CHILDREN'S ONCOLOGY GROUP

ALTE07C1

Neuropsychological, Social, Emotional, and Behavioral Outcomes in Children with Cancer

A Groupwide Non-Therapeutic Study

THIS PROTOCOL IS FOR RESEARCH PURPOSES ONLY, AND SHOULD NOT BE COPIED, REDISTRIBUTED OR USED FOR ANY OTHER PURPOSE.

STUDY CHAIR
Leanne Embry Segovia, PhD
Behavioral Science
University of Texas Health Science Center at San Antonio
Pediatric Hem/Onc
CSRCH - 8th Floor
333 N. Santa Rosa Street
San Antonio, TX 78207
Phone: (210) 704-2987
Fax: (210) 704-2396
E-mail: SegoviaL@uthscsa.edu

For Statistics and Data Center Contact Person see: http://members.childrensoncologygroup.org
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDY COMMITTEE</td>
<td>3</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>5</td>
</tr>
<tr>
<td>EXPERIMENTAL DESIGN SCHEMA</td>
<td>6</td>
</tr>
<tr>
<td>1.0 SPECIFIC AIMS</td>
<td></td>
</tr>
<tr>
<td>1.1 Primary Aim</td>
<td>7</td>
</tr>
<tr>
<td>2.0 BACKGROUND AND RATIONALE</td>
<td></td>
</tr>
<tr>
<td>2.1 Neuropsychological and Behavioral Effects of Cancer Treatment</td>
<td>7</td>
</tr>
<tr>
<td>2.2 Previous Difficulties with Neuropsychological and Behavioral Assessment</td>
<td>7</td>
</tr>
<tr>
<td>2.3 Significance</td>
<td>8</td>
</tr>
<tr>
<td>3.0 ENROLLMENT PROCEDURES AND ELIGIBILITY CRITERIA</td>
<td></td>
</tr>
<tr>
<td>3.1 Study Enrollment</td>
<td>9</td>
</tr>
<tr>
<td>3.2 Patient Eligibility Criteria</td>
<td>9</td>
</tr>
<tr>
<td>4.0 MATERIALS AND METHODS</td>
<td></td>
</tr>
<tr>
<td>4.1 Quality Control</td>
<td>10</td>
</tr>
<tr>
<td>4.2 Required Procedures</td>
<td>10</td>
</tr>
<tr>
<td>4.3 Standardized Timepoints</td>
<td>14</td>
</tr>
<tr>
<td>4.4 Data Handling</td>
<td>15</td>
</tr>
<tr>
<td>4.5 Equipment and Space</td>
<td>15</td>
</tr>
<tr>
<td>4.6 Neuropsychological and Behavioral Assessment Compliance</td>
<td>15</td>
</tr>
<tr>
<td>STATISTICAL CONSIDERATIONS</td>
<td>16</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>17</td>
</tr>
<tr>
<td>APPENDIX I: ADMINISTRATION ORDER FOR COG STANDARD NEUROPSYCHOLOGICAL AND BEHAVIORAL BATTERY</td>
<td>18</td>
</tr>
<tr>
<td>APPENDIX II: RED FLAG ITEMS</td>
<td>21</td>
</tr>
<tr>
<td>APPENDIX III: ADMINISTRATION PROCEDURES FOR THE COG STANDARD NEUROPSYCHOLOGICAL AND BEHAVIORAL BATTERY</td>
<td>22</td>
</tr>
<tr>
<td>APPENDIX IV: NEUROPSYCHOLOGICAL AND BEHAVIORAL ASSESSMENT COMPLIANCE WORKSHEET</td>
<td>35</td>
</tr>
<tr>
<td>APPENDIX V: YOUTH INFORMATION SHEETS</td>
<td>36</td>
</tr>
<tr>
<td>SAMPLE RESEARCH INFORMED CONSENT/PARENTAL PERMISSION FORM</td>
<td>38</td>
</tr>
</tbody>
</table>
STUDY COMMITTEE

STUDY CHAIR
Leanne Embry Segovia, PhD
Behavioral Science
University of Texas Health Science Center at San Antonio
Pediatric Hem/Onc
CSRCH - 8th Floor
333 N. Santa Rosa Street
San Antonio, TX 78207
Phone: (210) 704-2987
Fax: (210) 704-2396
E-mail: SegoviaL@uthscsa.edu

STUDY COMMITTEE MEMBERS
Bartlett Moore, PhD
Behavioral Science
M.D. Anderson Cancer Center
Division of Pediatrics Box 87
1515 Holcombe Blvd
Houston, TX 77030
Phone: (713) 794-4066
Fax: (713) 792-0608
E-mail: bmoore@mdanderson.org

Christopher Durant Turner, MD
Hematology/Oncology
Dana-Farber Cancer Institute and Children's Hosp
Pediatic Oncology
44 Binney Street, G331A
Boston MA 02115
Phone: (617) 632-4386
Fax: (617) 632-4897
E-mail: christopher_turner@dfci.harvard.edu

Nina Singh Kadan-Lottick, MD, MSPH
Hematology/Oncology
Yale University School of Medicine
Section of Pediatric Hem/Onc
333 Cedar Street, LMP 2073
P O Box 208064
New Haven, CT 06520-8064
Phone: (203) 785-4640
Fax: (203) 737-2228
E-mail: Nina.Kadan-Lottick@yale.edu

Smita Bhatia, MD, MPH
Hematology/Oncology
City of Hope National Medical Center
Professor and Chair
Population Sciences
1500 East Duarte Road / DPS 173
Duarte, CA 91010-3000
Phone: (626) 471-7321
Fax: (626) 930-5387
E-mail: sbhatia@coh.org

STUDY VICE CHAIR
Paul Fisher, MD
Neurology
Standard University Medical Center
Stanford Advanced Medicine Center
875 Blake Wilbur Drive, Room CC2220
Palo Alto, CA 94305
Phone: (650) 725-8630
Fax: (650) 498-4686
E-mail: pfisher@stanford.edu

STUDY VICE CHAIR
Lu Chen, PhD
Statistics
Children’s Oncology Group – Operations Center
440 E Huntington Drive, 4th Floor
Arcadia, CA 91006
Phone: (626) 241-1520
Fax: (626) 445-4334
E-mail: lchen@childrensoncologygroup.org

STUDY STATISTICIAN
Robert Noll, PhD
Behavioral Science
Children's Hospital of Pittsburgh
Child Development Unit
3705 Fifth Ave.
Pittsburgh, PA 15217
Phone: (412) 692-6530
Fax: (412) 692-5679
E-mail: robert.noll@chp.edu

STUDY STATISTICIAN
Nina Singh Kadan-Lottick, MD, MSPH
Hematology/Oncology
Yale University School of Medicine
Section of Pediatric Hem/Onc
333 Cedar Street, LMP 2073
P O Box 208064
New Haven, CT 06520-8064
Phone: (203) 785-4640
Fax: (203) 737-2228
E-mail: Nina.Kadan-Lottick@yale.edu

Christopher Durant Turner, MD
Hematology/Oncology
Dana-Farber Cancer Institute and Children's Hosp
Pediatic Oncology
44 Binney Street, G331A
Boston MA 02115
Phone: (617) 632-4386
Fax: (617) 632-4897
E-mail: christopher_turner@dfci.harvard.edu

Smita Bhatia, MD, MPH
Hematology/Oncology
City of Hope National Medical Center
Professor and Chair
Population Sciences
1500 East Duarte Road / DPS 173
Duarte, CA 91010-3000
Phone: (626) 471-7321
Fax: (626) 930-5387
E-mail: sbhatia@coh.org
STUDY COMMITTEE MEMBERS
Stephen A. Sands, PhD
Behavioral Science
Columbia Presbyterian College of Phys & Surgeons
161 Fort Washington Avenue
IP7
New York NY 10032
Phone:  (212) 305-3649
Fax:  (212) 305-5848
E-mail: ss2341@columbia.edu

Patricia McGuire Cullen, PhDc, RN, CPNP
Nursing
Children's Oncology Group - Operations Center
Regis University: Dept of Nursing
3333 Regis Blvd: G-8
Denver, CO 80221-1099
Phone:  (303) 964-5132
Fax:  (303) 964-5325
E-mail: pcullen@regis.edu

Robert Annett, PhD
Behavioral Science
University of New Mexico School of Medicine
Pediatrics
Albuquerque, NM 87131
Phone:  (505) 272-5551
Fax:  (505) 272-6845
E-mail: rdannett@unm.edu

Kathleen Meeske, RN
Nursing
Children’s Hospital Los Angeles
Hem-One
4650 Sunset Blvd. MS54
Los Angeles, CA 90027
Phone:  (323) 361-2194
Fax:  (323) 664-5512
E-mail: kmeeske@chla.usc.edu

RESEARCH COORDINATOR
Gwen Hartley
Children's Oncology Group – Operations Center
440 E. Huntington Drive
Arcadia, CA 91006
Phone:  (626) 241-1539
Fax:  (626) 445-4334
E-mail: ghartley@childrensoncologygroup.org

PROTOCOL COORDINATOR
Chris Williams-Hughes
Children’s Oncology Group – Operations Center
5312 W. Roxbury Place
Littleton, CO 80128
Phone:  (303) 904-8527
Fax:  (303) 904-8407
E-mail: crhughes@qadas.com

PROTOCOL/SCIENTIFIC WRITER
Shari Mills, PhD
Senior Medical Writer
Children’s Oncology Group – Operations Center
E-mail: smills@childrensoncologygroup.org

Margaret Lewis
Clinical Research Associate
University of Texas Health Science Center at San Antonio
Pediatric Hem/Onc Room 8208
333 N. Santa Rosa Street
San Antonio, TX 78207
Phone:  (210) 704-2028
Fax:  (210) 704-2396
E-mail: lewism1@uthscsa.edu

For Group Operations (GOC) and
Statistics and Data Center (SDC) contacts see:
http://members.childrensoncologygroup.org
Telephone:  (626) 447-0064
The Children's Oncology Group has received a Certificate of Confidentiality from the federal government, which will help us protect the privacy of our research subjects. The Certificate protects against the involuntary release of information about your subjects collected during the course of our covered studies. The researchers involved in the studies cannot be forced to disclose the identity or any information collected in the study in any legal proceedings at the federal, state, or local level, regardless of whether they are criminal, administrative, or legislative proceedings. However, the subject or the researcher may choose to voluntarily disclose the protected information under certain circumstances. For example, if the subject or his/her guardian requests the release of information in writing, the Certificate does not protect against that voluntary disclosure. Furthermore, federal agencies may review our records under limited circumstances, such as a DHHS request for information for an audit or program evaluation or an FDA request under the Food, Drug and Cosmetics Act.

The Certificate of Confidentiality will not protect against mandatory disclosure by the researchers of information on suspected child abuse, reportable communicable diseases, and/or possible threat of harm to self or others.

