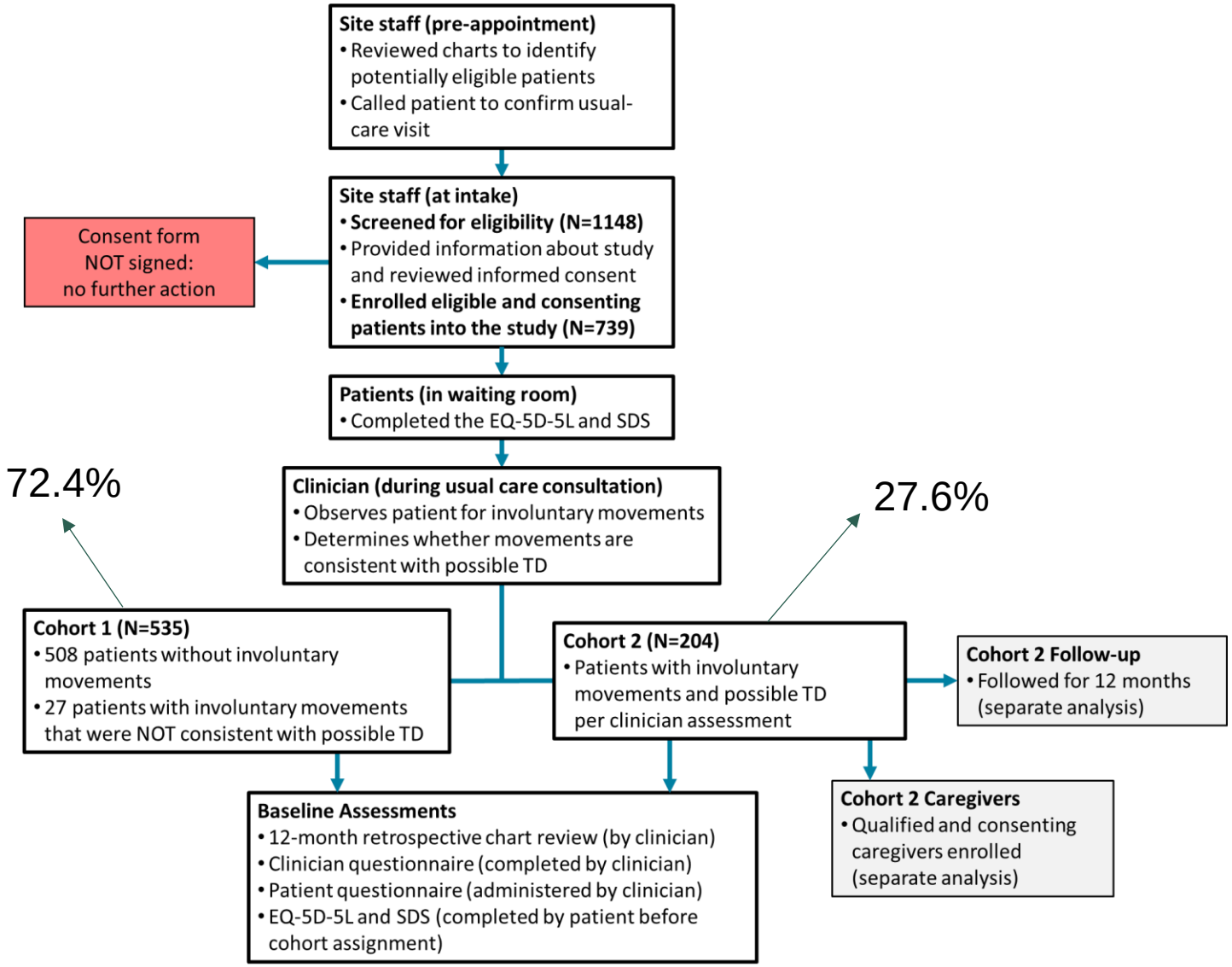
RE-KINECT: Overview of Possible TD Symptom Screen and Cohort Assignment



EQ-5D-5L, EuroQoL 5-Dimension 5-Level questionnaire; SDS, Sheehan Disability Scale; TD, tardive dyskinesia.

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RE-KINECT: Demographics and Clinical Characteristics

	Cohort 1 (N=535)	Cohort 2 (N=204)	*P*-value*	Adjusted *P*-value*†
Age, mean (SD)	47.6 (14.6)	54.6 (13.6)	<0.0001	
Sex, n (%)			0.0920	
Male	225 (42.1)	100 (49.0)		
Female	309 (57.8)	104 (51.0)		
Race, n (%)				
White	385 (72.0)	149 (73.0)	0.7981	
Black	89 (16.6)	36 (17.6)	0.7508	
Asian	22 (4.1)	8 (3.9)	0.9029	
Indian/Alaska Native	10 (1.9)	2 (1.0)	0.5267	
Other	31 (5.8)	9 (4.4)	0.4546	
Missing	5 (0.9)	2 (1.0)		
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		

*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.

