# CHRONIC KIDNEY DISEASE IN CHILDREN COHORT STUDY (CKiD)

# SECTION 13: COGNITIVE DEVELOPMENTAL and BEHAVIORAL MEASURES

# 13.1 OVERVIEW

This section describes the core cognitive developmental and core behavioral procedures (cognitivebehavioral battery) that are to be performed on all children and young-adults enrolled in CKiD. The core cognitive-behavioral battery is comprised of tests measuring cognitive development/IQ, attention, executive function, behavior and health-related quality of life.

**Psychologists should particularly familiarize** themselves with Sections 13.2 through Sections 13.6. Information contained in Sections 13.7 and 13.8 would be useful to read.

**Nephrologists and Nephrology Staff information of critical importance is** located in Sections 13.6 through 13.8. Information contained in Sections 13.2 through Sections 13.5 would be useful to read.

The assessment battery will permit CKiD investigators to evaluate longitudinal changes in cognitive development, behavior functioning and Health-Related Quality of Life (HRQOL) in children and young adults with Chronic Kidney Disease (CKD).

The cognitive-behavioral battery detailed in Sections 13 was constructed to:

- 1. Be in accordance with the neurocognitive findings reported in the available literature on children and adolescents with CKD;
- 2. Be used across the wide age range proposed in this study;
- 3. Be administered in a straightforward fashion;
- 4. Be conducted in a variety of clinical settings;
- 5. Show minimal practice effects with the planned assessment time points.

# **13. 2 ESTIMATED PROFESSIONAL TIME REQUIRED**

Direct assessment of each child will take approximately 1.5 hours of a Psychologist's time. The amount of direct time will vary depending on the age, behavioral status, and health of the child. In addition, it is estimated that there will be another hour required for scoring, data recording, and summarization of findings for the medical chart and parent feedback report.

# 13.3 DESCRIPTION OF CORE COGNITIVE DEVELOPMENTAL and BEHAVIORAL MEASURES

The Core Tests for Cognitive Developmental Assessment:

- Mullen Scales of Early Learning (Mullen Scales) 12 to 29 months
- Wechsler Preschool and Primary Scale of Intelligence Third Edition (WPPSI-III) 30 months through 5 years
- Wechsler Abbreviated Scales of Intelligence Second Edition (WASI II) 6 years and older
- Wechsler Intelligence Scale for Children Fourth Edition (WISC-IV)
  - Digit Span Subtest 6 to 16 years
- Wechsler Intelligence Scale for Children-Integrated
  - Spatial Span Subtest 6 to 16 years

- Wechsler Adult Intelligence Scale Fourth Edition (WAIS-IV) Digit Span Subtest (Forward & Reverse Components ONLY) 17 years and older
- Wechsler Memory Scale Third Edition (WMS-III) Spatial Span Subtest 17 years and older
- Conner's Kiddie Continuous Performance Test (K-CPT) 4 to 5 years
- Conner's' Continuous Performance Test II (CPT-II) 6 years and older
- Delis-Kaplan Executive Function System (D-KEFS) Subtests
  - D-KEFS Tower Subtest 6 years and older
  - D-KEFS Verbal Fluency Subtest 6 years and older
  - D-KEFS Design Fluency Subtest 6 years and older
  - D-KEFS Color-Word Interference Subtest 6 years and older

The Core Tests for Behavioral Assessment:

- Behavior Assessment System for Children 2<sup>nd</sup> Edition (BASC-2) Parent Forms 2 to 21 years
- Behavior Assessment System for Children 2<sup>nd</sup> Edition (BASC-2) Self-Report Form College Version – 21 to 25 years
- Behavior Rating Inventory of Executive Function-Preschool Version-Parent Form (BRIEF-P) 2 to 5 years
- Behavior Rating Inventory of Executive Function-Parent Form (BRIEF) 6 to 18 years
- Behavior Rating Inventory of Executive Function-Adult Version (BRIEF-A) 18 years and older
- Pediatric Quality of Life (PedsQL)-Parent Form 2 to 18 years
- Pediatric Quality of Life (PedsQL)-Self-Report Form 8 to 18 years
- Pediatric Quality of Life (PedsQL)-Young Adult Form 18 years and older

# Table 13.3a: Table of responsibilities

(C)=Child completed (P)=Parent completed	<u>Psychologist</u> <u>Administered</u>	Distributed & collected by Study
(YA)=Young Adult Participant completed		<u>sent to CCC for</u> <u>scoring</u>
	1	1
CHILDREN YOUNGER THAN 6 YRS		
Mullen Scales of Early Learning (Mullen, 12-29 months) (C)	d	
01	Ŷ	
Wechsler Preschool & Primary Scale of Intelligence (WPPSI-III, 30 months-5yrs) (C)		
Connors' Continuous Performance Test: Kiddie version (K-CPT, 4-5 yrs) (C)	٧	
Behavior Assessment System for Children-2 (BASC2-PRS, $\geq 2$ yrs) (P)		N
Pediatric Quality of Life Scale (PedsQL, $\geq 2$ yrs) (P)		٧
Behavior Rating Inventory of Executive Function-Preschool Version (BRIEF-P, 2-5 yrs) (P)		٦
CHILDREN 6 YRS OR OLDER		
Wechsler Abbreviated Scales of Intelligence Second Edition (WASI II) (C,YA)	$\checkmark$	
Wechsler Intelligence Scale for Children Fourth Edition (WISC-IV,6-16 yrs) Digit Span and Spatial Span Subtests (C)	V	
We chsler Adult Intelligence Scale Fourth Edition (WAIS-IV, $\geq$ 17 yrs) Digit Span Subtest (C,YA)	$\checkmark$	
We chsler Memory Scale Third Edition (WMS-III, $\geq 17$ yrs ) Spatial Span Subtest (C,YA)	$\checkmark$	
Connors' Continuous Performance Test (CPT-II) (C)	$\checkmark$	
Delis-Kaplan Executive Function System (D-KEFS) Tower, Verbal Fluency, Design Fluency, Color-Word Interference Subtests (C,YA)	1	
Behavior Assessment System for Children- Parental Rating Scales (BASC2-PRS,) (P)		1
BASC-2 - Self-Report of Personality (BASC2-SRP COL,) (YA)		1
Pediatric Quality of Life Scale (PedsQL) (P,C,YA)		1
Behavior Rating Inventory of Executive Function (P,YA)		1

PARTICIPANT AGE	TESTS	Estimated Assessment Time for Child or Young Adult	Estimated Assessment Time for Parent	Behavioral Coding Sheet	Cognitive Coding Sheet	Quality of Life PedsQL
$\geq$ 12months and < 24months	Mullen Scales (12-29)	25 min		NA	NRCO3a	NA
$\geq$ 24months and < 30 months	Mullen Scales (12-29) BASC-2- Parent (2-5) BRIEF-P (2-5.11) PedsQL-Parent (2-4)	25 min	15 min 25 min 5 min	NRCO4b	NRCO3a	*NRCO1a (Parent, 2-4)
$\geq$ 30 months and < 4 years	WPPSI-III (2.6-3:11) BASC-2- Parent (2-5) BRIEF-P (2-5.11) PedsQL-Parent (2-4)	35 min	15 min 15 min 5 min	NRCO4b	NRCO3b	*NRCO1a (Parent, 2-4)
$\geq$ 4 years and < 5 years	WPSSI-III (4.0-7.3) OR BASC-2- Parent (2-5) BRIEF-P (2-5.11) K-CPT PedsQL-Parent (2-4)	45 min 10min	15 min 15 min 5min	NRCO4b	NRCO3c	*NRCO1a (Parent, 2-4)
$\geq$ 5 years and < 6 years	BASC-2- Parent (2-5) BRIEF-P (2-5.11) K-CPT WPPSI-III (4:0-7:3) PedsQL-Parent (5-7)	10 min 45 min	15 min 15 min 5 min	NRCO4b	NRCO3c	*NRCO1b (Parent, 5-7)
$\geq$ 6 years and < 8 years	BASC-2- Parent (6-11) BRIEF (6-18) CPT-II D-KEFS Subtests WASI II WISC-IV Digit & Spatial Span Subtests PedsOL-Parent (5-7)	15 min 25 min 20 min 10 min	5 min 15 min 5 min	NRCO4c	NRCO3d	*NRCO1b (Parent, 5-7)
$\geq$ 8 years and < 12 years	BASC-2-Parent (6-11) BRIEF (6-18) CPT-II D-KEFS Subtests WASI II WISC-IV Digit & Spatial Span Subtests PedsQL Parent (8-12) PedsQL Child (8-12)	15 min 25 min 20 min 10 min 5min	15 min 15 min 5 min	NRCO4d	NRCO3d	*NRC01d (Parent, 8-12) & *NRCO1e (Child, 8-12)
$\geq$ 12 years and < 13 years	BASC-2-Parent (12-21) BRIEF (6-18) CPT-II D-KEFS Subtests WASI II WISC-IV Digit & Spatial Span Subtests PedsQL Parent (8-12) PedsQL, Child (8-12)	15 min 25 min 20 min 10 min 5 min	15 min 15 min 5 min	NRCO4e	NRCO3d	*NRC01d (Parent, 8-12) & *NRC01e (Child, 8-12)
$\geq$ 13 years and < 17 years	BASC-2-Parent (12-21) BRIEF (6-18) CPT-II D-KEFS Subtests WASI II WISC-IV Digit & Spatial Span Subtests PedsQL Parent (13-18) PedsQL Teen (13-18)	15 min 25 min 20.min 10 min 5 min	15 min 15 min 5 min	NRCO4e	NRCO3d	*NRC01f (Parent, 13-18) & *NRC01g (Teen, 13-18)