ABSTRACT

Neuropsychological and behavioral assessments are a crucial component of monitoring for late effects in patients being treated, normally quite aggressively, for cancer. This is especially true for patients that are exposed to potentially neurotoxic therapies. However, lack of compliance with assessment schedules, variations in assessment schedules and neuropsychological measures utilized across studies, as well as overly complex and long neuropsychological assessments have proved to be problematic to the assessment process within the Children’s Oncology Group (COG). In order to remediate these problems, a streamlined and standardized neuropsychological and behavioral assessment battery has been developed. The COG Standard Neuropsychological and Behavioral Battery is a focused assessment of critical functional domains that have been empirically shown to be most affected by childhood cancer, its treatment, or other disease-related factors. This battery was designed to provide a brief measure of neuropsychological and behavioral function in order to strike a balance between research goals, the clinical needs of the patient, and time constraints on the institutional neuropsychologist/psychologist. The battery of tests will take only about 1 hour to administer and all patients will be tested at 3 standardized timepoints. Parent-completed questionnaires will also be utilized to gather information about the patient’s function, specifically in terms of attention, memory, executive abilities, and behavioral/social/emotional adaptation.
EXPERIMENTAL DESIGN SCHEMA

Patient is enrolled on ACNS0331 or ACNS0332 that aims to assess neuropsychological, social, emotional, or behavioral functioning.

- Patient enrolls on ALTE07C1
- Neuropsychological/Behavioral Assessment #1
  9 months (± 3 months) post cancer diagnosis
- Neuropsychological/Behavioral Assessment #2
  30 months (± 3 months) post cancer diagnosis
- Neuropsychological/Behavioral Assessment #3
  60 months (± 3 months) post cancer diagnosis
1.0 SPECIFIC AIMS
To utilize a standardized battery of age-appropriate neuropsychological and behavioral tests in conjunction with COG Phase III clinical trials to evaluate cognitive, social, emotional, and behavioral functioning over time.

1.1 Primary Aim
To institute procedures to ensure a consistent, streamlined, and efficient administration of the neuropsychological/behavioral tests in a cooperative group setting in order to maximize compliance with a standardized assessment battery conducted at 3 standardized timepoints.

2.0 BACKGROUND AND RATIONALE
As improved cancer treatments have increased rates of survival among children with cancer, attention to lasting effects of the cancer and its treatment has grown. Understanding late effects of cancer and its treatment is crucial for devising cancer treatments with decreased impact on patient quality of life and/or creating supplemental treatments for cancer survivors that diminish or overcome treatment-related impairments.

2.1 Neuropsychological and Behavioral Effects of Cancer Treatment
Neurocognitive effects of cancer treatment are most common in patients with brain tumors and acute lymphoblastic leukemia (ALL), but are also seen with stem cell transplantation and treatment for acute myelogenous leukemia (AML) and non-Hodgkin lymphoma (NHL).1-2 Cancer treatments that target the central nervous system (CNS), including cranial radiation therapy (CRT) and intrathecal chemotherapy, and their effects on neuropsychological functioning have a significant impact on patients’ lives. Although both cancer treatments and neuropsychological assessment techniques have become more sophisticated over time, research studies over the last several decades have shown negative effects of cancer treatment aimed at the CNS.3 Studies have consistently revealed deficits with the following functions: complex psychomotor skills, visual-motor integration, attention and concentration, visual-spatial processing and memory, and nonverbal reasoning.4 Furthermore, common findings were that the impairments often gradually appeared over several years and that younger age during treatment was associated with greater treatment-related impairments.4 In several studies, gender differences in cancer treatment-related impairment have also been reported. In these studies, greater neuropsychological impairment was associated with being female.1,3 It may be too early to draw conclusions regarding social and behavioral functioning of children being treated for cancer as many studies have not sufficiently controlled for potentially confounding variables.4 Many studies have found an association between cancer treatment and poorer social adjustment with peers and emotional well-being, however, a recent study comparing all children being treated for cancer in one geographic region with a race-, gender-, and age-matched child revealed no differences in emotional function between the 2 groups and better social function among the children being treated for cancer.5

The pattern of deficits observed in patients treated for cancer has led researchers to suspect that patients’ white matter was being affected by the CNS-directed cancer treatments.3,4 Several studies have confirmed the damage of white matter following cancer treatments targeting the CNS.6-9 And although treatment impairments in children with cancer are primarily a result of chemotherapy and radiation therapy, in the case of brain tumor patients, there can also be impairment due to the tumor itself.

2.2 Previous Difficulties with Neuropsychological and Behavioral Assessment
Despite the critical need to monitor for the consequences of cancer treatments to patients’ neuropsychological and behavioral functioning, accrual of patient data pertaining to neuropsychological and behavioral assessment has been a problem in the cooperative group setting. In an effort to improve matters, the Behavioral Science committee examined the existing assessment approach. A number of difficulties with the assessment approach were identified and corrective steps were recommended (see Table 1 below). Consequently, a new streamlined and standardized neuropsychological and behavioral assessment battery
has been developed. Moreover, the battery administration time and the amount of scores to be retained have been reduced and a set of 3 standard assessment time points have been determined. Additional measures to improve patient data accrual include up-front attainment of institutional principal investigator and neuropsychologist/psychologist study commitment, utilization of common assessment tools, and development of a loan mechanism to make assessment tools available to institutions as necessary.

Table 1. Neuropsychological Assessment Problems Identified and Proposed Solutions

<table>
<thead>
<tr>
<th>Problems</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Excessive number of required tests</td>
<td>• Reduce length of assessment battery to approximately 1 hour.</td>
</tr>
<tr>
<td></td>
<td>• Concentrate the assessment battery on specific functional domains: intelligence, attention, memory, executive function.</td>
</tr>
<tr>
<td>2. Case report forms (CRFs) too complex</td>
<td>• Reduce number of data scores on the CRFs to most essential.</td>
</tr>
<tr>
<td>3. Timing of exams not coinciding with clinical need</td>
<td>• Establish assessment timepoints that have clinical and research relevance.</td>
</tr>
<tr>
<td>4. Differing timepoints and test batteries at different age cutoffs</td>
<td>• Standard and age-appropriate tests to be employed.</td>
</tr>
<tr>
<td></td>
<td>• Assessment timing to be standardized.</td>
</tr>
<tr>
<td>5. Lack of test availability</td>
<td>• Use the latest versions of the most common tests available.</td>
</tr>
<tr>
<td></td>
<td>• Develop a central loan mechanism for those that do not have specific tests on site.</td>
</tr>
<tr>
<td>6. Lack of consistency between research and clinical test battery</td>
<td>• Improve assessment battery with purpose of simultaneously achieving clinical and research goals.</td>
</tr>
<tr>
<td>7. Poor understanding of research participation process</td>
<td>• Reinforce standard operating procedures for testing (eg, timelines, specific tests, process for obtaining tests that are not at the site, remote data entry process).</td>
</tr>
<tr>
<td>8. Lack of available institutional neuropsychologist/psychologist</td>
<td>• Obtain commitment from institutional principal investigator and neuropsychologist/psychologist prior to study initiation.</td>
</tr>
</tbody>
</table>

2.3 Significance

Neuropsychological and behavioral assessments are a crucial component of the necessary monitoring for late effects in patients being treated, normally quite aggressively, for cancer. This is especially true for patients that are exposed to potentially neurotoxic therapies. However, lack of compliance with assessment schedules, variations in assessment schedules and neuropsychological measures utilized across studies, as well as overly complex and long neuropsychological assessments have proved to be problematic to the assessment process within COG. In order to remediate these problems, a streamlined and standardized neuropsychological and behavioral assessment battery has been developed. The COG Standard Neuropsychological and Behavioral Battery is a focused assessment of critical functional domains that have been empirically shown to be most affected by childhood cancer, its treatment, or other disease-related factors. This battery was designed to provide a brief measure of neuropsychological and behavioral functioning in order to strike a balance between research goals, the clinical needs of the patient, and time constraints on the institutional neuropsychologist/psychologist. The battery of tests will take only about 1 hour to administer and all patients will be tested at 3 standard time points. Additionally, parent-report questionnaires will be completed to gather information about the patient’s function, specifically in terms of attention, memory, executive abilities, and behavioral/social/emotional adaptation.
3.0 ENROLLMENT PROCEDURES AND ELIGIBILITY CRITERIA

3.1 Study Enrollment

3.1.1 Patient Registration
Prior to enrollment on this study, patients must be assigned a COG patient ID number. This number is obtained via the eRDE system once authorization for the release of personal health information (PHI) has been obtained. The COG patient ID number is used to identify the patient in all future interactions with COG. If you have problems with the registration, please refer to the online help.

In order for an institution to maintain COG membership requirements, every newly diagnosed patient needs to be offered participation in ACCRN07, Protocol for the Enrollment on the Official COG Registry, The Childhood Cancer Research Network (CCRN).

3.1.2 IRB Approval
Local IRB/REB approval of this study is to be entered into the Online IRB Submission System by each site. In addition, the official signed copy of the IRB approval document must be faxed to the Group Operations Center (GOC) at: (626) 445-6715. Once IRB/REB approval documentation is received by COG, the institution will have access to the RDE enrollment screens within the next business day.

3.1.3 Study Enrollment
Patients may be enrolled on the study once all eligibility requirements for the study have been met. Study enrollment is accomplished by going to the Enrollment application in the RDE system. If you have problems with enrollment, refer to the online help in the Applications area of the COG website.

3.1.4 Affirmation of Intent to Comply with Requirements for Quality of Life (QoL) and Neuropsychological Testing Requirements.
Institutions who wish to participate in this study will be required to provide a letter co-signed from the institutional Principal Investigator and the collaborating psychologist stating that they have reviewed the ALTE07C1 protocol and the test battery requirements, possess or have a plan to acquire the necessary resources and assessment materials for conducting the assessments, and intend to fully participate in the neuropsychological and behavioral assessment components of the study.

3.2 Patient Eligibility Criteria

Important note: The eligibility criteria listed below are interpreted literally and cannot be waived (per COG policy posted 5/11/01). All clinical and laboratory data required for determining eligibility of a patient enrolled on this trial must be available in the patient's medical/research record which will serve as the source document for verification at the time of audit.

3.2.1 Concomitant Treatment
The patient must be currently enrolled on ACNS0331 or ACNS0332 that aims to examine neuropsychological, social, emotional, and/or behavioral functioning.

3.2.2 Language
The patient must have receptive and expressive language skills in English since the assessment instruments are standardized and validated among English-speakers.

3.2.3 Exclusion Criteria

3.2.3.1 Patients with history of pre-existing neurodevelopmental disorder (eg, traumatic brain injury, mental retardation, or Down syndrome) prior to diagnosis of childhood cancer are not eligible.
3.2.3.2 Patients with history of birth weight < 1500 g, which is associated with neuropsychological deficits, are not eligible.

3.2.4 Regulatory

3.2.4.1 All patients and/or their parents or legal guardians must sign a written informed consent.

3.2.4.2 All institutional, FDA, and NCI requirements for human studies must be met.

4.0 MATERIALS AND METHODS

A standardized neuropsychological and behavioral battery has been developed to assess the domains of neuropsychological functioning and behavior that have been empirically shown to be most affected by childhood cancer, its treatment, or other disease-related factors. This battery was designed to provide a brief measure of neuropsychological and behavioral functioning so as to strike a balance between research goals, the clinical needs of the patient, and time constraints on the institutional neuropsychologist/psychologist. The ALTE07C1 standard neuropsychological and behavioral battery focuses on 3 cognitive domains: intelligence, attention, and memory, as well as broad domains of social, emotional, and behavioral functioning. The battery of tests will take only about 1 hour to administer and all patients will be tested at 3 standardized timepoints. Additionally, parent-report questionnaires will be completed to gather information about the patient’s function in terms of attention, executive abilities, and behavioral/social/emotional adaptation.