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RE-KINECT: Demographics and Clinical Characteristics

	Cohort 1 (N=535)	Cohort 2 (N=204)	*P*-value*	Adjusted *P*-value*†
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)		
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. ‡Includes assisted living, group home, or living with other caregiver.

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RE-KINECT: Baseline Psychiatric Conditions & Antipsychotic Use

	Cohort 1 (N=535)	Cohort 2 (N=204)	*P*-value*	Adjusted *P*-value*†
Psychiatric condition, n (%)				
Schizophrenia or schizoaffective disorder	174 (32.5)	111 (54.4)	<0.0001	<0.0001
Mood disorder or other psychiatric disorder§	401 (75.0)	112 (54.9)	<0.0001	0.0255
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		
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.

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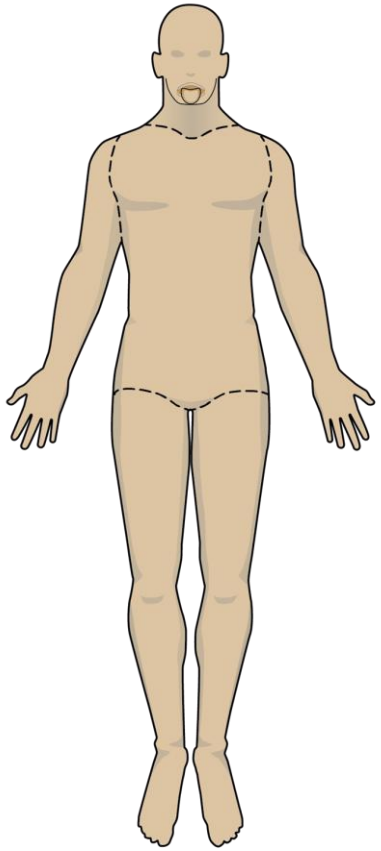
RE-KINECT: Location and Severity of Uncontrollable Involuntary Movements (Cohort 2)

- Based on clinician and patient ratings, respectively, 52.9% and 63.6% of cohort 2 patients had involuntary movements in 2 or more body regions
- There were statistically significant positive correlations between clinician and patient ratings (all P< 0.001) in the following:
  - Severity of involuntary movements in each body region (ie, head/face, neck/trunk, upper extremities, lower extremities)
  - Maximum severity score in any body region
  - Total number of body regions with an involuntary movement



	Percentage of Cohort 2 Patients		
	Per Clinician Report (N=204)	Per Patient Report (N=110)	Spearman Correlation, ρ
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	
Maximum rating in any body region			
None	0	0	0.50*
Some	66.7	52.7	
A lot	33.3	47.3	
Missing	0	0	
Total number of body regions			
One	47.1	36.4	0.24*
Two	28.4	36.4	
Three	14.7	17.3	
Four	9.8	10.0	

The maximum symptom severity score represents the highest rating reported in any of the 4 body regions. 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.