# Table 13.3b: CKiD Cognitive/Developmental/Behavioral Tests by Participant Age & Corresponding Data Coding Sheet

PARTICIPANT AGE	TESTS	Estimated Assessment Time for Child or Young Adult	Estimated Assessment Time for Parent	Behavioral Coding Sheet	Cognitive Coding Sheet	Quality of Life PedsQL
$\geq$ 17 years and < 18 years	BASC-2-Parent (12-21) BRIEF (6-18) CPT-II D-KEFS Subtests WASI II WAIS-IV Digit Span Subtest OR WMS-III Spatial Span Subtest PedsQL Parent (13-18) PedsQL Teen (13-18)	15 min 25 min 20 min 5 min 5 min 5 min 5 min	15 min 15 min 5 min	NRC04e	NRC03e	*NRC01f (Parent, 13-18) & *NRCO1g (Teen, 13-18)
$\geq$ 18 years and < 19 years	BASC-2-Parent (12-21) BASC-2-Self report (21-25) BRIEF (6-18) OR BRIEF-A (18+) CPT-II D-KEFS Subtests WASI II WAIS-IV Digit Span Subtest OR WMS-II Spatial Span Subtest PedsQL Parent (13-18) PedsQL Teen (13-18) OR PedsQL Young Adult (18+)	10 min 25 min 20 min 5 min 5 min 5 min 5 min 5 min	15 min 15 min 15 min 15 min	NRC04f	NRC03e	*NRC01f (Parent, 13-18) & *NRC01g (Teen, 13-18) & <u>*NRC01h</u> (Young Adult, <u>18+)</u>
$\geq$ 19 years and < 21 years	BASC-2-Parent (12-21) BASC-2 Self report (21-25) BRIEF (6-18) BRIEF-A (18+) CPT-II D-KEFS Subtests WASI II WAIS-IV Digit Span Subtest OR WMS-III Spatial Span Subtest PedsQL Young Adult (18+)	15 min 15 min 10 min 25 min 20 min 5 min 5 min 5 min	15 min 15 min	NRC04f	NRC03e	<u>*NRC01h</u> (Young Adult, <u>18+)</u>
≥21	BASC-2-Parent (12-21) BASC-2 Self-report (21-25) BRIEF-A (18+) CPT-II D-KEFS Subtests WASI II WAIS-IV Digit Span Subtest WMS-III Spatial Span Subtest PedsQL Young Adult (18+)	15 min 15 min 15 min 25 min 20 min 5 min 5 min 5 min	15 min	NRC04g	NRC03e	<u>*NRC01h</u> (Young Adult, <u>18+)</u>

 Table 13.3b (continued):
 CKiD Cognitive/Developmental/Behavioral Tests by Participant Age & Corresponding Data Coding Sheet

\* Peds QL NEPHRON Data Entry Form

 $\ast$  Peds QL given to youth and parents by study coordinator



Diagram 13.3.a CKiD Cognitive and Development Tests by Chronological Age





# 13.4 TASKS ADMINISTERED BY THE PSYCHOLOGIST

# 13.4.1 Mullen Scales of Early Learning

Children between the ages of 12 months through 29 months will be administered the Mullen Scales of Early Learning. The Mullen Scales of Early Learning is a comprehensive measure of cognitive function for children, from birth to 68 months, so we should have adequate floors and ceilings for the targeted age range. The test generates six age-normed scores: the Gross Motor Scale and four Cognitive Scales (Visual Reception, Fine Motor, Receptive Language, and Expressive Language). An Early Learning Composite Score is generated based on the four Cognitive Scales, and serves as a measure of general development/intelligence. The Mullen is simple to administer for those with early childhood experience and has standardized instructions for each item. Test administration requires a test kit which contains all the necessary items and materials for use during the assessment.

# 13.4.2 Wechsler Preschool and Primary Scale of Intelligence Third Edition (WPPSI-III)

Children between the ages of 2.5 through 5 years, will be administered the Wechsler Preschool and Primary Scale of Intelligence Third Edition (WPPSI-III). The WPPSI-III is a measure of general intelligence that has been thoroughly revised to address issues of developmental sensitivity. The test has two forms: WPPSI-III 2:6-3:11 and WPPSI-III 4:0-7:3. Although the test is applicable for children up to 7 years of age, the WPPSI will be administered for children younger than age 6. The WPPSI-III, for children between the ages of 2 years 6 months through 3 years 11 months, includes four core subtests: Receptive Vocabulary, Information, Block Design, and Object Assembly. The older version of the WPPSI-III, for children between the ages of 4 years through 5 years 11 months, includes seven core subtests: Information, Vocabulary, Word Reasoning, Block Design, Matrix Reasoning, Picture Concepts, and Coding. Both configurations of the WPPSI-III generate composite scores for Verbal IQ, Performance IQ, and Full Scale IQ. Age-based standard scores are generated for all indices.

# 13.4.3 Wechsler Abbreviated Scale of Intelligence Second Edition (WASI II)

Children 6 years of age and older will be administered the Wechsler Abbreviated Scale of Intelligence Second Edition (WASI II). The WASI II is designed as a reliable brief measure of general cognitive functioning, and consists of four subtests. CKiD will use the 2-item WASI-II that includes Vocabulary and Matrix Reasoning. The results from these subtests produce a 2-subtest IQ score. Age-based standard scores are generated for subtests and for the 2-scale IQ.

# 13.4.4 Wechsler Intelligence Scale for Children Fourth Edition (WISC-IV) Digit Span Subtest

The WISC-IV Digit Span Subtest will be administered to all children between the ages of 6 to 16 years. One component of the WISC-IV Digit Span Subtest requires individuals to repeat a sequence of verbally presented numbers forward, and the second component requires the individual to repeat a sequence of verbally presented numbers in reverse order. Age-based standard scores will be generated for the total score, forward and reverse sequences. \*\*\*Permission has been obtained from NCS Pearson, Inc. to create a WISV-IV Digit Span form for use in CKiD.

# 13.4.5 Wechsler Adult Intelligence Scale Fourth Edition (WAIS-IV) Digit Span Subtest

The WAIS-IV Digit Span Subtest requires individuals to repeat verbally presented numbers. Only the forward and reverse components will be administered to all children 17 years of age and older. Sequencing is NOT administered. The subtest will require approximately 5 minutes to administer. Age-based standard scores will be generated for forward and reverse sequences. Total standard scores will NOT be able to be obtained because Sequencing is NOT administered. \*\*\*Permission has been obtained from NCS Pearson, Inc. to create a WAIS-IV Digit Span form for use in CKiD.

# 13.4.6 Conner's Continuous Performance Test Second Edition (CPT-II)

The Conner's Continuous Performance Test Second Edition (CPT-II) will be administered to all children 6 years of age and older. The CPT-II is used to identify visual attention problems manifested in impaired vigilance and impulsive responding. The primary stimuli are letters that are presented to a child on a computer screen. Psychologists must print the test results from the CPT-II computerized program and send to their designated Clinical Coordinating Center along with the other study forms. The test can be administered in approximately 15 minutes and provides information about the child's attention. **The results print out should be sent to CKiD**.

# 13.4.7 Conner's Continuous Performance Test: Kiddie Version (K-CPT)

The Conner's Continuous Performance Test: Kiddie Version (K-CPT) will be administered to all children between the ages of 4 through 5 years. The K-CPT is a computer-conducted test of attention that parallels the Conner's Continuous Performance Test Second Edition (CPT-II) described above. The K-CPT uses picture stimuli instead of letters, requires approximately 7 minutes to complete, and provides information about the child's attention. **The results print out should be sent to CKiD.** 

# 13.4.8 Delis-Kaplan Executive Function System Subtests (D-KEFS)

The D-KEFS consists of nine tests that comprehensively assess the key components of executive functioning. For this study, the following four (4) D-KEFS subtests will be administered to all children ages 6 years and older: Tower, Verbal Fluency, Design Fluency and Color-Word Interference. While the normative sample for the subtests actually begins at 8 years, we will use it for 6 and 7 year olds given the longitudinal nature of many of our CKiD-II research questions. Obviously, age-based standard scores will NOT be generated for 6 and 7 year old age groups but, rather, raw scores will be used to address change in function over time.

# 13.4.9 <u>Wechsler Intelligence Scale for Children Fourth Edition Integrated (WISC-IV-I) Spatial Span</u> <u>Subtest</u>

The WISC-IV Spatial Span Subtest will be administered to all children between the ages of 6 and 16 years. The participant is shown a board of raised blocks. The examiner touches the blocks one at a time, in sequences of increasing length, and the participant is asked to touch the blocks in the same sequence. This subtest includes both forward and backward components. Age-based standard scores will be generated for Spatial Span Forward and Spatial Span Backward.

# 13.4.10 Wechsler Memory Scales Third Edition (WMS-III) Spatial Span Subtest

The WMS-III Spatial Span Subtest will be administered to all participants 17 years of age and older. The participant is shown a board of raised blocks. The examiner touches the blocks one at a time, in sequences of increasing length, and the participant is asked to touch the blocks in the same sequence. This subtest includes both forward and backward components. Age-based standard scores will be generated for Spatial Span Forward and Spatial Span Backward.

Table 13.4a. Of defing motimation for te	sts in the core	Dattery.
Test	Publisher	Estimated Site Cost of purchasing test kit & scoring manual or computer scoring program.
		To ensure uniformity of data collection CKiD has obtained appropriate authorization from each publisher to distribute testing forms to all collaborating sites
Kiddie Conner's Continuous Performance Test (K- CPT)	Pearson	KCPT disk provided by CKiD. Scored by psychologist. SEND computer printout to CKiD.
Conner's Continuous Performance Test-II (CPT-II)	Pearson	CPT disk provided by CKiD. Scored by psychologist. SEND computer printout to CKiD.
Delis-Kaplan Executive Function Systems (D-KEFS) Subtests: Tower, Verbal Fluency, Design Fluency, Color-Word Interference	Pearson	Testing forms provided by CKiD. Scored by psychologist.
Mullen Scales of Early Learning (Mullen)	Pearson	Testing forms provided by CKiD Scored by psychologist
Wechsler Abbreviated Scales of Intelligence Second Edition (WASI II)	Pearson	Testing forms provided by CKiD. Scored by psychologist.
Wechsler Adult Intelligence Scale Fourth Edition (WAIS-IV) Digit Span Subtest	Pearson	Testing forms provided by CKiD. Psychologist administers and scores DS forward and SD backward only. Permission obtained from NCS Pearson to purchase per- person administrations of the Digit Span subtest for CKiD participants. Permission granted for CKiD to photocopy WAIS-IV Digit Span subtest form for use.
Wechsler Intelligence Scale for Children Fourth Edition (WISC-IV Integrated) Digit Span and Spatial Span Subtests	Pearson	Testing forms provided by CKiD. Permission obtained from NCS Pearson, Inc. to purchase per-person administrations of the Digit and Spatial Span subtests for CKiD participants. Permission granted for CKiD to photocopy WISC-IV Digit and WISC-IV I Spatial Span subtest forms for use.
Wechsler Preschool and Primary Scales of Intelligence-III (WPPSI-III)	Pearson	Testing forms provided by CKiD. Scored by psychologist.
Behavior Assessment System for Children (BASC-2) - Parent Rating Scales and Self-report Rating Scales	Pearson	Testing forms provided by CKiD and scored by CKiD.
Behavior Rating Inventory for Executive Functions (BRIEF)	PAR	Testing forms provided by CKiD and scored by CKiD
Behavior Rating Inventory for Executive Functions - Preschool Version (BRIEF-P)	PAR	Testing forms provided by CKiD and scored by CKiD.
Pediatric Quality of Life Scale (Peds QL) - Parent, Child and Young Adult	PedsMetrics	Testing forms provided by CKiD and scored by CKiD.

