



Neurology Measures for PhenX Toolkit

	Measure	Brief Description of Measurement Protocols	
1	Clinical Neuropathy Assessment	This protocol is a nine-item clinical examination that measures sensory symptoms, motor symptoms, arm and leg strength, and nerve conduction velocities.	
2	Epilepsy Screener	This protocol is a nine-item, interviewer-administered questionnaire to screen for the presence of epilepsy.	
3	Executive Function	This protocol describes the procedures for a two-part test that requires the respondent to organize numerical and alphabetical sequences that are randomly distributed on a piece of paper.	
4	Global Mental Status Screener	a. Adult	This protocol asks the respondent to perform certain tasks, such as drawing and counting, to assess various cognitive domains, such as attention, memory, orientation, language, conceptual thinking, and planning.
		b. Child	This protocol screens infants and young children for developmental delays in five areas.
5	Gross Motor Function	This protocol is a five-item, parent-report questionnaire that classifies children with cerebral palsy, based on current motor ability, including the need for assistive technology. There are specific protocols for the following age groups: 2–4 years old, 4–6 years old, and 6–12 years old.	
6	History of Head Trauma	This protocol is a questionnaire that captures the lifetime history of traumatic brain injury.	
7	History of Stroke - Ischemic Infarction and Hemorrhage	This protocol is a questionnaire that captures the history of stroke(s) and associated symptoms, such as slurred speech, double vision, loss of vision, and paralysis.	
8	Migraine	A self-administered questionnaire that assesses the frequency of severe headaches, the level of pain, whether the person is taking medications, and associated complications such as nausea.	
9	Parkinsonism Symptoms	This protocol is a 27-item test that measures the severity of symptoms in resting tremor, resistance to movement, and abnormal gait and posture.	
10	Signs of Essential Tremor	This protocol assesses rest, postural, and kinetic tremor severity. The protocol includes scoring and classification instructions.	
11	Symptoms of Restless Legs Syndrome	This protocol is a 10-item questionnaire that rates the primary features, the intensity and frequency of symptoms, and the impact of the disorder on the patient's quality of life for the most recent 2-week period.	
12	Verbal Memory	This protocol asks the respondent to repeat, from memory, details of a story that is read to him or her. The test can be performed as both an immediate and delayed recall.	
13	Visual Memory	This protocol asks the respondent to draw, from memory, a series of simple images. The test can be performed as both an immediate and delayed recall.	
14	Working Memory	This protocol asks the respondent to repeat back, in forward and reverse order, a series of numbers.	

What Is PhenX?

PhenX is a collaborative, consensus project between RTI International, the National Human Genome Research Institute (NHGRI) of the National Institutes of Health, and the larger research community. The objective of PhenX is to recommend measures with specified measurement protocols that have a high priority for inclusion in genome-wide association studies (GWAS). The consistent use of some measurement protocols across studies will facilitate cross-study comparisons. High-priority measures are, therefore, those measures that are broadly relevant to multiple health outcomes or assessments of health outcomes, although the measures are not focused on differential diagnosis.

Research Domains

The PhenX Steering Committee (SC) chose 21 research domains. A research domain is a field of research with a unifying theme and easily enumerated quantitative and qualitative measures. Working Groups (WGs) of experts in a specific domain were constituted, and they:

- Evaluated the scope of the domain and the broad elements of that scope, and then
- Recommended potential high-priority measures with specific measurement protocols.

These measures were vetted with the larger research community, and final recommendations from the WGs were reviewed by the SC. The primary goal of the project is to collect these recommendations in a Toolkit that will enable scientists to select measures and implement those measures in studies.

For more information on the PhenX project, please visit the project's website at <https://www.phenx.org/>.

Research Area (Domain)	Status	WG Chair(s)	SC Liaison
Alcohol, Tobacco and Other Substances	In Toolkit	Deborah S Hasin	Erin M Ramos
Anthropometrics	In Toolkit	Michele Forman	Michelle Williams
Cancer	In Toolkit	Neil Caporaso and Christine B Ambrosone	Margaret R Spitz
Cardiovascular	In Toolkit	Thomas A Pearson	William R Harlan
Demographics	In Toolkit	Myles Cockburn	Peter Kraft
Diabetes	In Toolkit	Craig L Hanis	William R Harlan
Environmental Exposures	In Toolkit	Lynn R Goldman	Diane Wagener
Gastrointestinal	In Toolkit	David Whitcomb	William R Harlan
Infectious Diseases and Immunity	In Toolkit	Richard Kaslow	Jonathan Haines
Neurology	In Toolkit	Jeffery M Vance	Lindsay A Farrer
Nutrition and Dietary Supplements	In Toolkit	Patrick J Stover	Jose M Ordovas
Ocular	In Toolkit	Janey L Wiggs	Jonathan Haines
Oral Health	In Toolkit	James Beck and Bryan Michalowicz	Mary L Marazita
Physical Activity and Physical Fitness	In Toolkit	Bill Haskell and Rick Troiano	Jose M Ordovas
Psychiatric	In Toolkit	Jordan Smoller and Kenneth Kendler	Carlos N Pato
Psychosocial	In Toolkit	Bernice Pescosolido	Carlos N Pato
Reproductive Health	In Toolkit	Carol Hogue	Michelle Williams
Respiratory	In Toolkit	Edwin K Silverman	Terri H Beaty
Skin, Bone, Muscle and Joint	In Toolkit	Douglas P Kiel	Lindsay A Farrer
Social Environments	In Toolkit	Barbara Entwisle	Peter Kraft
Speech and Hearing	In Toolkit	Cynthia Morton and Mabel Rice	Mary L Marazita