Neurocognitive Impacts of Cancer and School Supports

September 30, 2023

Skyler Leonard, PhD, ABPP
Acting Assistant Professor
University of Washington School of Medicine

Attending Pediatric Neuropsychologist
Division of Psychiatry and Behavioral Medicine
Speaker Disclosure

I have no actual or potential conflict of interest in relation to this presentation.
Agenda/Objectives

• Neurocognitive Impacts of Cancer and Treatment

• Neuropsychology

• School Supports - 504 and IEP’s
  • Differences
  • Eligibility
  • Process
Possible Impacts of Cancer/Treatment

• Cognitive changes (very subtle to severe) – Learning, reasoning, focus, attention
• Emotional changes – post-traumatic stress
• Behavioral changes – behavior dysregulation
• Social changes – missed social opportunities during treatment
Important Factors to Consider

Patient factors – age, previous abilities

Family factors – support during and after treatment

Disease factors – type of cancer, seizures

Treatment factors – chemotherapy, radiation, surgeries/transplants
Cognitive/Developmental Supports during and after cancer

1. NEUROPSYCHOLOGICAL EVALUATION
2. SCHOOL BASED SUPPORTS AND ACCOMMODATIONS
What is neuropsychology?

• The study of brain and behavior relationships.

• Clinical neuropsychologists
  • Assess
  • Diagnose
  • Treat (in some cases)
Clinical Neuropsychology
Time to shift gears
Modern Pediatric Neuropsychology Goals

- Identify strengths and weaknesses
- Determine impact of medical history
- Assist in localization of function and dysfunction
- Establish baseline cognitive functioning
- Diagnostic clarity
- Qualify for services
- Inform treatment plans and Individual Education Programs
- Treat cognitive disorders
Sources of information

- Medical History
- Objective Assessments
- Behavioral Observations
- School Records
- Interview
Domains

- Intelligence
- Attention/Processing Speed
- Executive Functioning
- Language/Communication
- Visuospatial/Visuoperceptual
- Sensorimotor
- Memory
- Emotional and Behavioral
- Academics
- Adaptive
School Based Supports

Individualized Education Program/Plan

Section 504 Accommodation Plan
Individualized Education Program/Plan (IEP)

- For students with disabilities
- Document of instruction and services
- Legal document
- Tailored to child and needs
- Special Education
Who qualifies for an IEP?

- Child with a disability
- Adverse educational impact
- Unique needs that cannot be addressed exclusively through education in general education classes with or without individual accommodations
- Needs special education and related services.
IEP Disability Categories

- Autism
- Deaf-blindness
- Deafness
- Emotional Disturbance
- Hearing Impairment
- Intellectual Disability
- Multiple Disabilities
- Orthopedic Impairment
- Other Health Impairment
- Specific Learning Disability
- Speech or Language Impairment
- Traumatic Brain Injury
- Visual Impairment
Components of IEP

• Current level
• Goals
• Measures of progress/Alternative assessments
• Services – location, duration, frequency
• Modifications/Accommodations
• Assistive tech
• Adaptive PE
• Gen Ed inclusion
• Transition plan
Timeline of IEP

- Request for evaluation
- 10 days to provide permission form
- 60 days - complete evaluation
- 10 days - report
- 30 days - first IEP meeting
IEP Team

- Child (as appropriate)
- Regular Education Teacher(s)
- School System Representative
- Transition Services Agency Representative(s)
- Parents
- Others with Knowledge or Special Expertise about the Child
- Person Who Can Interpret Evaluation Results
- Intervention Specialist(s) or Provider

IEP Team
Behavior and the IEP

• Functional Behavior Assessment
• Behavior Intervention Plan
Reviewing and Revising the IEP

• Review/Revise - At least once per year
• Re-evaluate – At least once every 3 years:
  • Continue to meet eligibility criteria
  • Additional services
  • Present levels
Other important IEP considerations

1. Least restrictive educational environment
2. Summer services
3. Transition plan
Section 504 Plan

- Services through Gen Ed only
- Eligibility: Physical or mental impairment that substantially limits one or more major life activities
504 Process

- Referral
- Evaluate of Eligibility
- Develop 504 Plan
- Implement 504 Plan
- Periodically re-evaluate student
Section 504 Plan Components

- Typically brief
- Lists responsible parties
- Includes accommodations – allow the student to access the general education learning goals
- Not modifications – changes the learning goals
# IEP vs 504