Note: For patients enrolled on ACNS0331, please refer to the ACNS0331 protocol Sections 3.1.2.2 and 19.0 regarding the Quality of Life Assessments (BASC-2, ABAS-II, BRIEF, and Peds QL).

4.1 Quality Control

Each participating institution is required to identify a neuropsychologist or qualified psychologist at their institution who agrees in writing to provide all required neuropsychological assessments as set forth in the ALTE07C1 guidelines. All of the assessments in the neuropsychological battery will be administered and scored by a neuropsychologist/psychologist designated by the institution or by his/her supervisee. The supervisee must have prior psychometric training in administration and scoring of neuropsychological measures. The institutional neuropsychologist/psychologist is responsible for the integrity of the data collected. The neuropsychologist/psychologist will conduct spot checks of the battery administration for supervisees and review all patient files for data scoring accuracy prior to submission of the data to the institutional CRA. Failure to comply with the assessment requirements will result in the institution not being allowed to enroll additional patients on the protocol until all outstanding assessments have been completed, scored, and received by the COG Group Operations Center. See Section 4.6 for additional details.

4.2 Required Procedures

4.2.1 Test Administration Order

The neuropsychological tests for patients and the parent-completed questionnaires must be administered in the order specified in Appendix I. It is preferable that all parent-report measures be completed while the child is being administered the neuropsychological tests. When this is not possible, parent-report measures should be completed no later than 1 month after testing has been administered.
4.2.2 Language Preference
The child’s language preference will be determined before testing begins using the parent-completed COG Language Preference Questionnaire. In order for the child to be enrolled, it must be determined that the neuropsychological testing procedures can be completed in English. If a parent is unable to complete the parent-report measures in English, the child will still be allowed to enroll but parent-report data will not be obtained. The COG Language Preference Questionnaire can be accessed on the COG website.

4.2.3 The Testing Session
Prior to the initial neuropsychological assessment, the neuropsychologist/psychologist will meet with the patient to discuss the study and review the consent form. The neuropsychologist/psychologist will clarify that the neuropsychological assessments are for research purposes; however limited interpretive information may be provided by the neuropsychologist/psychologist to the patient and their family should there be an issue of clinical concern.

Making the child and family feel comfortable with the testing situation is critical to obtaining accurate assessment results. In order to establish rapport, the neuropsychologist/psychologist will spend a few minutes with the child and parent together before proceeding with the evaluation and briefly explain the purpose of the assessment. During the assessment, the goal is to create an atmosphere in which the child will feel safe to communicate openly without fear of being criticized or judged. The neuropsychologist/psychologist will encourage the child to do his/her best and give praise for effort rather than for results.

The neuropsychological assessment should be administered in 1 session, however due to age-related and/or disease-related factors, this may not be possible. The institutional neuropsychologist/psychologist should use his/her discretion to determine when breaks or temporary suspensions of the testing are necessary due to disruption of the child’s performance, however the assessment battery must be completed within 3 sessions. The tests in the assessment battery are presented in Table 1 below for parents and children by age and by functional domain assessed.
<table>
<thead>
<tr>
<th>Table 1. COG Standard Neuropsychological and Behavioral Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children</strong></td>
</tr>
<tr>
<td><strong>Intelligence</strong></td>
</tr>
<tr>
<td>WPPSI-III (Vocabulary, Block Design) (15 min)</td>
</tr>
<tr>
<td>WISC-IV (Vocabulary, Block Design) (15 min)</td>
</tr>
<tr>
<td>WAIS-III (Vocabulary, Block Design) (15 min)</td>
</tr>
<tr>
<td><strong>Processing Speed/Attention</strong></td>
</tr>
<tr>
<td>WPPSI-III (Symbol Search, Coding) (10 min)</td>
</tr>
<tr>
<td>WISC-IV (Symbol Search, Coding) (10 min)</td>
</tr>
<tr>
<td>WAIS-III (Symbol Search, Coding) (10 min)</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
</tr>
<tr>
<td>CMS (Story Memory, Faces, Dot Location) (15 min)</td>
</tr>
<tr>
<td>CVLT-C (15 min)</td>
</tr>
<tr>
<td>WISC-IV (Digit Span) (5 min)</td>
</tr>
<tr>
<td>WAIS-III (Digit Span) (5 min)</td>
</tr>
<tr>
<td>WMS-III (Logical Memory, Faces, Spatial Span) (15 min)</td>
</tr>
<tr>
<td>CVLT-II (15 min)</td>
</tr>
<tr>
<td><strong>Parents</strong></td>
</tr>
<tr>
<td>COG Language Preference Questionnaire</td>
</tr>
<tr>
<td><strong>Intelligence/General Developmental Progress</strong></td>
</tr>
<tr>
<td>CDI (15 min)</td>
</tr>
<tr>
<td><strong>Attention and Behavior/Social/Emotional Function</strong></td>
</tr>
<tr>
<td>BASC-II (20 min)</td>
</tr>
<tr>
<td><strong>Executive Function</strong></td>
</tr>
<tr>
<td>BRIEF-P (5 min)</td>
</tr>
<tr>
<td>BRIEF (5 min)</td>
</tr>
<tr>
<td><strong>Adaptive Function</strong></td>
</tr>
<tr>
<td>ABAS-II (15 min)</td>
</tr>
<tr>
<td><strong>Quality of Life</strong></td>
</tr>
<tr>
<td>PedsQL 4.0 (Generic Version, NOT Cancer Module)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test</th>
<th>Child’s Age (Years : Months)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 2:0</td>
</tr>
<tr>
<td></td>
<td>↓</td>
</tr>
<tr>
<td>WPPSI-III</td>
<td>X (2:6 to &lt; 6:0)</td>
</tr>
<tr>
<td>WISC-IV</td>
<td>X</td>
</tr>
<tr>
<td>WAIS-III</td>
<td>X</td>
</tr>
<tr>
<td>WPPSI-III (Symbol Search, Coding)</td>
<td>X (4:0 to &lt; 6:0)</td>
</tr>
<tr>
<td>WISC-IV (Symbol Search, Coding)</td>
<td>X</td>
</tr>
<tr>
<td>WAIS-III (Symbol Search, Coding)</td>
<td>X</td>
</tr>
<tr>
<td>CMS (Story Memory, Faces, Dot Location)</td>
<td>X</td>
</tr>
<tr>
<td>CVLT-C (15 min)</td>
<td>X</td>
</tr>
<tr>
<td>WISC-IV (Digit Span) (5 min)</td>
<td>X</td>
</tr>
<tr>
<td>WAIS-III (Digit Span) (5 min)</td>
<td>X</td>
</tr>
<tr>
<td>WMS-III (Logical Memory, Faces, Spatial Span) (15 min)</td>
<td>X</td>
</tr>
<tr>
<td>CVLT-II (15 min)</td>
<td>X</td>
</tr>
<tr>
<td>COG Language Preference Questionnaire</td>
<td>X</td>
</tr>
<tr>
<td>CDI (15 min)</td>
<td>X (1:3 to &lt; 6:0)</td>
</tr>
<tr>
<td>BASC-II (20 min)</td>
<td>X</td>
</tr>
<tr>
<td>BRIEF-P (5 min)</td>
<td>X</td>
</tr>
<tr>
<td>ABAS-II (15 min)</td>
<td>X</td>
</tr>
<tr>
<td>PedsQL 4.0 (Generic Version, NOT Cancer Module)</td>
<td>X</td>
</tr>
</tbody>
</table>

**Index of Test Abbreviations**

- **WPPSI-III**: Wechsler Preschool and Primary Scale of Intelligence – 3rd Edition
- **WISC-IV**: Wechsler Intelligence Scales for Children – 4th Edition
- **WAIS-III**: Wechsler Adult Intelligence Scales – 3rd Edition
- **CMS**: Children’s Memory Scale
- **CVLT-C**: California Verbal Learning Test – Children’s Version
- **CVLT-II**: California Verbal Learning Test – 2nd Edition
- **WMS-III**: Wechsler Memory Scale – 3rd Edition
- **CDI**: Child Development Inventory
- **BASC-II**: Behavior Assessment System for Children – 2nd Edition
- **BRIEF-P**: Behavior Rating Inventory of Executive Function – Preschool Version
- **BRIEF**: Behavior Rating Inventory of Executive Function Scales
- **ABAS-II**: Adaptive Behavior Assessment System – 2nd Edition
- **PedsQL 4.0**: Pediatric Quality of Life Inventory Version 4.0 (Generic Version, NOT Cancer Module)
4.2.4 COG Standard Neuropsychological Battery
As indicated in Table 1 above, the tests that are administered depend on the child’s age at the time of the assessment. General information about each of the measures in the COG Standard Neuropsychological and Behavioral Battery is provided below. Procedural information for each of the tests in the battery is provided in Appendix III.

4.2.4.1 Wechslser Preschool and Primary Scale of Intelligence – 3rd Edition (WPPSI-III)
The WPPSI-III is a test for assessment of intellectual function in individuals more than 2 years, 6 months of age but less than 6 years of age. Four subtests from this measure will be used: 1. Vocabulary will be utilized to assess verbal intellectual function; 2. Block Design will be utilized to assess nonverbal intellectual function; 3. Symbol Search and 4. Coding will be used to assess processing speed. Reliability for this measure has been reported to be between 0.83 and 0.95. Criterion and discriminant validity have been established for this measure.

4.2.4.2 Wechsler Intelligence Scales for Children – 4th Edition (WISC-IV)
The WISC-IV is a test for assessment of intellectual function in individuals 6-16 years of age. Five subtests from this measure will be used: 1. Vocabulary will be utilized to assess verbal intellectual function; 2. Block Design will be utilized to assess nonverbal intellectual function; 3. Symbol Search and 4. Coding will be used to assess processing speed; and 5. Digit Span will be used to assess short-term memory. Reliability has been reported between 0.79 and 0.97 for this measure. Construct validity has been established for this measure.

4.2.4.3 Wechsler Adult Intelligence Scales – 3rd Edition (WAIS-III)
The WAIS-III is a test for assessment of intellectual function in individuals greater than 16 years of age. Five subtests from this measure will be used: 1. Vocabulary will be utilized to assess verbal intellectual function; 2. Block Design will be utilized to assess nonverbal intellectual function; 3. Symbol Search and 4. Coding will be used to assess processing speed; and 5. Digit Span will be used to assess short-term memory. Very good reliability as well as concurrent and criterion validity has been established for this measure.

4.2.4.4 Children’s Memory Scale (CMS)
The CMS is a test to assess verbal and visual memory in individuals 5-16 years of age. The following subtests will be utilized: Story Memory, Story Memory Recall, Faces, Faces Recall, Dot Location, and Dot Location Recall. Reliability and validity have been established for this measure.