 Table 13.4a: Ordering information for tests in the core battery.

# **13.5 ADMINISTRATION GUIDELINES**

#### 13.5.1 General Information for Psychologist Administered Tests

Prior to testing at the study visit, the Psychologist should check with the Study Coordinator to determine if the child has any impairment that might interfere with the standard administration of the tests (i.e. Question **C9** and **C10** on the **Medical History Form or F14**). It is crucial for **all personnel** who will test the children with CKD to practice administering and scoring the entire test battery prior to testing a study participant. Familiarity with the administration procedures and the testing materials is essential for achieving reliable assessment results. Some tests require simultaneous administration and scoring; in others, additional attention must be paid to scoring details. All of the tests require specific and rigorous adherence to test-developer instructions to preserve standardization.

All of the neurocognitive tasks used in this protocol are standardized; consequently, administrative scripts are provided. All instructions should be given verbatim, and instructions may be repeated when so indicated in the test manual. The entire age-appropriate neurocognitive screening battery should be completed at each scheduled testing occasion. Sometimes a participant will wish to stop during a test or wish to leave the examination altogether. Use your professional judgment in order to obtain the most valid assessment possible. Indicate the number of testing sessions on the cognitive coding data sheet.

Described below are the reliability codes that will be used to communicate the evaluator's professional judgment about the child's performance. Use the Reliability Coding Worksheet provided by CKiD and then transfer Reliability Codes to the data coding sheet.

Testing should be performed in a quiet room in which environmental distractions have been eliminated or minimized. Every effort should be made to build rapport with the child during the evaluation in order to attain maximal performance. Interruptions during the testing session should be minimized by disconnecting telephones and placing a sign on the door of the examination room indicating that testing is in progress. Appropriate sized table and chairs are required. Because several of the tests are timed, a stopwatch is also necessary. Short "breaks" may be taken to ensure participant cooperation and maximum performance.

Children with poor kidney function tend to fatigue easily. Testing should not be done on a day that the child has undergone non-routine invasive medical procedures, non-invasive medical procedures that the child perceives as disturbing or medical tests involving sedation. The Study Coordinator should be able to facilitate scheduling any procedures that could negatively influence the child's performance on the neurocognitive assessment on an alternate day. While testing would not generally be contraindicated on a day that a child received a venipuncture (as most CKD children become relatively sensitized to routine blood draws), we recommend that testing is not be done on the day that the Iohexol GFR studies are performed.

#### 13.5.2 English Language Issues

If a CKiD participant (between the ages of 8 and older) has learning disabilities or visual problems that prevent independent completion of the self-report surveys, the Reading Assistance Procedure should be used with the child to complete the PedsQL.

In the event that the child speaks Spanish, the CCC will provide Spanish versions of the behavior rating scales if available.

**Reading Assistance Administration Procedure** - The reading assistant (not the parent) should have a copy of the behavioral survey and be seated in a manner that he or she can observe the respondents ability to track items that are being read out loud. The test administrator should read the directions and review the sample questions to assess the respondent's ability to comprehend the response options. The reading assistant should indicate the item number, read the question verbatim, and then ask the respondent to circle the answer of their choice. Care should be taken that the provided reading assistance does not impinge on the respondent's sense of confidentiality.

# 13.5.3 Qualifications of Examiner for Psychologist Administered Tests (cognitive and attention)

For the CKiD Study, we insist that all participants receive their cognitive assessment from a licensed Psychologist or from a trained examiner (i.e., technicians) or graduate student who is being closely supervised by a Licensed Psychologist. Adhering to this recommendation will facilitate quality control/quality assurance of the data obtained for the neurocognitive protocol procedures for each participant.

# 13.5.4 Administration Order for the Psychologist Administered Tests

Given the potential for order effects in the core battery because of fatigue issues associated with chronic kidney disease, and to counterbalance each of the blocks within and across participants, we have organized the tests into two separate blocks. In this way, we can control for any order effects in the battery and provide the examiner with flexibility in the administration of the tests within an assessment block in order to address the needs of difficult-to-evaluate participants. The CCCs are responsible for notifying the clinical site Psychologist of the order in which the blocks of tests are to be administered.

For the youngest of our participants (i.e., ages 12 months through 47 months), blocking is not an issue in that they will be receiving only the Mullen or the WPPSI-III.

For children 4 through 5 years of age, the WPPSI-III and K-CPT will be counterbalanced across study participants and time points. This can be seen in Table 13.5.4a.

For children between the ages of 6 through 16 years, the tests are divided into two blocks (See Table 13.5.4b). Block A will include two subtests of the WASI-II, the WISC-IV Digit Span Subtest and the WISC-IV I Spatial Span Subtest and Block B will include the CPT-II and four D-KEFS Subtests.

For children 17 years of age and older, the tests are divided into two blocks (See Table 13.5.4c). Block A will include two WASI II subtests, the WAIS-IV Digit Span Subtest (Forward and Backward) and the Wechsler Memory Scale Spatial Span Subtest. Block B will include the CPT-II and the four D-KEFS Subtests.

Table 13.5.4d provides the structure for counterbalancing the test block administrations across participants and assessment time points. The blocking order will be determined by the CCC. If you have any questions about the block, contact your CCC Project Director.

### Table 13.5.4a Cognitive test instruments by blocks for children ages 4 to 5.

	Block A	
WPPSI-III		
	Block B	
K-CPT		

Table 13.5.4b Cognitive test instruments by blocks for children ages 6 to 16.

Block A		
WASI II (Vocabulary & Matrix Reasoning Subtests)		
WISC-IV Digit Span Subtest		
WISC-IV-Integrated Spatial Span Subtest		
Block B		
CPT-II		
D-KEFS Tower Subtest		
D-KEFS Design Fluency Subtest		
D-KEFS Verbal Fluency Subtest		
D-KEFS Color-Word Subtest		

# Table 13.5.4c Cognitive test instruments by blocks for children 17 years and older.

Block A		
WASI II (Vocabulary & Matrix Reasoning Subtests)		
WAIS IV Digit Span Subtest (Forward & Backward)		
WMS III Spatial Span Subtest		
Block B		
CPT-II		
D-KEFS Tower Subtest		
D-KEFS Design Fluency Subtest		
DKEFS Verbal Fluency Subtest		
D-KEFS Color-Word Subtest		

Table 13.5.4d Counterbalanced administration of the assessment battery blocks for all age ranges.

Case #	Baseline Neurocognitive Visit Third Neurocognitive Visit, Fifth Neurocognitive Visit	Second Neurocognitive Visit, Fourth Neurocognitive Visit Sixth Neurocognitive Visit
Case #1	Block A then Block B	Block B then Block A
Case #2	Block B then Block A	Block A then Block B
Case #3	Block A then Block B	Block B then Block A
Case #4	Block B then Block A	Block A then Block B
Case #5	Block A then Block B	Block B then Block A
Case #6	Block B then Block A	Block A then Block B
Case 7, 9, 11 & other odd	Block A then Block B	Block B then Block A
numbered cases		
Case 8, 10, 12 & other even numbered cases	Block B then Block A	Block A then Block B

# 13.5.5 Reliability Coding for Psychologist Administered Tests

We will be employing a behavioral coding mechanism that will provide examiner perception of the reliability of the test data collected. This rating will be conducted for each task that is administered and should be completed immediately after the task is completed and recorded on CKiD Reliability Worksheet. The Reliability Code will assist CKiD in determining why a particular task was not administered, and/or if a data point should be marked in the data set because of low reliability. The coding system involves a 2-point code for each task and is described below (e.g., 1.0 for a typical reliable administration).

# 13.5.5.1 Reliability Codes for Each Task

Below is the two-point system to permit a rating for determining the reliability of each task. The reliability code consists of 2 digits. The second digit will capture the reason why the reliability was compromised. The second score would be recorded after the decimal point (e.g., 1.0).

# 13.5.5.2 Reliability Code if an Entire Measure is Not Administered

If an ENTIRE measure was not administered, please use the 2 point reliability code to reflect the reason. Below is the two-point system to permit a rating that specifies the reason why the measure was not administered. The second score is recorded after the decimal point (e.g., 5.1 indicates that the participant attempted the task but was too impaired to complete, primarily related to physical reasons/limitations).

# Primary Codes:

- 1 Standard procedure, Reliable Results
- 2 Irregular Procedure, Reliability Impact Minor (e.g., child tired, but able to complete)
- 3 Irregular Procedure, Unreliable (e.g., child too active, too ill; examiner errors)
- 4 Participant Attempted Participant too Impaired to Complete
- 5 Participant Attempted Examiner Discontinued
- 6 Participant Attempted Refused to Finish
- 7 Participant Refused to Begin
- 8 Not attempted Reason Unrelated to Participant (e.g., examiner forgot, task or measure not available)

# Secondary Codes:

.0 Use this secondary reliability code when standard procedure with adequate reliability or irregular procedure with adequate reliability occurred.

#### OR

- .0 Testing problems not directly related to the patient (e.g., trained examiner not available, improper test administration, procedure not available).
- .1 Testing problems primarily related to physical limitations: injuries or disabilities (not cognitive in nature).
- .2 Testing problems primarily related to cognitive deficit: impairments in cognition, and/or behaviors of the participant.

