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## PODCAST TITLE

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## Introduction:

Hello! My name is Mattea Lee, and I am a second-year medical student at the University of Calgary. This podcast was created in conjunction with Peds Cases and the Canadian Pediatric Society, and summarizes the position statement titled “Screen Time and Young Children: Promoting Health and Development in a digital world”

Today we will be discussing the key points of this position statement, from discussing the benefits and risk associated with screen time, and highlighting the 4M model. The 4M model includes minimizing screen time, mitigating risks, being mindful and modelling healthy behaviour. Later in this podcast, I will be joined by Dr. Michelle Ponti and Dr. Michelle Jackman so we can have an open conversation on screen use in young children, and their perspectives as working pediatricians. Dr. Ponti is chair of the CPS Pediatric Digital Task Force, and lead author in the statements on digital literacy. Dr. Jackman is a pediatrician at the Alberta Children's Hospital and has clinical and research experience in helping children and their families with Pediatric Obesity. We recognize that our world is surrounded by screens, from our phones to the TV, and we want to talk about practical tips on how to implement these healthy screen skills into our daily lives as physicians and parents. A separate PedsCase podcast was created by Dr. Fanyu Yang, who discusses the CPS position statement titled Digital Media: promoting healthy screen use in school aged children and adolescents.

## Objectives

After this podcast, the listener will be able to

1. List the potential developmental, psychosocial, and physical-health benefits and risks of screen media in children under the age of 5.
2. Discuss the evidence-based guidelines to support children’s early media experiences using the 4M model
3. Develop an approach from working pediatricians on how to implement these models as a physician and parents

## Case Study

Let's introduce this podcast with a case-study. You are working in a general pediatric clinic. Today, you are seeing a 4 year old boy, Adam, for his annual physical exam. You also prepare to specifically inquire about Adam's lifestyle habits, including his activities, diet, physical activity and screen time use. While taking Adam's medical history with his mother, Adam starts to get impatient. Adam starts fussing and squirming around in his chair. Adam's mother quickly hands him her phone. As she does this, Adam's mother confesses that she often hands Adam her phone in situations when she needs to keep him occupied. She admits she feels some guilt and is also wondering what impacts screen time has on a young child. What medical recommendations would be appropriate? What does the literature suggest are possible risks and benefits for screen time use? As a physician, you recognize that you want to finish completing his medical history, but also recognize that this can be a "teachable moment." We will come back to this case study on how as a physician, we can role model positive behavior with screen time.

A survey from 2016 CPS members found that parents often asked 4 questions regarding screen time, how much is too much? How can I effectively set a time limit? What are the effects on health and well-being? And what is optimal content for my child to view on a screen? Let's dive into all of this

## Benefits and Risks Associated with Screen Time

Many Canadian parents express concerns on how screen time affects children and families. This is no surprise and has likely drastically increased since the start of the COVID-19 pandemic. Before we begin talking to Dr. Ponti and Dr. Jackman about the changes observed during the pandemic, let's get a good background understanding of what the CPS recommends for young children under 5 years of age. We will first be discussing existing literature on the benefits and risks associated with screen time in 3 domains: Development, Psychosocial impacts and Physical health. Following this, we will talk about the 4M model.

To start off this conversation, it is first important to understand "What is screen time?" Screen time refers to any time present in front of a screen, whether that be a smart phone, tablet, television, video game, computer, or even wearable technology. Conversely, Digital Media refers to content transmitted over the internet on all devices. TV usually dominates all screen use in young children, and many preschoolers accumulate screen time both at home and during childcare.

## Developmental Benefits and Risks Associated with Screen Time

Our first domain is development. There is an extremely important developmental period from infancy to preschool age. Research has shown that a child's earlier screen encounters can be formative. Any health routines, including screen use are established easier in early childhood. These routines may be-habit forming, and early exposure increases the likelihood of overuse later in life.

We are seeing some important trends in early childhood. Active Health Kids Canada reported that children 3-5 years old spend an average of 2 hours per day in front of the screen, and only 15% of preschoolers met the current Canadian Sedentary Behaviour guidelines which recommend limiting screen use to < 1 hour per day. A 2012 US study found that children between 8mo to 8yo are exposed to an average of 4 hours of background TV in one

day.  Although this study might be slightly outdated, the prevalence of screens has only grown in the last decade. From these statistics, we can say that screens are ubiquitous in our world.

What is the impact of screen time on development? Babies can begin to imitate specific actions they see on the screen between 6 and 14 mo. By the end of their second year, children will begin to understand content. However, there is strong evidence that toddlers have difficulty transferring 2D to 3D representation and are unlikely to learn from the TV and this age. In a stark contrast, toddlers learn intensely through face-to face interaction with parents and caregivers. This type of in person real learning is more interactive, enriching, and efficient.

Are there any benefits for development? After the age of 2 years, quality TV that is well-designed, age-appropriate and with specific educational goals can provide an additional route for early language and literacy. This occurs through fostering cognitive development including positive racial attitude and imaginative play. When combined with interactive and contingent responses from adults, children can learn new words. E-books may build early literacy, but again is best when co-viewed and sinuses with a parent or caregiver.

