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CLINICAL NEUROPSYCHOLOGIST

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My name is Madeleine Connellan, and I'm a Clinical Neuropsychologist. I'm talking today about the role of neuropsychologists in long term follow-up of paediatric oncology patients.

As neuropsychologists, we're involved because our role is to assess and monitor children's cognitive, behavioural, and emotional, development and provide intervention as appropriate.

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Neurocognitive late effects

So, the majority of our research findings which have indicated the need for neuropsychology follow-up of the paediatric oncology patients comes from research of those patients who have had treatment for a malignant brain tumour, particularly the medulloblastoma population. These patients are at greatest risk for cognitive changes following treatment and there are a number of risk factors that have been identified which we take into consideration when considering the risk of a child experiencing neurocognitive late effects.

These include:

- A younger age;
- A diagnosis and treatment;
- The location, size and growth of the tumour;
- Any surgery that was conducted; and
- If there was a need for cranial radiation – this poses a greater risk for cognitive changes in these patients, and we consider the dose and localisation of that cranial radiation when considering the risk posed to those children.

The other risk factors also include primary deficits that may arise from the tumour growth itself, such as hydrocephalus, or sensory or physical deficits that arise due to the tumour location.

There's also retrospective data that indicates that the leukaemia population are at risk of neurocognitive late effects, particularly those who have been treated for high risk, acute lymphoblastic leukaemia and who have received high dose intrathecal Methotrexate.

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So other factors that pose a risk for neurocognitive late effects include:

- The need for prolonged absences from education during treatment;
- The socioeconomic status and coping of the family; and
- Mental health of the patients and their families.

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Common processing difficulties: Attention, working memory & processing speed

	<p>The common difficulties that we tend to see in patients who experience neurocognitive late effects, arise in the domains of information processing – specifically attention, information processing speed, and working memory, which is the skill you use when you’re doing mental arithmetic. You’re doing an active process in your short term memory.</p> <p>These processes have a strong influence then, on a student’s ability to learn and create their knowledge store. They impact on long term memory and the development of executive functions, which come on board in adolescence, allowing them to plan and organise and become more independent learners.</p> <p>So we can see that a disruption to these initial information processing domains has impacts on a student’s performance as they progress through school, in the years and months following their treatment.</p>
00:02:58	<p>It’s important to recognise that the neurocognitive late effects we see in this population do not indicate a loss of skills.</p>
00:03:07	<p>“Growing into difficulties”: The importance of long term follow-up</p> <p>Patients who have undergone treatment for cancer, particularly the medulloblastoma population, do not tend to see a regression in their skills or a loss of those skills that have already been established. Rather, it’s a failure to make the age-appropriate cognitive developmental gains. And with time, as processing becomes more difficult and learning becomes more effortful, the gap between our oncology patients and their healthy peers widens.</p>
00:03:34	<p>We see that the effect of treatment impacts those cognitive abilities that are yet to come online, so to speak. So for example, a patient who is 8 years old at the time of diagnosis and treatment has already learnt to attend well in class, to read, spell and conduct basic arithmetic to a particular level. However, we may see that learning becomes more effortful for them following their treatment, and there’s a disruption to the processing of more complex material as they enter adolescence. They find it more difficult to organise and plan – we see that disruption to those executive functions – and that’s why we see these difficulties in the months and years later, following treatment.</p>
00:04:20	<p>It is important to remember that it’s only a small proportion of paediatric oncology patients who will experience neurocognitive late effects. However, at this stage, we can’t confidently predict who those patients will be. We have identified a number of risk factors which help us target our service to those that may require follow-up, but it does indicate the need for regular screening and consultation to ensure we do detect those patients who are experiencing those late effects and ensure they have appropriate follow-up.</p>
00:04:53	<p>Clinical Neuropsychology in the LTF Clinic</p> <p>The role of clinical neuropsychology in the Long Term Follow-up program is to provide that service that assesses, monitors and provides intervention, regarding cognitive and behavioural development. And this comes in two ways.</p> <p>The first is consultation and liaison as part of the multidisciplinary team. Neuropsychologists provide secondary consultation to families where the patient has previously identified cognitive difficulties.</p> <p>We discuss functional management recommendations that can be put in place at home and at school.</p> <p>We also consult with parents on behaviour management strategies for children who have had a disruption to their attachment, to their social development, during treatment and parents require a bit of extra support in managing behaviour as these children develop.</p> <p>We provide psychosocial screening to our adolescent patients providing them with a confidential session with a particular focus on mental health.</p>

We discuss with our patients and with their families how they are adjusting to the transition as they move beyond the hospital environment out into their community supports, and what this means to them as a family. We discuss with families also how to discuss referrals with their GPs in order to access community mental health supports, and outline the conversations that would be helpful for them to be having with their GPs, particularly around mental healthcare plans. And in the clinic, we also identify any need for a comprehensive neuropsychology assessment, to better document the neurocognitive changes that may be occurring for this patient.

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Clinical Neuropsychology in the LTF Clinic

And that's where our second role comes in, which is providing these comprehensive assessments. We target those processes identified earlier – attention, working memory, processing speed – but also a broad range of cognitive domains, to understand the cognition and behaviour of this child. Based on the findings, we then provide individualised functional recommendations to these families, specifically highlighting this patient's cognitive strengths and how we might be able to use strategies utilising these strengths to assist in areas that might be more difficult for them.

A very basic example would be if a student responds well and interprets visual information with greater ease than written information.

As part of our assessment, we liaise with parents, with teachers, with other healthcare providers and allied healthcare providers, to discuss how these recommendations can be put in place day-to-day with these patients.

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So an important reason that we provide consultation regarding mental health and psychosocial difficulties in clinic is because we know that this population are at greater risk of post-traumatic stress disorder, depression and anxiety. And we know that there is a need to follow-up these patients over many years, as children, adolescents and young adults develop a greater understanding of their cancer diagnosis and treatment, and the impact it's had on them and their families.

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We do frequent screening with adolescents regarding their mental health and have conversations with them and their parents – with the adolescent's permission – regarding how they might access appropriate support in their local community. This is usually done by recommending a consultation with their GP to discuss a mental healthcare plan and obtain a referral to a local clinical psychologist.

We also discuss specific mental health services in regards to drug or alcohol difficulties, specific learning difficulties and a variety of different community services.

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We also do a lot of work with families around the family coping and adjustment, particularly as the family transitions from being in hospital frequently through treatment, to being off treatment, and then moving into our long term follow-up program where they may be only then identifying the difficulties that are arising for their family, and working out ways that they cope with what is their normal life, following treatment and the impact it's had on their family.

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Thank you for listening.

END OF TRANSCRIPT

Disclaimer: The information in this video is considered to be true and correct at the date of publication, however, changes in circumstances after the time of publication may impact on the accuracy of this information. The video is not intended to replace clinical judgement.

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The video is available at <https://pics.org.au/health-professionals/professional-development/elearning/late-complications/>

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