# The Reliability Recording Worksheet is located in Appendix A.

# 13.6 QUALITY CONTROL OF THE DATA

Data for the first two available cases completed at each clinical site will be reviewed by the regional project Psychologists (Dr. Hooper or Dr. Gerson). The regional Psychologists will communicate any identified errors that necessitate changes to previously entered data to the CCC and to the DCC. Thereafter, for approximately 25% of the sample at baseline and at each of the neurocognitive follow-up visits, the regional Psychologists will review neurocognitive protocol forms to verify administration fidelity and to perform double scoring of the protocol procedures to check the accuracy of translation of raw scores into standardized scores and the transcription of the standardized scores from the procedure protocol forms onto the correct Cognitive Coding Sheet. The regional Psychologist will initially review 2 consecutive protocols from each site to determine error trends and then review a random sample of approximately 20% of the remaining protocols.

In addition to the quality control procedures completed by the regional Psychologists, the DCC will check 10% of the baseline and follow-up visit protocols to assess the reliability of transcription from the correct Cognitive Coding Sheet onto NEPHRON, the web-based data management system. The DCC will also perform quality assurance checks for the behavioral data by checking the accuracy of data entry into the computerized scoring assistants, the transcription of the standardized scores from the computerized print-out onto the correct Behavioral Coding Sheet and the transcription from the Behavioral Coding Sheet onto NEPHRON.

# 13.6.1 Administration and Distribution

It is expected that all sites will have or have access to the testing procedures outlined in this section. If sites do not have specific tests or procedures, then they should contact the CCC to discuss options that will be available to them with respect to this part of the protocol. All reasonable efforts should be made to administer the complete neurocognitive battery to each study participant to ensure completeness of the study data. All testing forms and single-use protocols will be provided by CKiD.

#### 13.6.2 <u>Procedures for Photocopying, Transmission and Storage of Forms Used in Psychologist</u> <u>Administered Tests</u>

All original testing forms must be copied by the site Psychologist OR the site Study Coordinator.

After the forms are photocopied the Study Coordinator will federal express the original forms to their designated CCC for storage. These original data forms will be maintained at the CCCs for future use as needed by the CKiD study staff. Copies of the data forms will be stored according to Institutional Review Board and HIPAA standards at your clinical site and at the discretion of the Licensed Psychologist who is serving as the CKiD neurocognitive protocol site investigator in consultation with the local CKiD study coordinator and local CKiD Pediatric Nephrologist PI. Maintaining a copy of the testing forms at the site is important and among of other things, will allow the Psychologist to review prior testing to determine significant improvement or declines in functioning.

# 13.6.3 Scoring, Data Entry and Feedback Reports

After completing the testing session, each test should be scored by the examiner and the scores recorded onto the age appropriate Cognitive Coding Sheets (NRC03a-NRC03e). The Cognitive Coding Sheets will be provided by the CCCs. Each page of the Cognitive Coding Sheet should be reviewed and initialed by the Licensed Psychologist who has done the testing and/or who has supervised the testing to assert that the testing, data transformations and transcription of the data onto the CKiD study forms meet the standards established by the American Psychological Association regarding psychological assessment procedures. The Cognitive Coding Sheet must be sent to the clinical site's designated CCC with the ORIGINAL neurocognitive forms for data entry. A feedback letter for the participant's Nephrologist (and patient chart documentation of the testing results) and a parent feedback letter should be generated. It is recommended that he feedback reports are completed within 4 weeks of completing the testing.

# Figure 13.6.3a COGNITIVE-DEVELOPMENTAL DATA ENTRY AND FEEDBACK



# 13.7 SURVEYS DISTRIBUTED AND COLLECTED BY NEPHROLOGY STAFF

# 13.7.1 General Information for Distribution of Behavior Rating Scales

# At the Clinical Site:

It is suggested that the behavior rating scales be distributed at the beginning of the study visit by someone from the nephrology team (e.g., the Study Coordinator) and collected from the participant and/or parent prior to the end of the study visit. Some of the rating scales have age-based forms and it will be crucial to ensure that the parent and child are completing the appropriate form for the current age of the child at the TIME OF ASSESSMENT. Some of the assessments are double sided so please make sure that all items have been completed prior to the end of the study visit. Also, the nephrology team member responsible for collecting the behavior rating scales should check for all targeted "alert items" on the BASC-2 PRS using the Behavioral Alert Items Form provided by CKiD. <u>If any of the "critical items" are endorsed</u>, the Study Coordinator must notify the participant's Principal Investigator and/or Nephrologist and FAX the Behavioral Alert form to the CCC Project Director. The clinical site will determine the appropriate follow-up and communicate the follow-up plan to the CCC. The CCC will communicate the alert to the Regional Psychologists for their input. The CKiD study coordinator may choose to contact the CKiD Psychologist who tested the youth for advice regarding how to proceed.

# At the CCC:

The CCC will data enter the behavioral forms into the appropriate scoring assistant programs. **The CCCs should give priority attention to the behavioral forms from CKiD participants who have been identified by their site as having endorsed any of the Behavioral Alert items.** The participant's Nephrologist will not receive feedback about the behavioral questionnaires unless scoring suggests a clinically significant elevation on the BASC-2 Behavior Symptom Index Scale or the Depression Subscale. In the event that the BASC-2 Behavior Symptom Index T score is  $\geq$  70 or the Depression Subscale T-score of  $\geq$ 70, a prompt will appear in NEPHRON stating that the value is out of range. The CCC data entry personnel will override the data entered value and enter the study participant's actual score. The CCC data entry personnel will also provide the CCC Project Director with the agreed upon pages of the generated summary report from the scoring assistant, which reflects a clinically significant problem that was identified during data entry. The CCC is then responsible for notifying the clinical site's CKiD Study Coordinator or PI and providing the generated summary report within a reasonable time period.

#### 13.7.2 <u>Behavior Assessment System for Children-2 Parent Rating Scale and Self-Report of Personality,</u> College Version (BASC-2 PRS & BASC-2 SRP COL)

This Likert-style questionnaire uses parent and young adult participant responses to questions on a variety of topics related to social-behavioral functioning. Age-based T-Scores can be obtained for four general areas: Internalizing, Externalizing, Adaptability, and Behavior Symptoms. Scores are also obtained for twelve subtest areas: Hyperactivity, Aggression, Conduct Problems, Anxiety, Depression, Somatization, Atypicality, Withdrawal, Attention Problems, Adaptability, Social Skills, Leadership, Activities of Daily Living and Functional Communication. If a parent cannot read, then items can be read to the parent using the Reading Assistance Procedure.

# 13.7.3 <u>Review of BASC-2 Parent Rating Scales and Self-Report of Personality, College Version for</u> <u>Endorsement of Alert Items</u>

The BASC-2 Scales contain questions that are considered to be **"alert items"** by the CKiD project staff. The BASC-2 questionnaires need to be reviewed by the nephrology staff person responsible for collecting these inventories immediately after they have been completed by the parent and/or child **AND before the CKiD participant/parent leave.** The Behavioral Alert Items Form will allow for quick identification of the items of interest.

**If any of the critical items are endorsed**, the Study Coordinator will notify the participant's Principal Investigator and/or Nephrologist and FAX the Behavioral Alert form to the clinical site's designated CCC for documentation. The clinical site will determine the method of follow-up. The CKiD study coordinator may choose to contact the CKiD Psychologist who tested the youth for advice regarding how to proceed. **The CCC will communicate the alert to the Regional Psychologists for their input.** 

# 13.7.4 Pediatric Quality of Life Scale (PedsQL)-Parent

The Pediatric Quality of Life Scale (PedsQL) will be administered to the parents of all participants between the ages of 2 through 16 years. The PedsQL is a generic health status instrument that assesses five domains of health (Physical Functioning, Emotional Functioning, Psychosocial Functioning, Social Functioning and School Functioning). Three summary scales (Physical Health, Psychosocial, and Total Summary) are generated during scoring. The inventory should take approximately 5 minutes to complete.

# 13.7.5 Pediatric Quality of Life Scale (PedsQL)-Child

The Pediatric Quality of Life Scale (PedsQL) will be administered to children between the ages of 8 and 18. The PedsQL is a generic health status instrument that assesses five domains of health (Physical Functioning, Emotional Functioning, Psychosocial Functioning, Social Functioning and School Functioning). Three summary scales (Physical Health, Psychosocial, and Total Summary) are generated during scoring. The inventory should take approximately 5 minutes to complete.

# 13.7.6 Pediatric Quality of Life Scale (PedsQL)-Young Adult

The Pediatric Quality of Life Scale (PedsQL) will be administered to participants 18 year old and older. The PedsQL is a generic health status instrument that assesses five domains of health (Physical Functioning, Emotional Functioning, Psychosocial Functioning, Social Functioning and School Functioning). Three summary scales (Physical Health, Psychosocial, and Total Summary) are generated during scoring. The inventory should take approximately 5 minutes to complete.

# 13.7.7 <u>Behavior Rating Inventory for Executive Functions-Preschool Version (BRIEF-P)</u>

The BRIEF-P is a 63-item questionnaire for parents of preschool children between the ages of 2 through 6 that allow for the assessment of a child's executive functions within the context of home and preschool environments. Three clinical scales assess inhibitory self-control, flexibility and emergent metacognition. Two validity scales are also derived to measure excessive negativity and inconsistency of response. Excellent reliability and validity has been demonstrated. It should take approximately 15 minutes to complete.

#### 13.7.8 <u>Behavior Rating Inventory for Executive Functions (BRIEF)</u>

The BRIEF is an 86-item questionnaire for parents of school-age children between the ages of 6 through 18 that allow for the assessment of executive function behaviors (i.e. the ability to initiate and carry out new and goal directed patterns of behavior). It is composed of eight clinical scales (Inhibition, Shift of Set, Emotional Control, Initiation, Working memory, Planning, Organization, Monitoring) and three summary scales (Behavioral regulation, Metacognition and Global Executive Composite). The BRIEF incorporates two validity scales (measuring excessive negativity and inconsistency of responses) and has been shown to have excellent reliability and validity. It should take approximately 15 minutes to complete.

#### 13.7.9 Behavior Rating Inventory for Executive Functions-Adult Version (BRIEF-A)

The BRIEF-A is a standardized measure that captures views of an adult's executive functions or self-regulation in his or her everyday environment. The BRIEF-A is based on the BRIEF and is composed of 75 items within nine non-overlapping theoretically and empirically derived clinical scales (Inhibition, Self-Monitor, Plan/Organize, Shift, Initiate, Task Monitor, Emotional Control, Working Memory and Organization of Materials) that measure various aspects of executive functioning. It should take approximately 15 minutes for a literate participant to complete and participants who are 18 years old and older will complete it.