4.2.4.5 California Verbal Learning Test – Child (CVLT-C) or Adult 2nd Edition (CVLT-II)
The CVLT-C and CVLT-II involve verbally presenting a list learning task over the course of 5 trials. The test measures multiple aspects of how verbal learning occurs, or fails to occur, as well as the amount of verbal material learned. The CVLT-C is for individuals 5-16 years of age while the CVLT-II is for individuals older than 16 years of age. Test-retest reliability of this measure has been reported to be between 0.80 and 0.84.

4.2.4.6 Wechsler Memory Scale – 3rd Edition (WMS-III)
The WMS-III is a test to assess verbal and visual memory in individuals greater than 16 years of age. The following subtests will be utilized: Logical Memory I, Logical Memory II, Faces I, Faces II, and Spatial Span. Internal consistency reliability has been reported to be above 0.70 for this measure. Construct, convergent, and discriminant validity have been established for this measure.

4.2.4.7 Child Development Inventory (CDI)
The CDI is a test for the assessment of child development that will be utilized for individuals greater than 15 months and less than 6 years of age. The CDI gauges development in the following functional areas:
social, self-help, gross motor, fine motor, expressive language, language comprehension, use of letters, and use of numbers. Validity, sensitivity, and specificity have been established for this measure.

4.2.4.8 Behavior Assessment System for Children – 2nd Edition (BASC-II)
The BASC-II describes the behaviors, thoughts, and emotions of children and adolescents. The parent rating scale will be utilized for individuals older than 2 years and less than 18 years of age. The questionnaire yields composite and scale scores in the domains of externalizing, internalizing, school, and other problems as well as adaptive skills and behavioral symptoms. Internal consistency reliability has been reported to be between 0.80 and 0.95, test-retest reliability between 0.72 to 0.92, and interrater reliability between 0.53 and 0.86. Content and construct validity have been established for this measure.

4.2.4.9 Behavior Rating Inventory of Executive Function (BRIEF)
The 86-item parent-report version of the BRIEF will be used to assess executive function in individuals older than 6 years and less than 18 years of age. This pertains to the following functional areas: inhibition and shifting of attention, emotional control, initiation, working memory, planning, organization, and self-monitoring. Internal consistency of the BRIEF has been reported from 0.80 to 0.98 and test-retest reliability has been reported between 0.76 and 0.85. Construct, content, convergent, and discriminant validity have also been established for this measure.

4.2.4.10 Behavior Rating Inventory of Executive Function – Preschool Version (BRIEF-P)
The 63-item preschool version of the BRIEF will be used to assess executive function in individuals who are greater than 2 years and less than 6 years of age. This parent-report measure pertains to the following functional areas: inhibition, shifting of attention, emotional control, working memory, planning, and organization. Internal consistency of the BRIEF-P has been reported from 0.80 to 0.97 and test-retest reliability has been reported between 0.78 and 0.90. The preschool version of the questionnaire will be utilized for individuals between 2 and 6 years of age. Construct, content, convergent, and discriminant validity have also been established.

4.2.4.11 Adaptive Behavior Assessment System – 2nd Edition (ABAS-II)
The ABAS-II will be used for the assessment of adaptive skills in individuals older than 2 years and less than 18 years of age. Separate scale scores are available for 10 areas of adaptive skills. Internal consistency has been reported to be 0.95 or greater for the composite adaptive behavior scale and between 0.85 and 0.95 for the sub-scales. Construct, convergent, and discriminant validity have also been established.

4.2.4.12 Pediatric Quality of Life Inventory Version 4 (PedsQL 4.0)
The PedsQL 4.0 is a modular approach to measuring health-related quality of life in healthy children and adolescents as well as in those with acute and chronic health conditions. The Generic Version consists of 23 items, with parent-report for ages 2-4, 5-7, 8-12, and 13-18. The questionnaire yields domain scores for Physical, Emotional, Social, and School Functioning as well as summary scores for Total, Physical Health, and Psychosocial Health. Reliability and validity have been established for this measure.

4.3 Standardized Timepoints
The COG Standardized Neuropsychological and Behavioral Battery will be conducted at 3 standardized timepoints for all patients: 9 months post cancer diagnosis, 30 months post cancer diagnosis, and 60 months post cancer diagnosis. Date ranges for when the assessments must occur are 3 month time periods around the dates of each patient’s 3 required neuropsychological and behavioral assessments (ie, 9 months ± 3 months, 30 months ± 3 months, and 60 months ± 3 months).
4.4 **Data Handling**
Each patient will have his/her own neuropsychological and behavioral test protocol file which includes all the forms necessary for recording the patient’s test responses/performance. The file must be secured according to the ethical principles and code of conduct from the American Psychological Association.

Results of the neuropsychological and behavioral tests will be scored immediately following administration. Required data will then be transferred to the institutional CRA for submission to the COG database. The neuropsychologist/psychologist will regularly check to be sure that the scoring and data transfer are being done promptly and accurately.

4.5 **Equipment and Space**
Testing materials, including the tests and the forms for recording the patient’s response/performance, will be in the possession of the neuropsychologist/psychologist. Only the tests described in the COG Neuropsychological and Behavioral Battery (see Section 4.2) are to be administered for ALTE07C1; there will be no test substitutions.

The neuropsychological assessment will be conducted in a setting that provides seating for the child and examiner as well as a table for them to work at for the duration of the testing session. The testing location must be quiet and free from distractions such as people coming and going. A typical clinical examination room is inadequate for neuropsychological assessment since it usually contains an examination table and hence may promote negative associations for the child as well as lacks appropriate seating for the child and examiner. A hospital room can be adapted for use as a testing location so long as a table, seating, and freedom from distraction are provided for the child and examiner.

The parent will also be provided space that is free from distraction and has a table and seating to use while completing the questionnaires. The parent’s space will be separate from the child’s neuropsychological assessment space so as not to interfere with the child’s test performance.

4.6 **Neuropsychological and Behavioral Assessment Compliance**
In order to improve the accrual of patient data pertaining to neuropsychological and behavioral assessment, a mechanism for monitoring and ensuring compliance with neuropsychological assessment standards has been developed by the Behavioral Science Committee. The ALTE07C1 Study Chair will work cooperatively with COG to ensure that the following occur: 1) centralized enrollment of participants, 2) COG psychologists from participating institutions provide written participation commitments, and 3) centralized monitoring of protocol adherence. The Study Chair will also be responsible for assigning members of the Behavioral Science Committee to the Behavioral Science Study Coordinator (BSSC) position for each COG study that aims to examine neuropsychological, social, emotional, and/or behavioral functioning.

The BSSC will be responsible for monitoring the progress of each particular study to which they have been assigned. In this capacity, the BSSC will:
- Establish communication with the study Principal Investigator (PI);
- Serve as active liaison for all institutions participating in the study. This includes receiving COG email notifications of enrolled study participants and then, without delay, initiating communication with the corresponding institutions concerning testing procedures, scheduling, and availability of assessment materials;
- Prior to study initiation obtain and keep on file a commitment from each institutional PI and institutional neuropsychologist/psychologist. The commitment will consist of a letter, co-signed by the institutional PI and the institutional neuropsychologist/psychologist, stating that they have reviewed the ALTE07C1 protocol and the test battery requirements, possess or have a plan to acquire the necessary resources and assessment materials for conducting the assessments, and intend to fully participate in the neuropsychological and behavioral assessment components of the study;
• Monitor participating institutions for adherence to established assessment timelines, use of appropriate assessment materials, and timely and accurate data entry via the remote data entry system. The BSSC will provide guidance to institutions as necessary. The BSSC will also send emails to institutions as a reminder of an upcoming assessment appointment. These emails will be sent 2 weeks prior to the start of the range of dates on which the assessment must occur. Date ranges for when the assessments must occur are 3 month time periods around the dates of each patient’s 3 required neuropsychological and behavioral assessments (ie, 9 months ± 3 months, 30 months ± 3 months, and 60 months ± 3 months).

• Monitor procedures for neuropsychological and behavioral assessment using a Neuropsychological and Behavioral Assessment Compliance Worksheet (see Appendix III); and

• Every 6 months determine the assessment compliance rate for each participating institution. Institutions must achieve ≥ 90% compliance for the initial assessment and ≥ 80% compliance at each of the remaining 2 standardized timepoints. The BSSC will contact all institutions not achieving ≥ 90% compliance for the initial assessment in order to determine factors hindering patient accrual and solutions to overcome the problems. If an institution is delinquent in submitting 2 or more assessments, the institution will not be allowed to enroll additional patients on the protocol until all outstanding assessments have been completed, scored, and submitted to the COG Statistics and Data Center.

STATISTICAL CONSIDERATIONS

This study seeks to provide a standardized neuropsychological and behavioral assessment battery and institute procedures for COG therapeutic protocols that have aim(s) to assess neuropsychological, social, emotional, and/or behavioral outcomes. There is no pre-specified sample size or projected closing date for this study. This study might be amended or substituted by another protocol should the standard battery or the proposed procedures need revision.

The goal of this study is to ensure a consistent, streamlined, and efficient administration of the battery to maximize compliance. While there is no formal accrual goal, accrual and compliance will be monitored and reviewed by the Study Statistician and the Study Chair approximately every 6 months. For each of the scheduled assessment timepoints, the percentage of patients who have completed the assessment will be calculated among all enrolled patients who have passed that timepoint. Patients who have relapsed, progressed, developed SMN, died, or been lost to follow-up prior to a particular timepoint will be considered invaluable in monitoring compliance for that timepoint, yet they may still submit assessment data if the aim in the specific therapeutic protocol dictates continued collection of such data. Monitoring target is to have at least 90% of the evaluable patients completing the assessment at the first timepoint, and at least 80% compliance for the later timepoints.

For any COG therapeutic study that aims to examine neuropsychological, social, emotional and/or behavioral outcomes using the proposed standard battery, sample size and power considerations that are relevant to the specific scientific question of interest need to be established, but are beyond the scope of discussion for this protocol.
REFERENCES

APPENDIX I: ADMINISTRATION ORDER FOR COG STANDARD 
NEUROPSYCHOLOGICAL AND BEHAVIORAL BATTERY

Test order information is presented by age group.