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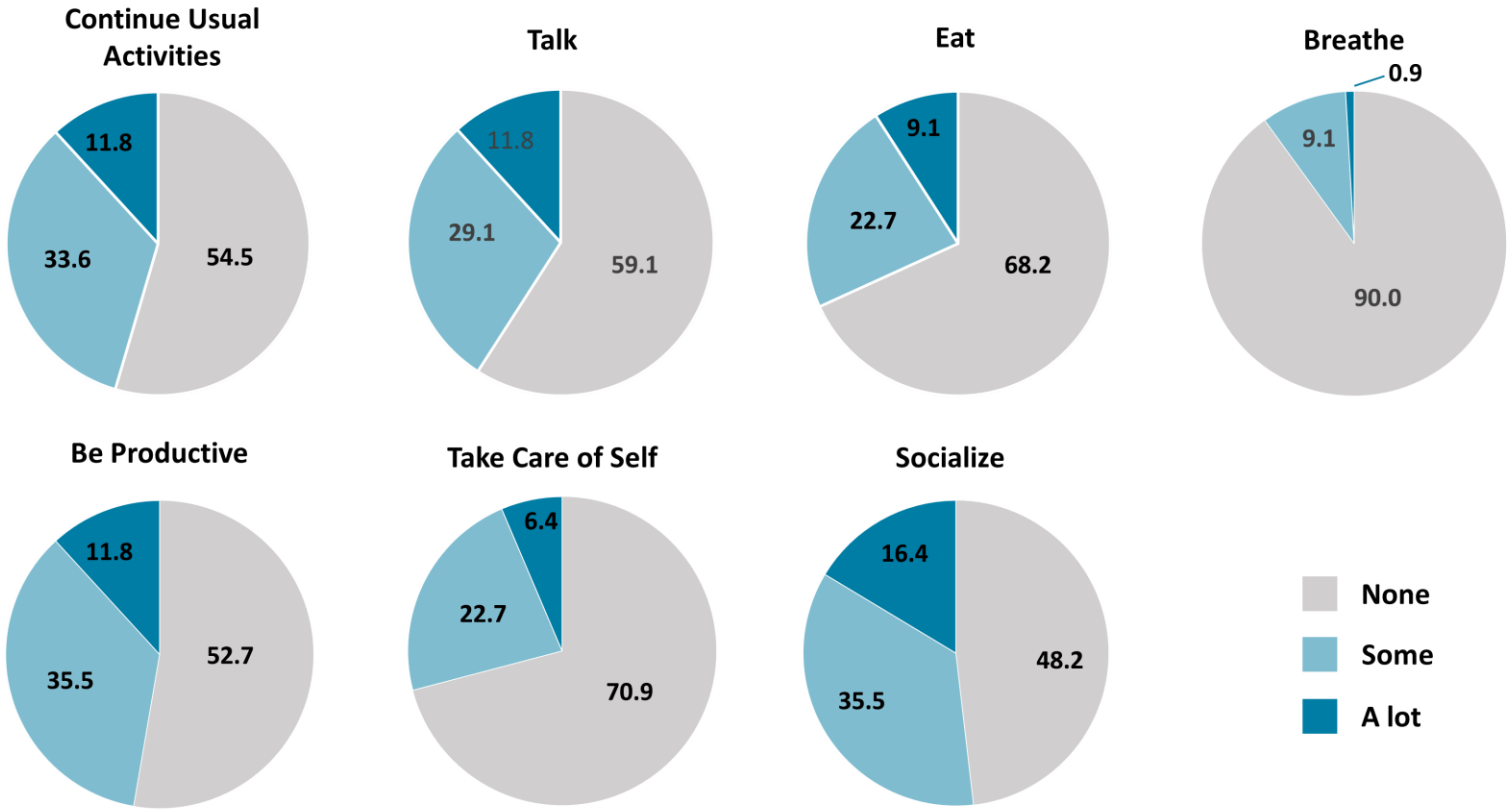
RE-KINECT: Impact of Involuntary Movements on Daily Activities (Cohort 2)

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.)

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RE-KINECT: Functional Status

	Cohort 1 (N=535)		Cohort 2 (N=204)		*P*-value*	Adjusted *P*-value*†
Overall functional status (Clinician Reported)‡	N_0	n (%)	N_0	n (%)	<0.0001	0.0010
Working/studying independently	535	276 (51.6)	204	66 (32.4)		
Working/studying with assistance	535	119 (22.2)	204	44 (21.6)		
Not working/studying	535	140 (26.2)	204	94 (46.1)		

*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).
‡ Status since the last usual-care visit, based on the clinician's best knowledge.
N_0, number of available assessments; SD, standard deviation.

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RE-KINECT: Functional Status and Health-Related Quality of Life

	Cohort 1 (N=535)		Cohort 2 (N=204)		*P*-value*	Adjusted *P*-value*†
Sheehan Disability Scale (Patient Reported)§[a]	N_0	Mean (SD)	N_0	Mean (SD)		
Work/school	363	3.7 (3.5)	111	4.2 (3.4)	0.2358	0.2316
Social life	531	3.7 (3.3)	203	4.0 (3.4)	0.3262	0.2008
Family life/home responsibilities	530	3.7 (3.3)	203	3.8 (3.3)	0.7380	0.3863
Total score	530	11.1 (9.2)	203	11.7 (9.3)	0.4262	0.1880
EuroQoL 5-Dimension 5-Level (Patient Reported)¥[a]	N_0	Mean (SD)	N_0	Mean (SD)		
Health state VAS	531	69.7 (21.7)	204	66.8 (25.1)	0.1501	0.0002
Utility index score	526	0.76 (0.19)	197	0.71 (0.21)	0.0029	0.0175

*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).
§Patient reported. 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.
¥Patient reported. 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).
[a]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.
N_0, number of available assessments; SD, standard deviation; VAS, visual analog scale.
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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 Cohort 2 patients had involuntary movements in 2 or more body regions
- Based on patient questionnaire, in Cohort 2, more than 40% of (n=204) patients 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 clinician’s assessment, a statistically significant difference between cohorts was observed for overall functional status, even when adjusted for age, sex, and psychiatric diagnosis
- For all EQ-5D-5L domains a higher percentage of Cohort 2 patients (vs. Cohort 1) had moderate problems or worse (score ≥3)
- The burden of possible TD 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..