# 13.7.10 Administration Order of Behavioral Rating Scales

The parent and the child can complete the self-administered behavior rating tools in any order.

# 13.7.11 Checking For Completeness of the Behavioral Rating Scales

A form will be provided to the Study Coordinators to use in making sure that the parent and/or child return all of the self-report surveys prior to receiving their study visit honorarium. It is NOT advised that parents or youth be allowed to take the behavior rating scales home to complete. Each Behavioral Rating forms should be visually scanned after parent's return the form to make sure that all items have been completed. If items have been left blank, the Study Coordinator should encourage the parent and/or child to complete the items to the best of their ability.

# 13.7.12 English Language Issues

If a parent is not literate, or if written English is difficult for a parent, then it is acceptable to read each item to the respondent using the Reading Assistance Administration Procedures described below, or to use a translator for non-English speaking parents

In the event that the parent speaks Spanish, the CCC will provide Spanish versions of the behavior rating scales if available.

**Reading Assistance Administration Procedure** - The reading assistant should have a copy of the survey and be seated in a manner that he or she can observe the parent's ability to track items that are being read out loud. The test administrator should read the directions and review the sample questions to assess the respondent's ability to comprehend the response options. The reading assistant should indicate the item number, read the question verbatim, and then ask the respondent to circle the answer of their choice. Care should be taken that the provided reading assistance does not impinge on the respondent's sense of confidentiality.

# **13.8 QUESTIONS:**

Drs. Hooper, Gerson and Johnson are available to answer questions and assist with protocol implementation.

Stephen R. Hooper, Ph.D.		
Professor and Clinical Neuropsycholog	ist	
Carolina Institute for Developmental D	isabilities, Campus Box # 7255	
University of North Carolina School of	Medicine	
Chapel Hill, NC 27599-7255		
Telephone: 919-966-5171		Fax: 919-966-2230
E-mail: stephen.hooper@cidd.unc.edu.		
Arlene C. Gerson, Ph.D.		
Johns Honking Medical Institutions Di	vision of Padiatric Nanhrology	
Baltimore, Maryland	vision of rediatic hephiology	
Phone: 410-502-8798 (office)	443-827-3175 (cell)	Fax: 410-614-3680
Email: agerson@jhmi.edu		

Rebecca J. Johnson, Ph.D. Assistant Professor, Department of Pediatrics Division of Developmental and Behavioral Sciences Children's Mercy Hospitals and Clinics University of Missouri - Kansas City School of Medicine Kansas City, Missouri Phone: 816-234-3674 Email: rejohnson@cmh.edu

# 13.9 EXAMPLES OF TEMPLATES FOR USE IN PROVIDING FEEDBACK TO NEPROLOGISTS

# Nephrologist FEEDBACK TEMPLATE: Ages >12 to <30 months

To the Nephrologist of \_\_\_\_\_:

On [date of neurocognitive evaluation], as a part of [his/her] participation in the Chronic Kidney Disease in Children (CKiD) study, the following tests were administered by [name of psychologist]:

#### Mullen Scales of Early Learning

Please note that these results were obtained as part of a research study. These results by themselves should not be used to make clinical or educational decisions. A more comprehensive evaluation with a Neuropsychologist is needed to make educational decisions or decisions about mental health needs. A letter describing the test results will be sent to the parent. In keeping with the clinical practice standards of Psychologists the parent feedback will report performance categories (Low Average, Average, Above Average) but not actual test scores. With parental permission the test scores and additional details of the testing results contained in the report below can be released to professionals involved with this child. Feel free to contact the Psychologist listed below if you have questions about this report.

#### Testing Results:

The Mullen Scales of Early Learning is a comprehensive measure of cognitive function for young children. The test generates five scores (Mean =  $50 \pm 10$ ): the Gross Motor Scale and four Cognitive Scales: Visual Reception Scale, Fine Motor Scale, Receptive Language Scale, and Expressive Language Scale. An Early Learning Composite Score (Mean =  $100 \pm 15$ ) is computed based on the four Cognitive Scales and serves as a measure of general development/intelligence.

- **Gross Motor** The items on the Mullen Gross Motor Scale evaluate balance, mobility and motor planning. Gross Motor was in the [Low Average, Average, Above Average] range.
- Visual Reception The items on the Mullen Visual Reception Scale evaluate visual processing skills, spatial organization and visual memory. Visual Reception was in the [Low Average, Average, Above Average] range.
- Fine Motor The items on the Mullen Fine Motor Scale evaluate coordination, visual organization, fine motor planning and fine motor control. Fine Motor was in the [Low Average, Average, Above Average] range.
- **Receptive Language** –The items on the Mullen Receptive Language Scale measure understanding of spoken language, auditory-spatial concepts, memory for commands and general information. Receptive Language was in the [Low Average, Average, Above Average] range.
- **Expressive Language** The items on the Mullen Expressive Language Scale measure ability to use speech to communicate and express ideas, vocabulary skills, abstract thinking, abstract reasoning, auditory memory and comprehension. Expressive Language was in the [Low Average, Average, Above Average] range.
- Early Learning Composite was in the [Low Average, Average, Above Average] range.

	T-Score/Standard Score	Percentile Rank
Gross Motor		
Visual Reception		
Fine Motor		
Receptive Language		
Expressive Language		
Early Learning Composite		

Summary:

# Nephrologist FEEDBACK TEMPLATE: Ages 30 months to <4 years

To the Nephrologist of \_\_\_\_\_:

On [date of neurocognitive evaluation] as a part of his/her participation in the Chronic Kidney Disease in Children (CKiD) study, the following tests were administered by [name of psychologist]:

WPPSI-III (2:6-3:11)

Please note that these results were obtained as part of a research study. These results by themselves should not be used to make clinical or educational decisions. A more comprehensive evaluation with a Neuropsychologist is needed to make educational decisions or decisions about mental health needs. A letter describing the test results will be sent to the parent. In keeping with the clinical practice standards of Psychologists the parent feedback will report performance categories (Low Average, Average, Above Average) but not actual test scores. With parental permission the test scores and additional details of the testing results contained in the report below can be released to professionals involved with this child. Feel free to contact the Psychologist listed below if you have questions about this report.

#### Testing Results:

This version of the Wechsler Preschool and Primary Scale of the Intelligence – Third Edition (WPPSI-III) was designed for children between the ages of 2 years, 6 months through 3 years, 11 months and includes four core subtests (Mean =  $10 \pm 3$ ): Receptive Vocabulary, Block Design, Information, and Object Assembly. Composite scores for Verbal IQ, Performance IQ and Full Scale IQ are generated by combining subtest scores (Mean =  $100 \pm 15$ ).

- **Receptive Vocabulary** The items on the Receptive Vocabulary Subtest measure a child's ability to comprehend verbal instructions, auditory and visual discrimination skills, and auditory memory and auditory processing skills. Receptive Vocabulary was in the [Low Average, Average, Above Average] range.
- **Block Design** The items on the Block Design Subtest measure a child's ability to analyze abstract visual stimuli, nonverbal concept formation skills, visual perception and organization, and visual-motor coordination. Block Design was in the [Low Average, Average, Above Average] range.
- **Information** The items on the Information Subtest measure a child's ability to acquire, retain and retrieve general knowledge. Information was in the [Low Average, Average, Above Average] range.
- **Object Assembly** The items on the Object Assembly Subtest measure a child's visual-perceptual organization, skill in integrating and synthesizing part-whole relationships, and nonverbal reasoning ability. Object Assembly was in the [Low Average, Average, Above Average] range.

The WPPSI-III Verbal IQ (VIQ) is based on comprehension, complex language expression, and connected language. VIQ was in the [Low Average, Average, Above Average] range. The WPPSI-III Performance IQ (PIQ) is based on perceptual analysis and manual manipulation of visual and visual-spatial stimuli. The PIQ was in the [Low Average, Average, Above Average] range. Full Scale IQ was in the [Low Average, Above Average] range.

	Scaled Score/Standard Score	Percentile Rank
Receptive Vocabulary		
Block Design		
Information		
Object Assembly		
Verbal IQ		
Performance IQ		
Full Scale IQ		

Summary:

# Nephrologist FEEDBACK TEMPLATE: Ages $\geq$ 4 to <6 years

To the Nephrologist of \_\_\_\_\_:

On [date of neurocognitive evaluation] as a part of his/her participation in the Chronic Kidney Disease in Children (CKiD) study, the following tests were administered by [name of psychologist]:

WPPSI-III (4:0-7:3) K-CPT

Please note that these results were obtained as part of a research study. These results by themselves should not be used to make clinical or educational decisions. A more comprehensive evaluation with a Neuropsychologist is needed to make educational decisions or decisions about mental health needs. A letter describing the test results will be sent to the parent. In keeping with the clinical practice standards of Psychologists the parent feedback will report performance categories (Low Average, Average, Above Average) but not actual test scores. With parental permission the test scores and additional details of the testing results contained in the report below can be released to professionals involved with this child. Feel free to contact the Psychologist listed below if you have questions about this report.

#### Testing Results

This version of the Wechsler Preschool and Primary Scale of the Intelligence – Third Edition (WPPSI-III) was designed for children between the ages of 4 years through 5 years, 11 months and includes 7 core subtests (Mean =  $10 \pm 3$ ): Block Design, Information, Matrix Reasoning, Vocabulary, Picture Concepts, Word Reasoning and Coding. Composite scores for Verbal IQ, Performance IQ and Full Scale IQ are generated using subtest scores (Mean = $100 \pm 15$ ).