<table>
<thead>
<tr>
<th>Age Group: Birth through 1 Year 2 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent Report</strong></td>
</tr>
<tr>
<td>ABAS-II</td>
</tr>
<tr>
<td><strong>Child Testing</strong></td>
</tr>
<tr>
<td>No Child Testing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Group: 1 Year 3 Months through 1 Year 11 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent Report</strong></td>
</tr>
<tr>
<td>Child Development Inventory</td>
</tr>
<tr>
<td>ABAS-II</td>
</tr>
<tr>
<td><strong>Child Testing</strong></td>
</tr>
<tr>
<td>No Child Testing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Group: 2 Years 0 Months through 2 Years 5 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent Report</strong></td>
</tr>
<tr>
<td>COG Language Preference Questionnaire</td>
</tr>
<tr>
<td>PedsQL 4.0 Generic Version</td>
</tr>
<tr>
<td>Child Development Inventory</td>
</tr>
<tr>
<td>BASC-II</td>
</tr>
<tr>
<td>BRIEF-Preschool Version</td>
</tr>
<tr>
<td>ABAS-II</td>
</tr>
<tr>
<td><strong>Child Testing</strong></td>
</tr>
<tr>
<td>WPPSI-III</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Group: 2 Years 6 Months through 3 Years 11 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent Report</strong></td>
</tr>
<tr>
<td>COG Language Preference Questionnaire</td>
</tr>
<tr>
<td>PedsQL 4.0 Generic Version</td>
</tr>
<tr>
<td>Child Development Inventory</td>
</tr>
<tr>
<td>BASC-II</td>
</tr>
<tr>
<td>BRIEF-Preschool Version</td>
</tr>
<tr>
<td>ABAS-II</td>
</tr>
<tr>
<td><strong>Child Testing</strong></td>
</tr>
<tr>
<td>WPPSI-III (Vocabulary, Block Design)</td>
</tr>
</tbody>
</table>
Age Group: 4 Years 0 Months through 4 Years 11 Months

**Parent Report**
- COG Language Preference Questionnaire
- PedsQL 4.0 Generic Version
- Child Development Inventory
- BASC-II
- BRIEF-Preschool Version
- ABAS-II

**Child/Adolescent Testing**
- WPPSI-III (Vocabulary, Block Design, Symbol Search, and Coding)

Age Group: 5 Years 0 Months through 5 Years 11 Months

**Parent Report**
- COG Language Preference Questionnaire
- PedsQL 4.0 Generic Version
- Child Development Inventory
- BASC-II
- BRIEF-Preschool Version
- ABAS-II

**Child/Adolescent Testing**
- CVLT-C
- WPPSI-III (Vocabulary and Block Design)
- CVLT-C Recall
- CMS (Story Memory, Faces, and Dot Location)
- WPPSI-III (Symbol Search and Coding)
- CMS Recall

Age Group: 6 Years 0 Months through 16 Years 11 Months

**Parent Report**
- COG Language Preference Questionnaire
- PedsQL 4.0 Generic Version
- BASC-II
- BRIEF
- ABAS-II

**Child/Adolescent Testing**
- CVLT-C
- WISC-IV (Vocabulary and Block Design)
- CVLT-C Recall
- CMS (Story Memory, Faces, and Dot Location)
- WISC-IV (Symbol Search, Coding, and Digit Span)
- CMS Recall
Age Group: 17 Years 0 Months through 17 Years 11 Months

Parent Report
COG Language Preference Questionnaire
PedsQL 4.0 Generic Version
BASC-II
BRIEF
ABAS-II

Adolescent Testing
CVLT-II
WAIS-III (Vocabulary and Block Design)
CVLT-II Recall
WMS-III (Logical Memory, Faces, and Spatial Span)
WAIS-III (Symbol Search, Coding, and Digit Span)
WMS-III Recall

Age Group: 18 Years 0 Months and Older

Parent Report
No Parent Report

Adolescent Testing
CVLT-II
WAIS-III (Vocabulary and Block Design)
CVLT-II Recall
WMS-III (Logical Memory, Faces, and Spatial Span)
WAIS-III (Symbol Search, Coding, and Digit Span)
WMS-III Recall
APPENDIX II: RED FLAG ITEMS

Some of the tests used for this neuropsychological/behavioral battery have “Red Flag” indicators. The purpose of highlighting these items is to be sure that the individual administering the battery checks specific items at the end of a testing session. If a “Red Flag” occurs, it is IMPERATIVE that the psychologist/neuropsychologist is informed immediately and that he/she determines whether the child’s parents and/or physician will be contacted. If any indication of a potential problem is detected, parents will receive individual consultation with the psychologist/neuropsychologist on site who will explain the meaning of the scores and refer to a qualified professional for a more thorough follow-up evaluation. In the case of a supervisee administering the battery, he/she should provide no information directly to the family regarding “Red Flag” items, but should instead report this information IMMEDIATELY to the supervising psychologist/neuropsychologist.

SUMMARY OF RED FLAGS BY TEST ADMINISTERED

Adaptive Behavior Assessment System – 2nd Edition (ABAS-II)
Red Flag: Scale Score < 70

Behavior Assessment System for Children – 2nd Edition (BASC-II)
- Red Flag Items: Ages 2.5 to 5 Years
  - 64: Bangs head
  - 84: Is cruel to animals
  - 127: Sets fires
- Red Flag Items: Ages 6 to 11 Years
  - 58: Threatens to hurt others
  - 92: Says “I want to die” or “I wish I were dead”
  - 97: Is cruel to animals
  - 138: Says “I want to kill myself”
  - 143: Sets fires
- Red Flag Items: Ages 12 Years and Older
  - 25: Is cruel to animals
  - 27: Sees things that are not there
  - 40: Threatens to hurt others
  - 60: Says “I want to kill myself”
  - 90: Says “I want to die” or “I wish I were dead”
  - 121: Sets fires

Wechsler Intelligence Scales – Adult 3rd Edition (WAIS-III) or Children 4th Edition (WISC-IV) or Preschool and Primary 3rd Edition (WPPSI-III)
Red Flag: Scale Score < 4; IQ < 70

No Red Flag Items
- Behavior Rating Inventory of Executive Function (BRIEF or BRIEF-P)
- California Verbal Learning Test – Children’s Version (CVLT-C) or 2nd Edition (CVLT-II)
- Child Development Inventory (CDI)
- Children’s Memory Scale (CMS)
- COG Language Preference Questionnaire
- Pediatric Quality of Life Inventory Version 4.0 (PedsQL 4.0) – Generic Version
- Wechsler Memory Scale – 3rd Edition (WMS-III)
APPENDIX III: ADMINISTRATION PROCEDURES FOR THE COG STANDARD NEUROPSYCHOLOGICAL AND BEHAVIORAL BATTERY

Administration information is provided below for the COG Standard Neuropsychological and Behavioral Battery. Procedural information is presented by age group. Information for each measure includes: (1) Items: Which items to complete; (2) Administration: How to administer the measure; (3) Scoring: How to score the results; and (4) Data Entry: What data must be reported.

### Age Group: Birth through 1 Year 2 Months

1. Items: The parent or surrogate who is familiar with the child completes all items of the Parent/Primary Caregiver Form (Ages 0-5).
3. Scoring: As per instructions in Manual or computer assisted scoring.

**NOTE:** Use age-appropriate record form.

### Age Group: 1 Year 3 Months through 1 Year 11 Months

**Parent Report: Child Development Inventory (CDI)**
1. Items: The parent or surrogate who is familiar with the child completes all items.

1. Items: The parent or surrogate who is familiar with the child completes all items of the Parent/Primary Caregiver Form (Ages 0-5).
3. Scoring: As per instructions in Manual or computer assisted scoring.

**NOTE:** Use age-appropriate record form.

### Age Group: 2 Years 0 Months through 2 Years 5 Months

**Parent Report: COG Language Preference Questionnaire**
1. Items: The parent or surrogate who is familiar with the child completes all items.
2. Administration: As per instructions.
3. Scoring: No scoring required.
4. Data Entry: Raw data are reported.

**Parent Report: PedsQL 4.0 Generic Version (Parent Report for Toddlers, Ages 2-4)**
1. Items: The parent or surrogate who is familiar with the child completes all items.
2. Administration: As per instructions.
3. Scoring: On the PedsQL Generic Core Scales, items are ‘reverse scored’ and linearly transformed to a 0-100 scale, so that higher scores indicate better HRQOL (Health-Related Quality of Life).
A. To reverse score, transform the 0-4 scale items to 0-100 as follows: 0=100, 1=75, 2=50, 3=25, 4=0.

B. To create what the authors call Scale Scores (NOTE: These are not ‘scaled scores’ that we typically use with standardized tests), the mean is computed as the sum of the items over the number of items answered (this accounts for missing data). If more than 50% of the items in the scale are missing, the Scale Score should not be computed. Imputing the mean of the completed items in a scale when 50% or more are completed is generally the most unbiased and precise method. To do this, count the number of missing values in the scale (call it “nmiss”). Next, sum the item scores and divide by the number of items in the scale minus “nmiss”.

C. To create the Psychosocial Health Summary Score, the mean is computed as the sum of the items over the number of items answered in the Emotional, Social, and School Functioning Scales.

D. To create the Total Scale Score, the mean is computed as the sum of all the items over the number of items answered on all the Scales.

4. Data Entry: Scores for Physical Functioning, Emotional Functioning, Social Functioning, School Functioning, Psychosocial Health Summary, and Total Scale.

NOTE: This is a proprietary questionnaire that may be utilized at no cost in unfunded studies; otherwise there is a cost associated with using this measure.

**Parent Report: Child Development Inventory (CDI)**
1. Items: The parent or surrogate who is familiar with the child completes all items.

1. Items: The parent or surrogate who is familiar with the child completes all items on the Parent Rating Scales – Preschool Form (Ages 2-5).
3. Scoring: As per instructions in Manual or computer assisted scoring.

NOTE: Use age-appropriate record form.

**Parent Report: Behavior Rating Inventory of Executive Function-Preschool Version (BRIEF-P)**
1. Items: The parent or surrogate who is familiar with the child completes all items.
3. Scoring: As per instructions in Manual or computer assisted scoring.
4. Data Entry: Raw scores and T-scores for Inhibit, Shift, Emotional Control, Working Memory, Plan/Organize, ISCI (I + EC), FI (S + EC), EMI (WM + PO), and GEC (I + S + EC+WM+PO).

1. Items: The parent or surrogate who is familiar with the child completes all items of the Parent/Primary Caregiver Form (Ages 0-5).
3. Scoring: As per instructions in Manual or computer assisted scoring.

NOTE: Use age-appropriate record form.

**Age Group: 2 Years 6 Months through 3 Years 11 Months**

**Parent Report: COG Language Preference Questionnaire**
1. Items: The parent or surrogate who is familiar with the child completes all items.
2. Administration: As per instructions. This measure is completed before the child testing begins.
3. Scoring: No scoring required.
4. Data Entry: Raw data are reported.

**Parent Report: PedsQL 4.0 Generic Version (Parent Report for Toddlers, Ages 2-4)**
1. Items: The parent or surrogate who is familiar with the child completes all items.
2. Administration: As per instructions.
3. Scoring: On the PedsQL **Generic Core Scales**, items are ‘reverse scored’ and linearly transformed to a 0-100 scale, so that higher scores indicate better HRQOL (Health-Related Quality of Life).
   A. To reverse score, transform the 0-4 scale items to 0-100 as follows: 0=100, 1=75, 2=50, 3=25, 4=0.
   B. To create what the authors call **Scale Scores** (NOTE: These are not ‘scaled scores’ that we typically use with standardized tests), the mean is computed as the sum of the items over the number of items answered (this accounts for missing data). If more than 50% of the items in the scale are missing, the **Scale Score** should not be computed. Imputing the mean of the completed items in a scale when 50% or more are completed is generally the most unbiased and precise method. To do this, count the number of missing values in the scale (call it “nmiss”). Next, sum the item scores and divide by the number of items in the scale minus “nmiss”.
   C. To create the **Psychosocial Health Summary Score**, the mean is computed as the sum of the items over the number of items answered in the Emotional, Social, and School Functioning Scales.
   D. To create the **Total Scale Score**, the mean is computed as the sum of all the items over the number of items answered on all the Scales.
4. Data Entry: Scores for Physical Functioning, Emotional Functioning, Social Functioning, School Functioning, Psychosocial Health Summary, and Total Scale.

