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| **Signs of Essential Tremor** |
| **Protocol Id** | 131301 |
| **Description of Protocol** | The Washington Heights-Inwood Genetic Study of Essential Tremor (WHIGET) Tremor Rating Scale is a 23-item videotaped examination that assesses rest, postural, and kinetic tremor severity. Rated tasks include arm extension, pouring water between cups, drinking from a spoon, drinking from a cup, drawing Archimedes spirals, and touching a finger to the nose. The protocol includes scoring and classification instructions. A teaching videotape is also available to aid in training raters. |
| **Specific Instructions** | A teaching videotape is available for learning to administer the Washington Heights-Inwood Genetic Study of Essential Tremor (WHIGET) Tremor Rating Scale (Louis et al., 2001).Several items of the WHIGET Tremor Rating Scale are designed to assess and rule out features of parkinsonism:• Bradykinesia - items 9-14 • Rigidity - item 19• Reduced arm movements - item 22 Additionally, although item 23 (tandem gait) can be abnormal in essential tremor, this item is not used to make a diagnosis. |
| **Protocol Text** | **Washington Heights-Inwood Genetic Study of Essential Tremor (WHIGET) Tremor Rating Scale protocol for Videotaped Examination***While subject is seated:*1. Hands resting in lap for 15 s
2. Arms held at 90° for 15 s (arm sustention)
3. Arms held in wing position for 15 s
4. Pouring water from one cup to another (cups should be standard size and at least three quarters filled; 8 transfers)
5. Bring a spoon of water from lap level up to mouth and back again; repeat 7 additional times
6. Drinking water from a full glass; repeat 7 times with each hand
7. Finger-nose-finger on right 8 times
8. Finger-nose-finger on left 8 times
9. Open and close right hand 10 times
10. Open and close left hand 10 times
11. Alternatively pronate and supinate right hand 10 times
12. Alternatively pronate and supinate left hand 10 times
13. Tap right foot 10 times
14. Tap left foot 10 times
15. Jaw at rest for 5 s
16. Mouth open for 5 s
17. Sustained phonation: first "AAA" for 10 s, then "EEE"
18. Head while patient is seated for 10 s
19. The examiner will test the passive tone of each arm and leg and comment on this on the videotape
20. Drawing 2 Archimedes spirals with each hand (subject should make at least 6 full circular motions)

*While subject is standing:*1. Hands hanging at sides for 10 s; videotape legs too
2. Walking 20 ft and turning
3. Tandem gait for 10 steps