<table>
<thead>
<tr>
<th>504</th>
<th>Both</th>
<th>IEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Civil rights law</td>
<td>• Provide accommodations and modifications to school environment</td>
<td>• Federal Grant Program</td>
</tr>
<tr>
<td>• No separate funding</td>
<td></td>
<td>• State and federal funding</td>
</tr>
<tr>
<td>• No categories</td>
<td></td>
<td>• Disability/eligibility categories</td>
</tr>
<tr>
<td>• Requires substantial limitation on major life activity</td>
<td></td>
<td>• Requires adverse educational impact &amp; need for specially designed instruction</td>
</tr>
<tr>
<td>• Caregiver participation recommended (not required)</td>
<td></td>
<td>• Caregiver is required IEP team member</td>
</tr>
</tbody>
</table>
504 Example - Allergies
**Example - ADHD**

---

**Sample 504 Plan**

Student: Brendan Davis  
Date of Birth: June 22, 2006  
Grade: 4th  
Date of Plan: September 4, 2013  
Projected Date of Review: September 1, 2014  
Mental/Physical Impairment: ADHD

<table>
<thead>
<tr>
<th>Area of Educational Needs</th>
<th>Accommodations</th>
<th>Person or Persons Responsible</th>
<th>Frequency of / When Accommodation is to be Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Completion</td>
<td>Have student complete either even or odd problems</td>
<td>Teacher</td>
<td>When written work or homework is assigned</td>
</tr>
<tr>
<td>Organization</td>
<td>Assign a “buddy” to work with student at end of day to make sure all needed materials and books are brought home</td>
<td>Student, Student Buddy, Teacher (responsible for assigning buddy)</td>
<td>Every day—10 minutes before the end of the school day</td>
</tr>
<tr>
<td>Behavior</td>
<td>Use positive reinforcement when behavior becomes inappropriate</td>
<td>Teacher and other staff depending on location (librarian, etc.)</td>
<td>Whenever needed</td>
</tr>
<tr>
<td>Instructions</td>
<td>Preferential seating - back stations, etc., or near the front of the classroom, away from the door</td>
<td>Teacher</td>
<td>Daily</td>
</tr>
<tr>
<td>Test Taking</td>
<td>Provide a quiet area for the student to complete work</td>
<td>Teacher</td>
<td>Whenever needed</td>
</tr>
<tr>
<td></td>
<td>Allow extra time to complete tests</td>
<td>Teacher</td>
<td>Whenever needed</td>
</tr>
<tr>
<td></td>
<td>Allow the student to complete tests in library or resource room</td>
<td>Teacher</td>
<td>Whenever needed</td>
</tr>
</tbody>
</table>

Approved:  
Date:  
Person:  
Teacher:  
Other School Personnel:  
Name: Title:

---

ADDITUDE  
Strengths and Support for ADHD, Inc.
IEP Example
Individualized Education Programs (IEP) | Washington State Governor's Office of the Education Ombuds

AlbertsonSection 504 Handout.pdf (wa-schoolcounselor.org)
Questions?
Extra information if time allows...
Overall Cognitive Abilities

- Intelligence or IQ
- Verbal reasoning
- Visual-spatial reasoning
- Nonverbal reasoning (pattern recognition, novel problem solving, fluid reasoning)
- Processing speed
- Working memory
Attention and Executive Functioning

- Sustained attention
- Divided attention
- Inhibitory control
- Cognitive flexibility
- Working memory
- Processing speed
- Planning and organization
- Parent report of cognitive regulation, emotional regulation, and behavioral regulation
Language and Communication Skills

Speech
Receptive language
Expressive language
Social-communication
Visual-Spatial/Perceptual

• Testing brains ability to process and organize information

• Tested by having patients match pictures, copy figures, name objects that have been distorted, and judge the orientation of lines at different angles

• “What” vs. “Where” pathway
Sensorimotor

- Testing for lateralized difference that indicate dysfunction in one hemisphere
- Tested by observing gait and having patients complete fine motor tasks
- Key is difference in left vs. right functioning
Memory

• We test short-term (working memory), learning slope, encoding, retention, recall, and recognition
• Tests use variety of list learning, story memory, pictures, location in space, and abstract designs
• Lateralizing value is less reliable but still important
Academics

- Lower priority in neuropsych evaluation
- Standardized tests of reading, writing, and mathematics
- Can help identify learning disorders
Emotional/Social/Behavioral

- Assessed via interviews and questionnaires
- Diagnoses may be provided or deferred
- Treatment recommendations
Adaptive Skills

- Assess via interview, observation, standardized questionnaires with parents and/or teachers
- Extremely important for disability qualification