**NOTE:** This is a proprietary questionnaire that may be utilized at no cost in unfunded studies; otherwise there is a cost associated with using this measure.

**Parent Report: Child Development Inventory (CDI)**
1. Items: The parent or surrogate who is familiar with the child completes all items.

1. Items: The parent or surrogate who is familiar with the child completes all items on the **Parent Rating Scales – Preschool Form (Ages 2-5)**.
3. Scoring: As per instructions in Manual or computer assisted scoring.
4. Data Entry: Raw scores and T-scores from Scales: Activities of Daily Living, Adaptability, Aggression, Anxiety, Attention Problems, Atypicality, Depression, Functional Communication,
Hyperactivity, Social Skills, Somatization, and Withdrawal; Raw scores and T-scores from Composites: Externalizing Problems, Internalizing Problems, Behavior Symptoms Index, Adaptive Skills.

NOTE: Use age-appropriate record form.

**Parent Report: Behavior Rating Inventory of Executive Function-Preschool Version (BRIEF-P)**
1. Items: The parent or surrogate who is familiar with the child completes all items.
3. Scoring: As per instructions in Manual or computer assisted scoring.
4. Data Entry: Raw scores and T-scores for Inhibit, Shift, Emotional Control, Working Memory, Plan/Organize, ISCI (I + EC), FI (S + EC), EMI (WM + PO), and GEC (I + S + EC+WM+PO).

1. Items: The parent or surrogate who is familiar with the child completes all items of the Parent/Primary Caregiver Form (Ages 0-5).
3. Scoring: As per instructions in Manual or computer assisted scoring.

NOTE: Use appropriate record form.

**Child Testing: Wechsler Preschool and Primary Scale of Intelligence-3rd Edition (WPPSI-III)**
1. Items: Administer Receptive Vocabulary and Block Design subtests.
4. Data Entry: Raw scores and Scaled Scores for Receptive Vocabulary and Block Design.

NOTE: Use age-appropriate record form.

**Age Group: 4 Years 0 Months through 4 Years 11 Months**

**Parent Report: COG Language Preference Questionnaire**
1. Items: The parent or surrogate who is familiar with the child completes all items.
2. Administration: As per instructions. This measure is completed before the child testing begins.
3. Scoring: No scoring required.
4. Data Entry: Raw data are reported.

**Parent Report: PedsQL 4.0 Generic Version (Parent Report for Toddlers, Ages 2-4)**
1. Items: The parent or surrogate who is familiar with the child completes all items.
2. Administration: As per instructions.
3. Scoring: On the PedsQL Generic Core Scales, items are ‘reverse scored’ and linearly transformed to a 0-100 scale, so that higher scores indicate better HRQOL (Health-Related Quality of Life).
   A. To reverse score, transform the 0-4 scale items to 0-100 as follows: 0=100, 1=75, 2=50, 3=25, 4=0.
   B. To create what the authors call Scale Scores (NOTE: These are not ‘scaled scores’ that we typically use with standardized tests), the mean is computed as the sum of the items over the number of items answered (this accounts for missing data). If more than 50% of the items in the scale are missing, the Scale Score should not be computed. Imputing the mean of the completed items in a scale when 50% or more are completed is generally the most unbiased and precise method. To do this, count the number of missing values in the scale (call it “nmiss”). Next, sum the item scores and divide by the number of items in the scale minus “nmiss”.
C. To create the **Psychosocial Health Summary Score**, the mean is computed as the sum of the items over the number of items answered in the Emotional, Social, and School Functioning Scales.

D. To create the **Total Scale Score**, the mean is computed as the sum of all the items over the number of items answered on all the Scales.

4. Data Entry: Scores for Physical Functioning, Emotional Functioning, Social Functioning, School Functioning, Psychosocial Health Summary, and Total Scale.

**NOTE**: This is a proprietary questionnaire that may be utilized at no cost in unfunded studies; otherwise there is a cost associated with using this measure.

**Parent Report: Child Development Inventory (CDI)**
1. Items: The parent or surrogate who is familiar with the child completes all items.

1. Items: The parent or surrogate who is familiar with the child completes all items on the **Parent Rating Scales – Preschool Form (Ages 2-5)**.
3. Scoring: As per instructions in Manual or computer assisted scoring.
4. Data Entry: Raw scores and T-scores from **Scales**: Activities of Daily Living, Adaptability, Aggression, Anxiety, Attention Problems, Atypicality, Depression, Functional Communication, Hyperactivity, Social Skills, Somatization, and Withdrawal; Raw scores and T-scores from **Composites**: Externalizing Problems, Internalizing Problems, Behavior Symptoms Index, Adaptive Skills.

**NOTE**: Use age-appropriate record form.

**Parent Report: Behavior Rating Inventory of Executive Function-Preschool Version (BRIEF-P)**
1. Items: The parent or surrogate who is familiar with the child completes all items.
3. Scoring: As per instructions in Manual or computer assisted scoring.
4. Data Entry: Raw scores and T-scores for Inhibit, Shift, Emotional Control, Working Memory, Plan/Organize, ISCI (I + EC), FI (S + EC), EMI (WM + PO), and GEC (I + S + EC+WM+PO).

1. Items: The parent or surrogate who is familiar with the child completes all items of the **Parent/Primary Caregiver Form (Ages 0-5)**.
3. Scoring: As per instructions in Manual or computer assisted scoring.

**NOTE**: Use appropriate record form.

**Child Testing: Wechsler Preschool and Primary Scale of Intelligence-3rd Edition (WPPSI-III)**
1. Items: Administer Vocabulary, Block Design, Symbol Search, and Coding scales.
NOTE: Use age-appropriate record form.

**Age Group: 5 Years 0 Months through 5 Years 11 Months**

**Parent Report: COG Language Preference Questionnaire**
1. Items: The parent or surrogate who is familiar with the child completes all items.
2. Administration: As per instructions. This measure is completed before the child testing begins.
3. Scoring: No scoring required.
4. Data Entry: Raw data are reported.

**Parent Report: PedsQL 4.0 Generic Version (Parent Report for Young Children, Ages 5-7)**
1. Items: The parent or surrogate who is familiar with the child completes all items.
2. Administration: As per instructions.
3. Scoring: On the PedsQL Generic Core Scales, items are ‘reverse scored’ and linearly transformed to a 0-100 scale, so that higher scores indicate better HRQOL (Health-Related Quality of Life).
   - A. To reverse score, transform the 0-4 scale items to 0-100 as follows: 0=100, 1=75, 2=50, 3=25, 4=0.
   - B. To create what the authors call Scale Scores (NOTE: These are not ‘scaled scores’ that we typically use with standardized tests), the mean is computed as the sum of the items over the number of items answered (this accounts for missing data). If more than 50% of the items in the scale are missing, the Scale Score should not be computed. Imputing the mean of the completed items in a scale when 50% or more are completed is generally the most unbiased and precise method. To do this, count the number of missing values in the scale (call it “nmiss”). Next, sum the item scores and divide by the number of items in the scale minus “nmiss”.
   - C. To create the Psychosocial Health Summary Score, the mean is computed as the sum of the items over the number of items answered in the Emotional, Social, and School Functioning Scales.
   - D. To create the Total Scale Score, the mean is computed as the sum of all the items over the number of items answered on all the Scales.
4. Data Entry: Scores for Physical Functioning, Emotional Functioning, Social Functioning, School Functioning, Psychosocial Health Summary, and Total Scale.

NOTE: This is a proprietary questionnaire that may be utilized at no cost in unfunded studies; otherwise there is a cost associated with using this measure.

**Parent Report: Child Development Inventory (CDI)**
1. Items: The parent or surrogate who is familiar with the child completes all items.

1. Items: The parent or surrogate who is familiar with the child completes all items on the Parent Rating Scales – Preschool Form (Ages 2-5).
3. Scoring: As per instructions in Manual or computer assisted scoring.
NOTE: Use age-appropriate record form.

**Parent Report: Behavior Rating Inventory of Executive Function-Preschool Version (BRIEF-P)**
1. Items: The parent or surrogate who is familiar with the child completes all items.
3. Scoring: As per instructions in Manual or computer assisted scoring.
4. Data Entry: Raw scores and T-scores for Inhibit, Shift, Emotional Control, Working Memory, Plan/Organize, ISCI (I + EC), FI (S + EC), EMI (WM + PO), and GEC (I + S + EC+WM+PO).

1. Items: The parent or surrogate who is familiar with the child completes all items of the Parent/Primary Caregiver Form (Ages 5-21).
3. Scoring: As per instructions in Manual or computer assisted scoring.

NOTE: Use age-appropriate record form.

**Child Testing: California Verbal Learning Test-Children’s Version (CVLT-C)**
1. Items: Administer the entire measure.

NOTE: CVLT-C Recall to be administered after WPPSI-III.

**Child Testing: Wechsler Preschool and Primary Scale of Intelligence-3rd Edition (WPPSI-III)**
1. Items: Administer Vocabulary and Block Design subtests.
4. Data Entry: Raw scores and Scaled Scores for Vocabulary and Block Design.

NOTE: Use age-appropriate record form.

**Child Testing: Wechsler Preschool and Primary Scale of Intelligence-3rd Edition (WPPSI-III) Recall**
1. Items: Complete the Free Recall, Long-Delay Cued Recall, and Long-Delay Recognition.

**Child Testing: Children’s Memory Scale (CMS)**
1. Items: Complete items in Story Memory, Dot Location, and Faces subtests.
4. Data Entry: Raw score and scaled scores for: Dot Locations Learning, Dot Locations Total, Stories Immediate, Faces Immediate.

NOTE: CMS Recall to be administered after WPPSI-III Symbol Search and Coding.

**Child Testing: Wechsler Preschool and Primary Scale of Intelligence-3rd Edition (WPPSI-III)**
1. Items: Administer Symbol Search and Coding subtests.
4. Data Entry: Raw scores and Scaled Scores for Symbol Search and Coding

**NOTE:** Use age-appropriate record form.

**Child/Adolescent Testing: Children’s Memory Scale (CMS) Recall**
1. Items: Complete recall items in Story Memory, Dot Location, and Faces subtests.
4. Data Entry: Raw score and scaled scores for: Dot Locations Long Delay, Stories Delayed, Stories Delayed Recognition, Faces Delayed.

**Age Group: 6 Years 0 Months through 16 Years 11 Months**

**Parent Report: COG Language Preference Questionnaire**
1. Items: The parent or surrogate who is familiar with the child/adolescent completes all items.
2. Administration: As per instructions. This measure is completed **before** the child/adolescent testing begins.
3. Scoring: No scoring required.
4. Data Entry: Raw data are reported.