**Scoring Instructions***Criteria for ET:*1. On examination, a +2 postural tremor of at least 1 arm (a head tremor may also be present, but is insufficient for the diagnosis)2. On examination, there must bea. a +2 kinetic tremor during at least 4 tasks orb. a +2 kinetic tremor on 1 task and a +3 kinetic tremor on a second task; tasks include: pouring water, using a spoon to drink water, drinking water, finger-to-nose, and drawing a spiral3. If on examination the tremor is present in the dominant hand, then by report it must interfere with at least 1 activity of daily living (eating, drinking, writing, use of hands); if on examination, the tremor is not present in the dominant hand, this criterion is irrelevant.4. Medications, hyperthyroidism, alcohol, or dystonia are not potential etiologic factors5. Not psychogenic (bizarre features, inconsistent in character, changing, subject is distractable, other psychiatric features on examination)*Criteria for probable ET (1 and 3-5 must be true; also, either 2a or 2b must be true):*1. On examination, a +2 postural tremor of arms may or may not be present2. (a) Same as 2 above(b) Head tremor is present on examination3. Tremor in the dominant hand may or may not interfere with at least 1 daily activity4. Medications, hyperthyroidism, dystonia, or alcohol are not potential etiologic factors5. Not psychogenic*Criteria for possible ET:*1. On examination, a +2 kinetic tremor must be present on 3 tasks2. No other stipulations*Tremor Ratings (0 to +3):*0 = no visible tremor+1 = low-amplitude/barely perceivable tremor *or* intermittent tremor+2 = tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory+3 = large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper*Note from the Neurology Working Group: Please see Louis et al. (2001) for discussion on the addition of a tremor rating of 4.**While subject is seated:*1. Hands resting in lap for 15 s 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 2. Arms held at 90° for 15 s (arm sustention) 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 3. Arms held in wing position for 15 s 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 4. Pouring water from one cup to another (cups should be standard size and at least three quarters filled; 8 transfers) 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 5. Bring a spoon of water from lap level up to mouth and back again; repeat 7 additional times 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 6. Drinking water from a full glass; repeat 7 times with each hand 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 7. Finger-nose-finger on right 8 times 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 8. Finger-nose-finger on left 8 times 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 9. Open and close right hand 10 times 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 10. Open and close left hand 10 times 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 11. Alternatively pronate and supinate right hand 10 times 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 12. Alternatively pronate and supinate left hand 10 times 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 13. Tap right foot 10 times 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 14. Tap left foot 10 times 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 15. Jaw at rest for 5 s 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 16. Mouth open for 5 s 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 17. Sustained phonation: first"AAA" for 10 s, then"EEE" 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 18. Head while patient is seated for 10 s 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper 19. The examiner will test the passive tone of each arm and leg and comment on this on the videotape: Comments:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_20. Drawing 2 Archimedes spirals with each hand (subject should make at least 6 full circular motions) 0 [ ] no visible tremor 1 [ ] low-amplitude/barely perceivable tremor *or* intermittent tremor 2 [ ] tremor is of moderate amplitude (1-2 cm) *and* usually present; it is clearly oscillatory 3 [ ] large-amplitude (>2 cm), violent, jerky tremor resulting in difficulty completing the task due to spilling or inability to hold a pen to paper *While subject is standing:*21. Hands hanging at sides for 10 s; videotape legs too Comments:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_22. Walking 20 ft and turning Comments:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_23. Tandem gait for 10 steps Comments:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_24. Dominant Hand[ ] Right[ ] Left |
| **Selection Rationale** | The Washington Heights-Inwood Genetic Study of Essential Tremor Rating Scale (WHIGET) was vetted against similar protocols and selected because it is a relatively short (10 minutes or less), widely used, validated protocol that is relatively easy to administer. |
| **Source** | Louis, E. D., Ottman, R., Ford, B., Pullman, S., Martinez, M., Fahn, S., & Hauser, W. A. (1997). The Washington Heights-Inwood Genetic Study of Essential Tremor: Methodologic issues in essential-tremor research. *Neuroepidemiology,* *16,* 124-133. |
| **Language** | English |
| **Participant** | Adult, aged 18 or older |
| **Personnel and Training Required** | Personnel should be trained to administer the test by a licensed neurologist or other trained medical professional experienced with the Washington Heights-Inwood Genetic Study of Essential Tremor Rating Scale (WHIGET) or similar examination and should watch the teaching videotape that is available for learning to administer the protocol. Additionally, investigators are encouraged to have quality control procedures (e.g., videotaping sessions) in place to maintain consistency across examiners. |
| **Equipment Needs** | Investigators will need basic supplies to administer the test, such as standard-sized cups, spoons, and paper and pencil. Investigators will need a video recorder to tape the examination. |
| **Standards** |

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| **Standard** | **Name** | **ID** | **Source** |
| Common Data Element (CDE) | Neurology Essential Tremor Sign Assessment Description Text | 3107307 | [CDE Browser](https://cdebrowser.nci.nih.gov/CDEBrowser/search?elementDetails=9&FirstTimer=0&PageId=ElementDetailsGroup&publicId=3107307&version=1.0) |
| Logical Observation Identifiers Names and Codes (LOINC) | Signs of essential tremor proto | 62784-4 | [LOINC](http://s.details.loinc.org/LOINC/62784-4.html?sections=Web) |

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| **General References** | Louis, E. D., Barnes, L., Wendt, K. J., Ford, B., Sangiorgio, M., Tabbal, S., Lewis, L., Kaufmann, P., Moskowitz, C., Comella, C. L., Goetz, C. C., & Lang, A. E. (2001). A teaching videotape for the assessment of essential tremor. *Movement Disorders,* *16,* 89-93.Louis, E. D. (2016). Diagnosis and management of tremor. *Continuum*, *22,* 1143-1158.Louis, E. D. (2016). More time with tremor: The experience of essential tremor versus Parkinson’s disease patients. *Movement Disorders Clinical Practice,* *3*, 36-42.Sternberg, E. J., Alcalay, R. N., Levy, O. A., & Louis, E. D. (2013). Postural and intention tremors: A detailed clinical study of essential tremor vs. Parkinson’s disease. *Frontiers in Neurology 4*, 51. |
| **Protocol Type** | Physical Examination |
| **Derived Variables** | None |
| **Requirements** |

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| **Requirement Category** | **Required** |
| Average time of greater than 15 minutes in an unaffected individualAverage time of greater than 15 minutes in an unaffected individual | No |
| Major equipmentThis measure requires a specialized measurement device that may not be readily available in every setting where genome wide association studies are being conducted. Examples of specialized equipment are DEXA, Echocardiography, and Spirometry | No |
| Specialized requirements for biospecimen collectionThis protocol requires that blood, urine, etc. be collected from the study participants. | No |
| Specialized trainingThis measure requires staff training in the protocol methodology and/or in the conduct of the data analysis. | No |

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