



Information for Educators, Families and Students Following Cancer Treatment

What Are Late Effects?

Late effects are problems that can occur months or years following diagnosis or treatment of cancer. They can be caused either by the treatment or the disease itself. Children and adolescents who have had treatment for cancer are at risk for late effects. Their educational progress and ability to learn and socialize may be affected. Late effects can change over time depending upon how age and developmental stage interact with educational and social demands. Parents and teachers should be aware of potential problems that may be related to cancer treatment so that children and teens at risk can be watched closely and given extra help if the need arises.

What Types of Learning and Educational Issues May Occur?

Childhood cancer survivors **may** experience **some** of the following:

Cognitive Skills Deficits:

- Processing speed: longer time required to process information, delay between question and response (verbal or written), difficulty with high rate of information input
- Memory issues such as increased forgetfulness, working memory (the ability to work with information you're holding in your mind) and difficulty with retrieving information
- Attention deficits: Some children can become either inattentive or hyperactive or both, easily distractible, or become extremely sensitive to information overload
- Planning and organizational skills
- Learning: slower rate of new learning, difficulty with rote learning
- Language: decreased vocabulary, delays in developing more complex language, issues with speech production which can be due to hearing loss
- An "inertia" that makes it difficult to follow through on goals and plans, difficulty taking action despite motivation

Academic Skills:

Possible difficulties with the following:

- Handwriting/keyboarding, fine motor speed and dexterity
- Spelling
- Reading fluency/reading comprehension
- Understanding math concepts, remembering math facts

What Type of Social/Emotional Issues Might Children Face?

- **Identity:** Decreased self-esteem, anxiety about appearing different, preoccupation with physical condition, negative body image and fear of being bullied
- **Mental health and behaviour:** Depression, anxiety, externalizing behaviours, fatigue, and inability to regulate emotions
- **Social skills:** May be significantly impaired due to missing school or being ill during formative years, problems with peer relationships, inappropriate affect (facial expressions may not accurately reflect mood or emotions)

What Increases the Risk of Children Experiencing Late Effects?

- Diagnosis at a very young age
- Numerous and prolonged school absences
- History of learning difficulties before diagnosis
- Treatment that impairs hearing and/or vision
- Treatment that results in physical disabilities
- Children/adolescents who have had brain tumours, tumours of the eye or ear, Acute Lymphoblastic Leukemia (ALL), Acute Myeloid Leukemia (AML), or Non-Hodgkins Lymphoma (NHL) are more likely to have received treatment (chemotherapy/radiation/surgery) that may affect learning and memory

What Should be Considered Moving Forward?

- Students should be presented with a range of realistic choices and opportunities that are both motivating and achievable
- Having at least one, high quality friendship may protect children from peer rejection.
- A child who has had cancer treatment should be carefully followed for learning difficulties
- If problems begin to develop at school, neuropsychological or psychological testing should occur and an Individual Program Plan (IPP) created based on the results. Also, repeat testing can be useful prior to major transitions at school, (i.e., entry into elementary, middle, high school, post-secondary planning)

Further Information:

Pediatric Oncology Group of Ontario

<http://www.pogo.ca/programs-support/cancer-resources/pogo-publications/>

CureSearch (Children's Oncology Group)

<http://curesearch.org>