- **Block Design** The items on the Block Design Subtest measure a child's ability to analyze abstract visual stimuli, nonverbal concept formation skills, visual perception and organization, visual-motor coordination, and learning ability. Block Design was in the [Low Average, Average, Above Average] range.
- **Information** The items on the Information Subtest measure a child's ability to acquire, retain and retrieve general knowledge. Information was in the [Low Average, Average, Above Average] range.
- Matrix Reasoning The items on the Matrix Reasoning Subtest measure a child's visual information processing skills and abstract reasoning skills. Matrix Reasoning was in the [Low Average, Average, Above Average] range.
- **Vocabulary** The items on the Vocabulary Subtest measure a child's verbal knowledge, verbal concept formation skills, long-term memory, and language development. Vocabulary was in the [Low Average, Average, Above Average] range.
- **Picture Concepts** The items on the Picture Concepts Subtest measure a child's abstract reasoning ability and categorical reasoning ability. Picture Concepts was in the [Low Average, Average, Above Average] range.
- Word Reasoning The items on the Word Reasoning Subtest measure a child's verbal comprehension skills, reasoning ability, verbal abstraction skills, domain knowledge, and the ability to generate alternative concepts. Word Reasoning was in the [Low Average, Average, Above Average] range.
- **Coding** The Coding Subtest measure a child's short-term memory, learning ability, visual perception, visual-motor coordination, visual scanning ability, cognitive flexibility, attention, and motivation. Coding was in the [Low Average, Average, Above Average] range.

The WPPSI-III Verbal IQ (VIQ) is based on comprehension, complex language expression, and connected language. The VIQ was in the [Low Average, Average, Above Average] range. The WPPSI-III Performance IQ (PIQ) is based on perceptual analysis and manual manipulation of visual and visual-spatial stimuli. The PIQ was in the [Low Average, Average] range. The WPPSI-III Full Scale IQ was in the [Low Average, Average, Above Average] range. The WPPSI-III Full Scale IQ was in the [Low Average, Average, Average] range.

	Scaled Score/Standard Score	Percentile Rank
Block Design		
Information		
Matrix Reasoning		
Vocabulary		
Picture Concepts		
Word Reasoning		
Coding		
Verbal IQ		
Performance IQ		
Full-Scale IQ		

This child was asked to complete the Kiddie Conners' Continuous Performance Test (K-CPT) in order to assess attentional functioning. The K-CPT measures the ability to sustain attention as well as the ability to inhibit impulsive responding. The number of Errors of Omissions (paying attention over time) was in the [Low Average, Average, Above Average] range. The number of Errors of Commissions (impulsive responses) was in the [Low Average, Average, Average, Above Average] range.

	T-Score
Errors of Omissions	
Errors of Commissions	

Summary:

# Nephrologist FEEDBACK TEMPLATE: Ages $\geq 6$ to <18 years

To the Nephrologist of \_\_\_\_\_:

On [date of neurocognitive evaluation] as a part of his/her participation in the Chronic Kidney Disease in Children (CKiD) study, the following tests were administered by [name of psychologist]:

WASI-II Vocabulary Subtest and Matrix Reasoning Subtest CPT-II Digit Span Forward and Backwards Spatial Span Forward and Backwards D-KEFS Subtests (Tower, Verbal Fluency, Design Fluency, Color-Word)

Please note that these results were obtained as part of a research study. These results by themselves should not be used to make clinical or educational decisions. A more comprehensive evaluation with a Neuropsychologist is needed to make educational decisions or decisions about mental health needs. A letter describing the test results will be sent to the parent. In keeping with the clinical practice standards of Psychologists the parent feedback will report performance categories (Low Average, Average, Above Average) but not actual test scores. With parental permission the test scores and additional details of the testing results contained in the report below can be released to professionals involved with this child. Feel free to contact the Psychologist listed below if you have questions about this report.

#### Testing Results

The Wechsler Abbreviated Scale of Intelligence-II (WASI-II) is a brief and reliable measure of general cognitive functioning. Two subtests were administered during this testing (Mean =  $50 \pm 10$ ): Vocabulary and Matrix Reasoning. The results from these subtests also produce a Full Scale IQ (Mean =  $100 \pm 15$ ).

- **Vocabulary** The WASI-II Vocabulary Subtest evaluates a child's verbal knowledge, verbal concept formation, learning ability, long-term memory, and language development. Vocabulary was in the [Low Average, Average, Above Average] range.
- Matrix Reasoning The WASI-II Matrix Reasoning Subtest evaluates a child's visual information processing and abstract reasoning skills. Matrix Reasoning was in the [Low Average, Average, Above Average] range.

The WASI-II Full Scale IQ was in the [Low Average, Average, Above Average] range.

	T-Score/Standard Score	Percentile Rank
Vocabulary		
Matrix reasoning		
Full-2 IQ		

This child was asked to complete the **Conners' Continuous Performance Test (CPT-II)** to assess ability to sustain attention and inhibit impulsive responding. The number of Errors of Omissions (paying attention over time) was in the [Low Average, Average, Above Average] range. The number of Errors of Commissions (impulsive responses) was in the [Low Average, Average, Above Average] range.

	T-Score
Errors of Omissions	
Errors of Commissions	

This child was asked to complete a Wechsler **Digit Span Subtest**. Digit Span Forward provides an estimate of attention and short-term verbal memory. Digit Span Backward provides an estimate of verbal working memory. Digit Span Forward was in the [Low Average, Average, Above Average] range, Digit Span Backward was in the [Low Average, Above Average] range.

This child was asked to complete a Wechsler **Spatial Span Subtest**. Spatial Span Forward provides an estimate of attention and short-term visual memory. Spatial Span Backward provides an estimate of visual working memory. Spatial Span Forward was in the [Low Average, Average, Above Average] range. Spatial Span Backward was in the [Above Average, Average, Low Average] range.

The table below contains scaled scores (mean =  $10 \pm 3$ ) for Digit Span and Spatial Span tasks.

	Scaled Score
Wechsler Digit Span	
Forward	
Backward	
Wechsler Spatial Span	
Forward	
Backward	

This child was asked to complete several subtests of the Delis-Kaplan Executive Function System (D-KEFS)

- The **Tower** task provides an estimate of overall planning and problem solving.
- The Verbal Fluency task provides an estimate of verbal efficiency.
- The **Design Fluency** task provides an estimate of nonverbal efficiency.
- The Color-Word Interference task provides an estimate of set-shifting and inhibitory control.

Specific scaled scores for the D-KEFS tasks are listed below (scaled score mean =  $10 \pm 3$ ).

	Scaled Score
Tower Total Achievement	
Verbal Fluency	
FAS Letter	
Category Fluency	
Category Switching	
Category Switching Total Switching	
Design Fluency Total	
Color-Word Interference	
Inhibition	
Inhibition Switching	

#### Summary:

# Nephrologist FEEDBACK TEMPLATE: Ages $\geq$ 18 years

To the Nephrologist of \_\_\_\_\_:

On [date of neurocognitive evaluation] as a part of his/her participation in the Chronic Kidney Disease in Children (CKiD) study, the following tests were administered by [name of psychologist]:

Wechsler Abbreviated Scale of Intelligence-II (WASI-II) Vocabulary Subtest and Matrix Reasoning Subtest Conners' Continuous Performance Test (CPT-II) Wechsler Digit Span Forward and Backward Wechsler Spatial Span Forward and Backward D-KEFS Subtests (Tower, Verbal Fluency, Design Fluency, Color-Word Interference)

Please note that these results were obtained as part of a research study. These results by themselves should not be used to make clinical or educational decisions. A more comprehensive evaluation with a Neuropsychologist is needed to make educational decisions or decisions about mental health needs. A letter describing the test results will be sent to the parent. In keeping with the clinical practice standards of Psychologists the parent feedback will report performance categories (Low Average, Average, Above Average) but not actual test scores. With parental permission the test scores and additional details of the testing results contained in the report below can be released to professionals involved with this child. Feel free to contact the Psychologist listed below if you have questions about this report.

#### Testing Results:

The Wechsler Abbreviated Scale of Intelligence-II (WASI-II) is a brief and reliable measure of general cognitive functioning. Two subtests were administered during this testing (Mean =  $50 \pm 10$ ): Matrix Reasoning and Vocabulary. The results from these subtests produce a Full Scale IQ (Mean =  $100 \pm 15$ ).

- **Vocabulary** The WASI-II Vocabulary Subtest evaluates verbal knowledge, verbal concept formation, learning ability, long-term memory, and language development. Vocabulary was in the [Low Average, Average, Above Average] range.
- Matrix Reasoning The WASI-II Matrix Reasoning Subtest evaluates visual information processing and abstract reasoning skills. Matrix Reasoning was in the [Low Average, Average, Above Average] range.

The WASI-II Full Scale IQ was in the [Low Average, Average, Above Average] range.

	T-Score/Standard Score	Percentile Rank
Vocabulary		
Matrix reasoning		
Full Scale IQ		

This participant was asked to complete the **Conners' Continuous Performance Test (CPT-II)** to assess ability to sustain attention and inhibit impulsive responding over time. The number of Errors of Omissions (paying attention over time) was in the [Low Average, Average, Above Average] range. The number of Errors of Commissions (impulsive responses) was in the [Low Average, Average, Above Average] range.

	T-Score
Errors of Omissions	
Errors of Commissions	

This participant was asked to complete a Wechsler **Digit Span Subtest**. Digit Span Forward provides an estimate of attention and short-term verbal memory. Digit Span Backward provides an estimate of verbal working memory. Digit Span Forward was in the [Low Average, Average, Above Average] range. Digit Span Backward was in the [Low Average] range.

This participant was asked to complete a Wechsler **Spatial Span Subtest** (Mean =  $10 \pm 3$ ). Spatial Span Forward provides an estimate of attention and short-term visual memory. Spatial Span Backward provides an estimate of

visual working memory. Spatial Span Forward was in the [Low Average, Average, Above Average] range. Spatial Span Backward was in the [Above Average, Average, Low Average] range.

	Scaled Score
Wechsler Digit Span	
Forward	
Backward	
Wechsler Spatial Span	
Forward	
Backward	

This participant was asked to complete several subtests (Mean =  $10 \pm 3$ ) of the Delis-Kaplan Executive Function System (D-KEFS). These tasks provide estimates for several aspects of executive functioning.

The **Tower** task provides an estimate of overall planning and problem solving.

The Verbal Fluency task provides an estimate of verbal efficiency.

The Design Fluency task provides an estimate of nonverbal efficiency.

The Color-Word Interference task provides an estimate of set-shifting and inhibitory control.