1. Items: The parent or surrogate who is familiar with the child/adolescent completes all items.
2. Administration: As per instructions.
3. Scoring: On the PedsQL **Generic Core Scales**, items are ‘reverse scored’ and linearly transformed to a 0-100 scale, so that higher scores indicate better HRQOL (Health-Related Quality of Life).
   A. To reverse score, transform the 0-4 scale items to 0-100 as follows: 0=100, 1=75, 2=50, 3=25, 4=0.
   B. To create what the authors call Scale Scores (**NOTE**: These are not ‘scaled scores’ that we typically use with standardized tests), the mean is computed as the sum of the items over the number of items answered (this accounts for missing data). If more than 50% of the items in the scale are missing, the Scale Score should not be computed. Imputing the mean of the completed items in a scale when 50% or more are completed is generally the most unbiased and precise method. To do this, count the number of missing values in the scale (call it “nmiss”). Next, sum the item scores and divide by the number of items in the scale minus “nmiss”.
   C. To create the Psychosocial Health Summary Score, the mean is computed as the sum of the items over the number of items answered in the Emotional, Social, and School Functioning Scales.
   D. To create the Total Scale Score, the mean is computed as the sum of all the items over the number of items answered on all the Scales.
4. Data Entry: Scores for Physical Functioning, Emotional Functioning, Social Functioning, School Functioning, Psychosocial Health Summary, and Total Scale.

**NOTE:** Use age-appropriate record form.

This is a proprietary questionnaire that may be utilized at no cost in unfunded studies; otherwise there is a cost associated with using this measure.

1. Items: The parent or surrogate who is familiar with the child/adolescent completes all items on either the Parent Rating Scales-Child Form (Ages 6-11) or Parent Rating Scales-Adolescent Form (Ages 12-21).
3. Scoring: As per instructions in Manual or computer assisted scoring.

**NOTE**: Use age-appropriate age record form.

**Parent Report: Behavior Rating Inventory of Executive Function (BRIEF)**
1. Items: The parent or surrogate who is familiar with the child/adolescent completes all items.
3. Scoring: As per instructions in Manual or computer assisted scoring.
4. Data Entry: Raw scores and T-scores for Inhibit, Shift, Emotional Control, BRI (I + S + EC), Initiate, Working Memory, Plan/Organize, Organization of Materials, Monitor, MI (Ini + WM + PO + O + M) and GEC (BRI + MI).

1. Items: The parent or surrogate who is familiar with the child/adolescent completes all items of the Parent/Primary Caregiver Form (Ages 5-21).
3. Scoring: As per instructions in Manual or computer assisted scoring.

**NOTE**: Use age-appropriate record form.

**Child/Adolescent Testing: California Verbal Learning Test-Children’s Version (CVLT-C)**
1. Items: Administer the entire measure.

**NOTE**: CVLT-C Recall to be administered after WISC-IV Vocabulary and Block Design subtests.

1. Items: Administer Vocabulary and Block Design subtests.
4. Data Entry: Raw scores and Scaled Scores for Vocabulary and Block Design.

**Child/Adolescent Testing: California Verbal Learning Test-Children’s Version (CVLT-C) Recall**

**Child/Adolescent Testing: Children’s Memory Scale (CMS)**
1. Items: Complete items in Story Memory, Dot Location, and Faces subtests.
4. Data Entry: Raw score and scaled scores for: Dot Locations Learning, Dot Locations Total, Stories Immediate, Faces Immediate.
1. Items: Complete items in Symbol Search, Coding, and Digit Span subtests.
4. Data Entry: Raw scores and Scaled Scores for Symbol Search, Coding, and Digit Span.

Child/Adolescent Testing: Children’s Memory Scale (CMS) Recall
1. Items: Complete recall items in Story Memory, Dot Location, and Faces subtests.
4. Data Entry: Raw score and scaled scores for: Dot Locations Long Delay, Stories Delayed, Stories Delayed Recognition, Faces Delayed.

Age Group: 17 years 0 Months through 17 Years 11 Months

Parent Report: COG Language Preference Questionnaire
1. Items: The parent or surrogate who is familiar with the adolescent completes all items.
2. Administration: As per instructions. This measure is completed before the adolescent testing begins.
3. Scoring: No scoring required.
4. Data Entry: Raw data are reported.

1. Items: The parent or surrogate who is familiar with the adolescent completes all items.
2. Administration: As per instructions.
3. Scoring: On the PedsQL Generic Core Scales, items are ‘reverse scored’ and linearly transformed to a 0-100 scale, so that higher scores indicate better HRQOL (Health-Related Quality of Life).
   A. To reverse score, transform the 0-4 scale items to 0-100 as follows: 0=100, 1=75, 2=50, 3=25, 4=0.
   B. To create what the authors call Scale Scores (NOTE: These are not ‘scaled scores’ that we typically use with standardized tests), the mean is computed as the sum of the items over the number of items answered (this accounts for missing data). If more than 50% of the items in the scale are missing, the Scale Score should not be computed. Imputing the mean of the completed items in a scale when 50% or more are completed is generally the most unbiased and precise method. To do this, count the number of missing values in the scale (call it “nmiss”). Next, sum the item scores and divide by the number of items in the scale minus “nmiss”.
   C. To create the Psychosocial Health Summary Score, the mean is computed as the sum of the items over the number of items answered in the Emotional, Social, and School Functioning Scales.
   D. To create the Total Scale Score, the mean is computed as the sum of all the items over the number of items answered on all the Scales.
4. Data Entry: Scores for Physical Functioning, Emotional Functioning, Social Functioning, School Functioning, Psychosocial Health Summary, and Total Scale.
NOTE: Use age-appropriate record form. This is a proprietary questionnaire that may be utilized at no cost in unfunded studies; otherwise there is a cost associated with using this measure.

1. Items: The parent or surrogate who is familiar with the adolescent completes all items on the Parent Rating Scales-Adolescent Form (Ages 12-21).
3. Scoring: As per instructions in Manual or computer assisted scoring.
Communication, Hyperactivity, Leadership, Social Skills, Somatization, and Withdrawal; Raw scores and T-scores from Composites: Externalizing Problems, Internalizing Problems, Behavior Symptoms Index, Adaptive Skills.

NOTE: Use age-appropriate record form.

**Parent Report: Behavior Rating Inventory of Executive Function (BRIEF)**
1. Items: The parent or surrogate who is familiar with the adolescent completes all items.
3. Scoring: As per instructions in Manual or computer assisted scoring.
4. Data Entry: Raw scores and T-scores for Inhibit, Shift, Emotional Control, BRI (I + S + EC), Initiate, Working Memory, Plan/Organize, Organization of Materials, Monitor, MI (Ini + WM + PO + O + M) and GEC (BRI + MI).

1. Items: The parent or surrogate who is familiar with the adolescent completes all items of the Parent/Primary Caregiver Form (Ages 5-21).
3. Scoring: As per instructions in Manual or computer assisted scoring.

NOTE: Use age-appropriate record form.

1. Items: Administer the entire measure.

NOTE: CVLT-II Recall to be administered after WAIS-III Vocabulary and Block Design subtests.

**Adolescent Testing: Wechsler Adult Intelligence Scale-3rd Edition (WAIS-III)**
1. Items: Administer Vocabulary and Block Design subtests.
4. Data Entry: Raw scores and Scaled Scores for Vocabulary and Block Design.

**Adolescent Testing: California Verbal Learning Test-II (CVLT-II) Recall**
Adolescent Testing: Wechsler Memory Scale-3rd Edition (WMS-III)
1. Items: Complete items in Logical Memory I, Faces I, and Spatial Scan subtests.
4. Data Entry: Raw score and scaled scores for: Logical Memory I Recall Total Score, Faces I Recognition Total Score, Spatial Span Total Score.

Adolescent Testing: Wechsler Adult Intelligence Scale-3rd Edition (WAIS-III)
1. Items: Complete items in Symbol Search, Coding, and Digit Span subtests.
4. Data Entry: Raw scores and Scaled Scores for Symbol Search, Coding, and Digit Span.

Adolescent Testing: Wechsler Memory Scale-III (WMS-III) Recall
1. Items: Complete recall items in Logical Memory II and Faces II subtests.
4. Data Entry: Raw score and scaled scores for: Logical Memory II Recall Total Score, Faces II Recognition Total Score.

Age Group: 18 years 0 Months and Older

Parent Report
No Parent Report

1. Items: Administer the entire measure.

NOTE: CVLT-II Recall to be administered after WAIS-III Vocabulary and Block Design subtests.

Adolescent Testing: Wechsler Adult Intelligence Scale-3rd Edition (WAIS-III)
1. Items: Administer Vocabulary and Block Design subtests.
4. Data Entry: Raw scores and Scaled Scores for Vocabulary and Block Design.

Adolescent Testing: California Verbal Learning Test-II (CVLT-II) Recall

Adolescent Testing: Wechsler Memory Scale-3rd Edition (WMS-III)
1. Items: Complete items in Logical Memory I, Faces I, and Spatial Scan subtests.
4. Data Entry: Raw score and scaled scores for: Logical Memory I Recall Total Score, Faces I Recognition Total Score, Spatial Span Total Score.
Adolescent Testing: Wechsler Adult Intelligence Scale-3rd Edition (WAIS-III)
1. Items: Complete items in Symbol Search, Coding, and Digit Span subtests.
4. Data Entry: Raw scores and Scaled Scores for Symbol Search, Coding, and Digit Span.

Adolescent Testing: Wechsler Memory Scale –III (WMS-III) Recall
1. Items: Complete recall items in Logical Memory II and Faces II subtests.
4. Data Entry: Raw score and scaled scores for: Logical Memory II Recall Total Score, Faces II Recognition Total Score.
APPENDIX IV: NEUROPSYCHOLOGICAL AND BEHAVIORAL ASSESSMENT COMPLIANCE WORKSHEET

<table>
<thead>
<tr>
<th>Patient ID #</th>
<th>Date Enrolled</th>
<th>Institution</th>
<th>Institutional Neuro/Psychologist Name</th>
<th>CRA Name</th>
<th>NP1 Date Range*</th>
<th>Date NP1 Completed</th>
<th>NP2 Date Range*</th>
<th>Date NP 2 Completed</th>
<th>NP 3 Date Range*</th>
<th>Date NP 3 Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NP = COG Standard Neuropsychological and Behavioral Battery

Assessment Timepoints:
#1 = 9 months post cancer diagnosis  #2 = 30 months post cancer diagnosis  #3 = 60 months post cancer diagnosis

*Date ranges are 3 month time periods around the dates of the assessment timepoints
APPENDIX V: YOUTH INFORMATION SHEETS

INFORMATION SHEET REGARDING RESEARCH STUDY
(for children from 7 through 12 years of age)

Social, Emotional, Behavioral and learning effects in Children with Cancer

1. We have been talking with you about your cancer and are asking you to take part in a research study because you have cancer. A research study is when doctors work together to try out new ways to help people who are sick. In this study we are trying to learn about how your behavior, thinking, learning, remembering, and feelings may be affected by the cancer or treatment.