	Scaled Score
Tower Total Achievement	
Verbal Fluency	
FAS	
Category Fluency	
Category Switching	
Category Switching Total Switching	
Design Fluency Total	
Color-Word Interference	
Inhibition	
Inhibition Switching	

Summary:

# 13.10 EXAMPLE OF TEMPLATE FOR USE IN PROVIDING FEEDBACK TO YOUNG ADULTS

# FEEDBACK TEMPLATE: YOUNG ADULTS <u>Ages >18 years</u>

Dear \_\_\_\_\_

On [date of neurocognitive evaluation], as a part of your participation in the Chronic Kidney Disease in Children (CKiD) study, the following tests were administered to you by [psychologist name]: WASI-II, CPT-II, WAIS-IV Digit Span Subtest, WMS-III Spatial Span Subtest, and Delis-Kaplan Executive Function System subtests: D-KEFS Tower Test, D-KEFS Design Fluency Test, D-KEFS Verbal Fluency Test, and D-KEFS Color Word Interference Test.

#### Here is some more information about each of the tests and your testing results:

The Wechsler Abbreviated Scale of Intelligence (WASI-II) provides a measurement of your intellectual functioning. You were administered to two subtests of the WASI-II. The Vocabulary score was in the [Low Average, Average, Low Average] range. The Matrix Reasoning score was in the [Low Average, Average, Above Average] When we combine the two subtest scores, we obtain a Full Scale IQ (FIQ) score. The FIQ score was in the [Low Average, Average, Above Average] range.

The Conners' Continuous Performance Test (CPT-II) evaluates various aspects of attention. The CPT-II Omissions subscale measures sustained attention (e.g., paying attention over time). The CPT-II Commissions subscale measures the ability to inhibit impulsive responding (e.g., careful responding, or the ability to "stop" yourself from responding to incorrect letters). Your performance on the CPT-II Errors of Omission was in the [Low Average, Average, Above Average] range. Your performance on the CPT-II Errors of Commission was in the [Low Average, Average, High Average] range.

You completed four parts of the Delis-Kaplan Test (D-KEFS). The D-KEFS Tower test measures planning and problem solving. You were asked to move blue disks, one at time, from one peg to another, using the fewest number of moves, to make them look the same as a picture. On the D-KEFS Tower test, you scored in the [Low Average, Average, Above Average] range.

During the WAIS-IV Digit Span test, you were asked to repeat some numbers, first forward, and then backward. Digits Forward part measures attention. Digits Reversed measures working memory. Digits Forward, was in the [Low Average, Average, Average, High Average] range. Digits Reversed was in the [Low Average, Average, Above Average] range.

You were asked to complete the Wechsler Memory Scales, Third Edition (WMS-III) Spatial Span test. Spatial Span Forward provides an estimate of attention and short-term visual memory. Spatial Span Backward provides an estimate of visual working memory. Spatial Span Forward was in the [Low Average, Average, Above Average] range. Spatial Span Backward was in the [Low Average, Average, Above Average] range.

Please remember that these results were obtained as part of a research study, not as part of a routine visit with a psychologist. You should not use these results by themselves to make clinical or educational decisions. A more in-depth visit with a psychologist is needed if at any time you need to make educational decisions or if you need mental health treatment. Please contact the Psychologist listed below if you have any questions about these test results. A letter describing the test results will be sent to your Nephrologist.

# 13.11 EXAMPLE OF TEMPLATE FOR USE IN PROVIDING FEEDBACK TO PARENTS

# PARENT FEEDBACK TEMPLATE: Ages >12 to <30months

To the Parent/Guardian(s) of \_\_\_\_\_:

On [date of neurocognitive evaluation], as a part of [his/her] participation in the Chronic Kidney Disease in Children (CKiD) study, the Mullen Scales of Early Learning was administered by [name of psychologist].

Please remember that these results were obtained as part of a research study, not as part of a routine visit with a psychologist. You should not use these results by themselves to make clinical or educational decisions about your child. A more in-depth visit with a psychologist is needed if at any time you need to make educational decisions about your child, or if your child needs mental health treatment. Please contact the Psychologist listed below if you have any questions about these test results. A letter describing the test results will be sent to your Nephrologist.

#### Testing Results:

The Mullen Scales of Early Learning is a comprehensive measure of cognitive function for young children. The test generates five scores: the Gross Motor Scale and four Cognitive Scales (Visual Reception, Fine Motor, Receptive Language, and Expressive Language). An Early Learning Composite Score is generated based on the four Cognitive Scales and serves as a measure of general development/intelligence.

- **Gross Motor** The items on the Mullen Gross Motor Scale evaluate a child's balance, mobility and motor planning. Your child's Gross Motor skills were within the [Low Average, Average, Above Average] range.
- **Visual Reception –** The items on the Mullen Visual Reception Scale evaluate a child's visual processing skills, spatial organization and visual memory. Visual reception was in the [Low Average, Average, Above Average] range.
- **Fine Motor** –The items on the Mullen Fine Motor Scale evaluate a child's coordination, visual organization, fine motor planning and fine motor control. Fine- motor skills were within the [Low Average, Average, Above Average] range.
- **Receptive Language –**The items on the Mullen Receptive Language Scale measure a child's understanding of spoken language, auditory-spatial concepts, memory for commands and general information. Receptive language was in the [Low Average, Average, Above Average] range.
- **Expressive Language** The items on the Mullen Expressive Language Scale measure a child's ability to use speech to communicate and express ideas, and a child's vocabulary skills, abstract thinking and reasoning, auditory memory and comprehension. Expressive language was in the [Low Average, Average, Above Average] range.
- Early Learning Composite was in the [Low Average, Average, Above Average] range.

# Summary:

# PARENT FEEDBACK TEMPLATE: Ages <a>>30</a> months to <4 years

To the Parent/Guardian(s) of \_\_\_\_\_:

On [date of neurocognitive evaluation] as a part of his/her participation in the Chronic Kidney Disease in Children (CKiD) study, the following tests were administered by [name of psychologist]:

WPPSI-III (2:6-3:11)

Please remember that these results were obtained as part of a research study, not as part of a routine visit with a psychologist. You should not use these results by themselves to make clinical or educational decisions about your child. A more in-depth visit with a psychologist is needed if at any time you need to make educational decisions about your child, or if your child needs mental health treatment. Please contact the Psychologist listed below if you have any questions about these test results. A letter describing the test results will be sent to your Nephrologist.

#### **Testing Results:**

The Wechsler Preschool and Primary Scale of Intelligence – Third Edition (WPPSI-III,), for children between the ages of 2 years, 6 months and 3 years, 11 months, includes four core subtest scores: Receptive Vocabulary, Block Design, Information, and Object Assembly. Composite scores for Verbal IQ, Performance IQ and Full Scale IQ are derived by combing scores from the subtests.

- **Receptive Vocabulary** The items on the Receptive Vocabulary Subtest measure a child's ability to comprehend verbal instructions, auditory and visual discrimination skills, and auditory memory and auditory processing skills. Receptive Vocabulary was in the [low average, average, Above Average] range.
- Block Design The items on the Block Design Subtest measure a child's ability to analyze abstract visual stimuli, nonverbal concept formation skills, visual perception and organization, visual-motor coordination and learning ability. Block Design was in the [low average, average, Above Average] range.
- Information The items on the Information Subtest measure a child's ability to acquire, to retain and to retrieve general knowledge. Information was in the [low average, average, Above Average] range.
- **Object Assembly –** The items on the Object Assembly Subtest measure a child's visual-perceptual organization, skill in integrating and synthesizing part-whole relationships, nonverbal reasoning ability and trial-and-error learning development. Object Assembly was in the [low average, average, Above Average] range.

The WPPSI-III Verbal IQ (VIQ) is based on comprehension, complex expression, and connected language. VIQ was in the [Low Average, Average, Above Average] range. The WPPSI-III Performance IQ (PIQ) is based on perceptual analysis and manual manipulation of visual and visual-spatial stimuli. PIQ in the [Low Average, Average, Above Average] range. Your child's Full Scale IQ was in the [Low Average, Average, Above Average] range.

# Summary:

# PARENT FEEDBACK TEMPLATE: Ages >4 to <6 years

To the Parent/Guardian(s) of \_\_\_\_\_:

On [date of neurocognitive evaluation] as a part of his/her participation in the Chronic Kidney Disease in Children (CKiD) study, the following tests were administered by [name of psychologist]:

WPPSI-III (4:0-7:3) K-CPT

Please remember that these results were obtained as part of a research study, not as part of a routine visit with a psychologist. You should not use these results by themselves to make clinical or educational decisions about your child. A more in-depth visit with a psychologist is needed if at any time you need to make educational decisions about your child, or if your child needs mental health treatment. Please contact the Psychologist listed below if you have any questions about these test results. A letter describing the test results will be sent to your Nephrologist.

#### Testing Results:

The Wechsler Preschool and Primary Scale of Intelligence – Third Edition (WPPSI-III), for children between the ages of 4 years and 5 years, 11 months, includes 7 core subtests: Block Design, Information, Matrix Reasoning, Vocabulary, Picture Concepts, Word Reasoning, and Coding. The WPPSI-III provides a measurement of your child's intellectual functioning.

- **Block Design** The items on the Block Design Subtest measure a child's ability to analyze abstract visual stimuli, nonverbal concept formation skills, visual perception and organization, visual-motor coordination, and learning ability.
- Information The items on the Information Subtest measure a child's ability to acquire, to retain and to retrieve general knowledge
- **Matrix Reasoning** The items on the Matrix Reasoning Subtest measure a child's visual information processing skills and abstract reasoning skills.
- Vocabulary The items on the Vocabulary Subtest measure a child's verbal knowledge, verbal concept formation skills, learning ability, long-term memory, and language development.
- **Picture Concepts** The items on the Picture Concepts Subtest measure a child's abstract reasoning ability and categorical reasoning ability.
- **Word Reasoning –** The items on the Word Reasoning Subtest measure a child's verbal comprehension skills, reasoning ability, verbal abstraction skills, domain knowledge, and the ability to generate alternative concepts.
- **Coding** The items on the Coding Subtest measure a child's short-term memory, learning ability, visual perception, visual-motor coordination, visual scanning ability, cognitive flexibility, attention, and motivation.

The WPPSI-III Verbal IQ (VIQ) is based on comprehension, complex expression, and connected language. The VIQ score was in the [Low Average, Average, Above Average] range. The WPPSI-III Performance IQ (PIQ) is based on perceptual analysis and manual manipulation of visual and visual-spatial stimuli. The PIQ score was in the [Low Average, Average, Average, Above Average] range. Your child's combined index of the WPPSI-III Full Scale IQ was in the [Low Average, Average, Above Average] range. Average, Above Average] range.

Your child was asked to complete the Kiddie Conners' Kiddie Continuous Performance Test (K-CPT) in order to assess his/her ability to pay attention over time, and stop his/herself from hitting a button when he/she is told not to. The number of Omissions was in the [Low Average, Average, Above Average] range. The number of Commissions was in the [Low Average, Average, Above Average] range.

# Summary:

# PARENT FEEDBACK TEMPLATE: Ages <a>6</a> to <18 years

To the Parent/Guardian(s) of \_\_\_\_\_:

On [date of neurocognitive evaluation] as a part of his/her participation in the Chronic Kidney Disease in Children (CKiD) study, the following tests were administered by [name of psychologist]:

WASI-II Vocabulary Subtest and Matrix Reasoning Subtest CPT-II Wechsler Digit Span Forward and Backward Wechsler Spatial Span Forward and Backward D-KEFS Subtests (Tower, Verbal Fluency, Design Fluency, Color-Word Interference)

Please remember that these results were obtained as part of a research study, not as part of a routine visit with a psychologist. You should not use these results by themselves to make clinical or educational decisions about your child. A more in-depth visit with a psychologist is needed if at any time you need to make educational decisions about your child, or if your child needs mental health treatment. Please contact the Psychologist listed below if you have any questions about these test results. A letter describing the test results will be sent to your Nephrologist.

#### Testing Results:

The Wechsler Abbreviated Scale of Intelligence-II (WASI-II) is a brief and reliable measure of general cognitive functioning. Two subtests were administered during this testing: Vocabulary and Matrix Reasoning. The results from these subtests produce a two-subtest Full Scale IQ.

- **Vocabulary –** The WASI-II Vocabulary Subtest evaluates verbal knowledge, verbal concept formation, learning ability, long-term memory, and language development.
- **Matrix Reasoning –** The WASI-II Matrix Reasoning Subtest evaluates visual information processing and abstract reasoning skills.

The WASI-II Full Scale IQ score was in the [Low Average, Average, Above Average] range.

Your child was asked to complete the **Conners' Continuous Performance Test (CPT-II)** in order to assess his/her ability to pay attention over time, and inhibit (or stop) impulsive responding (in other words, to not hit a button when instructed not to do so). The number of Omissions placed was in the [Low Average, Average, Above Average] range. The number of Commissions was in the [Low Average, Average, Above Average] range.

Your child was asked to complete a Wechsler **Digit Span Subtest**. Digit Span Forward provides an estimate of attention and short-term verbal memory. The Digit Span Forward score was in the [Low Average, Average, Above Average] range. The Digit Span Backward score was in the [Low Average range, Average, Above Average] range.

Your child was asked to complete a Wechsler **Spatial Span Subtest** .Spatial Span Forward provides an estimate of attention and short-term visual memory. Spatial Span Backward provides an estimate of visual working memory. The Spatial Span Forward was in the [Low Average, Average, Above Average] range. The Spatial Span Backward was in the [Above Average, Average, Low Average] range.

Your child was asked to complete several subtests of the Delis-Kaplan **Executive Function System (D-KEFS).** These tasks provide estimates for several aspects of executive functioning.

- The Tower task provides an estimate of overall planning and problem solving
- The Verbal Fluency task provides an estimate of verbal efficiency. D-KEFS
- The Design Fluency task provides an estimate of nonverbal efficiency. D-KEFS
- The **Color-Word Interference** task provides an estimate of set-shifting and inhibitory control.

# Summary:

#### APPENDIX A. Reliability Recording Coding Worksheet

#### CKiD Neurocognitive Protocol Reliability Recording Worksheet: KID#\_\_\_\_\_, Date of Testing\_

	Primary Reliability Code	Secondary Reliability Code
	1 – Standard procedure, Reliable Results	.0 - Use this secondary reliability code when standard
	2 - Irregular Procedure, Reliability Impact Minor	procedure with adequate reliability OR irregular procedure
NOTE: This should be completed and	(e.g., child tired, but able to complete task )	with adequate reliability occurred.
transcribed to the appropriate Cognitive-	3 – Irregular Procedure, Unreliable (e.g., child	or
Developmental Data Coding Sheet.	too active, too ill; too tired, examiner errors)	<ul> <li>.0 – Testing problem not directly related to the patient (e.g.,</li> </ul>
	4 – Participant Attempted – Participant too	trained examiner not available, improper test
	Impaired to Complete	administration, procedure not available).
	5 – Participant Attempted - Examiner	
	Discontinued	<ul> <li>1 – Testing problems primarily related to physical limitations,</li> </ul>
	6 – Participant Attempted - Refused to Finish	injuries or disabilities of the participant (not cognitive in
	7 – Participant Refused to Begin	nature)
	8 – Not attempted - Reason UNRELATED to	<ul> <li>2 – Testing problems primarily related to cognitive deficits or</li> </ul>
	Participant (e.g., examiner forgot, procedure	impairments in cognition, and/or behaviors of the
	not available)	participant.
MULLEN		
Gross Motor	1 2 3 4 5 6 7 8	.0 .1 .2
Visual Reception	1 2 3 4 5 6 7 8	.0 .1 .2
Fine-Motor	1 2 3 4 5 6 7 8	.0 .1 .2
Receptive Language	1 2 3 4 5 6 7 8	.0 .1 .2
Expressive Language	1 2 3 4 5 6 7 8	.0 .1 .2
Early Learning Composite		
WPPSI-III (younger)	Primary Reliability Code	Secondary Reliability Codes
Receptive Vocabulary	1 2 3 4 5 6 7 8	.0 .1 .2
Block Design	1 2 3 4 5 6 7 8	.0 .1 .2
Information	1 2 3 4 5 6 7 8	.0 .1 .2
Object Assembly	1 2 3 4 5 6 7 8	.0 .1 .2
WPPSI-III (older)	Primary Reliability Code	Secondary Reliability Codes
Block Design	1 2 3 4 5 6 7 8	.0 .1 .2
Information	1 2 3 4 5 6 7 8	.0 .1 .2
Matrix Reasoning	1 2 3 4 5 6 7 8	.0 .1 .2
Vocabulary	1 2 3 4 5 6 7 8	.0 .1 .2
Picture Concepts	1 2 3 4 5 6 7 8	.0 .1 .2
Word Reasoning	1 2 3 4 5 6 7 8	.0 .1 .2
Coding	1 2 3 4 5 6 7 8	.0 .1 .2
К-СРТ	Primary Reliability Code	Secondary Reliability Codes
Overall Reliability	1 2 3 4 5 6 7 8	.0 .1 .2

#### CKiD Neurocognitive Protocol Reliability Recording Worksheet: KID #:\_\_\_\_\_

#### Date of Testing:

	Primary Reliability Code					ty Co	de	7.57	Secondary Reliability Code
	1 – Standard procedure, Reliable Results				able F	Resu	lts	.0 - Use this secondary reliability code when standard	
	2 - Irregular Procedure, Reliability Impact Minor				ability	Imp	act Minor	procedure with adequate reliability OR irregular	
	(e.g., child tired, but able to complete task)				to cor	mple	te task )	procedure with adequate reliability occurred.	
	3 – Irregu	Ilar Pr	roced	dure,	Unre	liable	(e.g	1., child	0 – Testing problem not directly related to the nationt
	too ac	tive, i	too il	II; too	tirec	i, exa	mine	er errors)	(e.g., trained examiner not available, improper test
	4 - Partic Impair	red to	Attel	nplet	:a – F 'e	artici	pant	100	administration, procedure not available).
	5 - Partic	ipant	Atter	mpte	d - E	xamir	ier		24.5
	Disco	ntinue	ed	- P.co			100		.1 - Testing problems primarily related to physical
	6 - Partic	ipant	Atter	mpte	d - R	efuse	d to	Finish	limitations, injuries or disabilities of the participant
	7 - Partic	ipant	Refu	used	to Be	gin			(not cognitive in nature).
	8 - Not at	temp	ted -	Rea	ison L	JNRE	LAT	ED to	.2 - Testing problems primarily related to cognitive
	Partic	ipant	(e.g.	, exa	amine	er forg	ot, p	rocedure	deficit: impairments in cognition, and/or behaviors
WASH	not av	ailabl	le)						of the participant
Vocabulary	1	2	3	4	5	6	7	8	.0 .1 .2
Matrix reasoning	1	2	3	4	5	6	7	8	.0 .1 .2
CPT-II		Prin	nary	Reli	iabilit	ty Co	de		Secondary Reliability Codes
Overall Reliability	1	2	3	4	5	6	7	8	.0 .1 .2
WISC-IV DIGIT SPAN OR WAIS-IV DIGIT SPAN		Prin	nary	Reli	iabilit	ty Co	de		Secondary Reliability Codes
Digit Span Forward	1	2	3	4	5	6	7	8	.0 .1 .2
Digit Span Backward	1	2	3	4	5	6	7	8	.0 .1 .2
WISC-IV Integrated OR WMS-III		Prin	nary	Rel	iabilit	ty Co	de		Secondary Reliability Codes
Spatial Span Forward	1	2	3	4	5	6	7	8	.0 .1 .2
Spatial Span Backward	1	2	3	4	5	6	7	8	.0 .1 .2
D-KEFS Subtests		Prin	nary	Rel	iabilit	ty Co	de		Secondary Reliability Codes
Tower	1	2	3	4	5	6	7	8	.0 .1 .2
Verbal Fluency: FAS Letter Fluency	1	2	3	4	5	6	7	8	.0 .1 .2
Verbal Fluency: Category Fluency	1	2	3	4	5	6	7	8	.0 .1 .2
Verbal Fluency: Category Switching	1	2	3	4	5	6	7	8	.0 .1 .2
Design Fluency: Fill Dots	1	2	3	4	5	6	7	8	.0 .1 .2
Design Fluency: Empty Dots	1	2	3	4	5	6	7	8	.0 .1 .2
Design Fluency: Switching	1	2	3	4	5	6	7	8	.0 .1 .2
Color-Word Interference: Color Naming	1	2	3	4	5	6	7	8	.0 .1 .2
Color-Word Interference: Word Reading	1	2	3	4	5	6	7	8	.0 .1 .2
Color-Word Interference: Inhibition	1	2	3	4	5	6	7	8	.0 .1 .2
Color-Word Interference: Inhibition/Switching	1	2	3	4	5	6	7	8	.0 .1 .2