2. Children who are part of this study will be given a set of tests at 3 different timepoints. Each testing will last about 1 hour. The first test will be done around 9 months after you are found to have cancer; the second test will be done 2.5 years after you are found to have cancer and the third test 5 years after you are found to have cancer. These tests will help us learn about the way you think, learn, and remember. Your parent, or another adult who knows you well, will also answer questions about your thoughts, feelings, and behavior.

3. Sometimes good things can happen to people when they are in a research study. These good things are called “benefits.” We hope that a benefit to you of being part of this study is that it will help us find any problems you might have in the way you think, learn, or remember. This study may find problems related to cancer and its treatment that were not known before. This information may also benefit other patients in the future.

4. Sometimes bad things can happen to people when they are in a research study. These bad things are called “risks.” The risks to you from this study are that the testing may be boring or tiring. The study may also remind you about other problems you may be having.

5. Your family can choose to be part of this study or not. Your family can also decide to stop being in this study at any time once you start. Make sure to ask your doctors any questions that you have.
INFORMATION SHEET REGARDING RESEARCH STUDY
(for teens from 13 through 17 years of age)

Social, Emotional, Behavioral and learning effects in Children with Cancer

1. We have been talking with you about your cancer and are asking you to take part in a research study because you have cancer. A research study is when doctors work together to try out new ways to help people who are sick. In this study we are trying to learn about how your behavior, thinking, learning, remembering, and feelings may be affected by the cancer or treatment.

2. Children and teens who are part of this study will be given a set of tests at 3 different timepoints. Each testing will last about 1 hour. The first test will be done around 9 months after you are found to have cancer; the second test will be done 2.5 years after you are found to have cancer and the third test 5 years after you are found to have cancer. These tests will help us learn about the way you think, learn, and remember. Your parent, or another adult who knows you well, will also answer questions about your thoughts, feelings, and behavior.

3. Sometimes good things can happen to people when they are in a research study. These good things are called “benefits.” We hope that a benefit to you of being part of this study is that it will help us find any problems you might have in the way you think, learn, or remember. This study may find problems related to cancer and its treatment that were not known before. This information may also benefit other patients in the future.

4. Sometimes bad things can happen to people when they are in a research study. These bad things are called “risks.” The risks to you from this study are that the testing may be boring or tiring. The study may also remind you about other problems you may be having.

5. Your family can choose to be part of this study or not. Your family can also decide to stop being in this study at any time once you start. Make sure to ask your doctors any questions that you have.
ALTE07C1, Neuropsychological, Social, Emotional, and Behavioral Outcomes in Children with Cancer

When we say “you” in this consent form, we mean you or your child; “we” means the doctors and other staff.

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS STUDY?

This study is organized by Children’s Oncology Group (COG). COG is an international research group that conducts clinical trials for children with cancer. More than 200 hospitals in North America, Australia, New Zealand, and Europe are members of COG.

You are being asked to take part in this research study because you have been diagnosed with cancer and because the cancer or the treatment that you are getting for that cancer might affect the function of your central nervous system, including the brain. This is also called neuropsychological function. For example, children treated for cancer can sometimes develop learning, thinking, or behavioral problems. These problems can lead to trouble remembering things, paying attention, planning ahead, and keeping up with their classmates at school. The overall goal of this study is to identify patients who are more likely to develop problems with neuropsychological and behavioral function. This information may help improve treatment planning for children with cancer in the future.

It is common to enroll children and adolescents with cancer in a clinical study that seeks to improve cancer treatment over time. Clinical studies include only people who choose to take part. You have a choice about whether or not you take part in this clinical study.

Please take your time to make your decision. Discuss it with your friends and family. We encourage you to include your child in the discussion and decision to the extent that she or he is able to understand and take part.

WHY IS THIS STUDY BEING DONE?

The overall goal of this study is to learn about the neuropsychological (for example, thinking, learning, and remembering) and behavioral functioning of children being treated for cancer.

Another goal of this study is to find out if a standard set (called a battery) of neuropsychological and behavioral tests can be consistently completed at all the COG hospitals and at 3 standard timepoints.
HOW MANY PEOPLE WILL TAKE PART IN THE STUDY?

There is no set number of people that will take part in this study. This study does not have a set date to end.

WHAT WILL HAPPEN ON THIS STUDY THAT IS RESEARCH?

All patients on this study will be given a set of tests called neuropsychological tests. These tests will be used to learn about the patient’s neuropsychological and behavioral functioning, for example, thinking, learning, and remembering. While the patient is taking these tests, the patient’s parent, or another person who knows the patient well, will fill in answers to a set of written questions. These questions will be used to learn more about the patient, for example, about his/her social skills, emotional well-being, and behavior.

ALTE07C1 is not a complete evaluation of a child’s intelligence or school achievement; rather, it is a brief set of assessments used for research to determine effects of the treatment.

Diagram of Treatment

A diagram of treatment can be seen below.

![Diagram of Treatment](image-url)
HOW LONG IS THE STUDY?

As part of this study, all patients will have 3 testing sessions, each lasting about 1 hour. The first assessment will take place around 9 months after you have been diagnosed with cancer (during your cancer treatment). The second assessment will take place around 30 months (that is 2.5 years) after you have been diagnosed with cancer and approximately one year after you have finished your cancer treatment. The third assessment will take place around 60 months (that is 5 years) after you have been diagnosed with cancer. The second and third assessments will look at changes after your cancer treatment.

Your doctor or the study doctor may decide to take someone off this study under the following circumstances:
- if he/she believes that it is in the person’s best interest

You can stop participating at any time. However, if you decide to stop participating in the study, we encourage you to talk to the study doctor and your regular doctor first.

WHAT ARE THE RISKS OF THE STUDY?

While most children enjoy the one-to-one interactions during these evaluations, some find the testing to be boring or tiring or frustrating. Rarely the testing may remind you about other problems. If the results of your testing show that you have problems that are concerning to the study doctors, you may be given further assessments or referrals for other care. In this case, you will have to give up more of your time for the extra testing.

ARE THERE BENEFITS TO TAKING PART IN THE STUDY?

We hope that you will get personal medical benefit from participation in this clinical study, but we cannot be certain. The study evaluation may find thinking, learning, remembering, or other problems that perhaps would otherwise not have been found.

We expect that the information learned from this study will benefit other patients in the future.

WHAT OTHER OPTIONS ARE THERE?

Instead of being in this study, you have these options:
- Choosing not to take part in this study
- Taking part in another study

Please talk to your doctor about these and other options.

WHAT ABOUT CONFIDENTIALITY?

Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law.

The Children’s Oncology Group has received a Certificate of Confidentiality from the federal government, which will help us protect the privacy of our research subjects. Information about the certificate is included in Attachment #1.
Each patient will have a file that includes all the forms from the psychological testing. The file will be stored according to the rules set by the American Psychological Association, the group that publishes guidelines for psychologists to follow.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as:

- **Children's Oncology Group**
- **Representatives of the National Cancer Institute (NCI), Food and Drug Administration (FDA), and other U.S. and international governmental regulatory agencies involved in keeping research safe for people**
- **The Institutional Review Board of this hospital**
- **Pediatric Central Institutional Review Board (CIRB) of the National Cancer Institute**

**WHAT ARE THE COSTS?**

There will be no added costs to you or your insurance company for taking part in this study.

In the case of injury or illness resulting from this study, emergency medical treatment is available but will be provided at the usual charge. No funds have been set aside to compensate you in the event of injury. However by signing this form, you are not giving up any legal rights to seek to obtain compensation for injury.

You or your insurance company will be charged for continuing medical care and/or hospitalization.

For more information on clinical studies and insurance coverage, you can visit the National Cancer Institute’s Web site at http://cancer.gov/clinicaltrials/understanding/insurance-coverage. You can print a copy of the “Clinical Trials and Insurance Coverage” information from this Web site.

If you choose to enroll on this study, this institution will receive some money from the Children’s Oncology Group to perform the research.

**WHAT ARE MY RIGHTS AS A PARTICIPANT?**

Taking part in this study is voluntary. You may choose not to be in this study. If you decide not to be in this study, you will not be penalized and you will not loose any benefits to which you are entitled. You will still receive medical care.

During the testing, you may skip questions that are stressful and you may stop taking the tests at any time.

You may stop being in the study at any time. If you stop being in the study, you will not be penalized and you will not lose any benefits to which you are entitled. Physicians and hospital personnel will still take care of you.

We will tell you about new information that may affect your health, welfare, or willingness to stay in this study. A committee outside of COG closely monitors study reports and notifies institutions if changes must be made to the study. Members of COG meet twice a year to evaluate results of treatment and to plan new treatments.
You may ask to be given a summary of the study results after they are written up. This may be several years after assessment of all people on the study is completed.

**WHOM DO I CALL IF I HAVE QUESTIONS OR PROBLEMS?**

For questions about the study or if you have a research related problem or you are injured, contact Dr. XXXX or your doctor at XXXX

If you have any questions about your rights as a research participant or any problems that you feel you cannot discuss with the investigators, you may call XXXX IRB Administrator at (XXXX

If you have any questions or concerns that you feel you would like to discuss with someone who is not on the research team, you may also call the Patient Advocate at XXXX

**WHERE CAN I GET MORE INFORMATION?**

The [COG Family Handbook for Children with Cancer](http://www.curesearch.org/) has information about specific cancers, tests, treatment side effects and their management, adjusting to cancer, and resources. Your doctor can get you this Handbook, or you can get it at [www.curesearch.org/](http://www.curesearch.org/)

Visit the [NCI's Web site](http://www.nci.nih.gov/cancerinfo/)

If you are in the United States, you may call the NCI's [Cancer Information Service](tel:1-800-4-CANCER) at: 1-800-422-6237 or TTY: 1-800-332-8615

Information about long term follow-up after cancer treatment can be found at: [http://www.survivorshipguidelines.org/](http://www.survivorshipguidelines.org/)

You will get a copy of this form. You may also ask for a copy of the protocol (full study plan).

**SIGNATURE**

I have been given a copy of all ____ pages of this form. The form includes one (1) attachment.

I agree to take part in this study.

Participant________________________________________________Date ___________

Parent/Guardian____________________________________________Date ___________

Parent/Guardian____________________________________________Date ___________

Physician/PNP obtaining consent______________________________Date ___________

IRB# IRB Approved:
Attachment #1
Certificate of Confidentiality Information

The Children's Oncology Group has received a Certificate of Confidentiality from the federal government, which will help us protect the privacy of our research subjects. The Certificate protects against the involuntary release of information about subjects collected during the course of our covered studies. The researchers involved in the studies cannot be forced to disclose the identity or any information collected in the study in any legal proceedings at the federal, state, or local level, regardless of whether they are criminal, administrative, or legislative proceedings. However, the subject or the researcher may choose to voluntarily disclose the protected information under certain circumstances. For example, if the subject or his/her guardian requests the release of information in writing, the Certificate does not protect against that voluntary disclosure. Furthermore, federal agencies may review our records under limited circumstances, such as a DHHS request for information for an audit or program evaluation or an FDA request under the Food, Drug and Cosmetics Act.

The Certificate of Confidentiality will not protect against the required reporting by hospital staff of information on suspected child abuse, reportable communicable diseases, and/or possible threat of harm to self or others.