Conversely, what are the risks for development? Research has shown that screen exposure >2hours/day by infants younger than 1 year had an association with significant language delay. Moreover, when exposure to screen time is extremely high, >7hours/day, there is evidence for attentional difficulties. Even high exposure to background TV has been found to negatively affect language use, acquisition, attention, cognitive development, and executive function in children younger than 5 years old. Prolonged TV viewing is associated with lower cognitive abilities, especially related to short-term memory, early math, reading and language skills.

Given there are no proven benefits of media exposure and there are however some significant developmental risks, we should counsel parents to **minimize** screen time for young children. This leaves more time for face-to-face interaction. Moreover, parents can **mitigate** the risks associated with screen time. This can include watching educational and age-appropriate content with their children, actively curating screen activities with educational apps, and combining touch screen use with creative or active play.

## Psychosocial Benefits and Risks Associated with Screen Time

What are the psychosocial impacts of screen time? Educational TV seems to reach children across all socio-economic status regardless if the families own a laptop, mobile device or TV, and this quality content may enhance both social and language skill for children older than 2 years old. If the content is well designed and age-appropriate, educational programs can help children learn important lessons such as empathy, tolerance and respect. However, it is important to minimize screen time for children under the age of 2. Recent evidence has shown an association between increased TV exposure in children under the age of 2, and anti-social, aggression, victimization behaviours in middle childhood. This may even be self-perpetuating as parents may feel the need to use screen media to comfort their child as they continue to grow older. Studies have shown that protecting quality family time and setting meaningful limits when children are young make it easier to cut back screen time when children are older. It is critical for developing children to have off-screen time to play, which will provide them with essential skills such as self-regulation, creativity and learning through imaginative play.

Have you ever wondered what the effect of parent screen time has on their children? Recent studies confirm a strong association between the time parents spend on their phone, and the likelihood of children to act out to gain attention. This often leads to negative interactions.

So overall, what are the factors that are associated with screen time and positive psychosocial development? The key is mindful use of screen time. By using screen time mindfully, parents and caregivers can actively enhance the media encounter by choosing them together and purposely. This also allows for a limit of screen use in public places or during family routines, such as meals which are prime opportunities for social learning. Finally, it is especially important to pay attention to choosing appropriate content, with specific awareness of watching content related to diversity and inclusion, social issues, violence, gender and body image messages that children are exposed to.

**Physical Benefits and Risks Associated with Screen Time**

Let's discuss the impacts of screen media on physical health. On a positive note, screen time can encourage and even compliment physical activity. After the age of 3 years old, children will respond to activity-based programming that encourages them to imitate or participate in play. Families or child-care providers can consider using fun, age-appropriate movement or fitness apps to incorporate more physical activity. This can even help connect on and off-screen experience, allowing engagement between the children, caregivers, peers and supporting imaginative play. However, if TV viewing at early years becomes a routine, children are at higher risk for being sedentary and overweight. In 2012, a Canadian study found that children who watched only 1 hour of TV per /day were 50% more likely to be overweight than children who watched less. TV can also expose children to unhealthy food and snacking commercials, and a systematic review found that adverse dietary effects were found in children aged 2-6 years, who watched as little as 1 hour per day. Finally, screen time before bedtime is associated with increased sleep problems. Volume, not content, was detrimental to sleep patterns as part of melatonin suppression.

So how do we balance the positive and negative aspects of screen time? The CPS suggests modelling screen time. All children, but especially children younger than 5 years old require quality family time and active play to develop some essential skills such as self-regulation, reactive thinking and language. Children should not have to compete with screens for parent attention. So, when parents model healthy screen habits this translates into prioritizing interactions with their children over their screens, choosing to use media together, helping children recognise and question advertising messages and minimize their own screen use when their children are present.

**Reinforcing 4M**

We talked about the CPS recommendations of the 4 Ms. To conclude, let's go over them one more time.

The first M is to minimize screen time. Screen time for children under the age of 2 is not recommended, and for children aged 2-5 years old, limiting screen use to a maximum of 1 hour per day is recommended. It is crucial to maintain daily "screen-free" times such as family meals. Finally, it is recommended to avoid the use of screen at least 1 hour before bed time.

The second M is for parents to mitigate the risk associated with screen time. Parents should be present and engaged when possible and co-view with their children. This is two-fold as it allows

parents to be aware of the content, prioritize educational, age-appropriate and interactive programming.

The third M is being mindful of screen use. Families should reflect on screen habits and develop a plan on when, how and where screens may or may not be used. As the children get older, this also includes helping children question advertising messages, and any other problematic content.

The last M is for the caregivers to model healthy screen use. This includes turning off screen when they are not in use, or choosing alternatives such as reading, outdoor play and hands-on activities.

Minimize, mitigate the risks, being mindful and modelling healthy behaviours can allow caregivers to promote child healthy in a developing digital world.

**Adam's Case: Discussion with Dr. Ponti and Dr. Jackman**

For the last part of this podcast, lets bring it all together and talk to Dr. Ponti and Dr. Jackman about the 4M's and how we can implement them into our practice as medical professionals; such as the case with Adam at the beginning…

Mattea: *How would you approach Adam's case?*

Dr. Ponti: *First, this is a great case example of a scenario I see all the time. I use it as an opportunity to open the conversation about screen time within the family's daily routine OR as a time to model how to recognize a change in a child behaviour. I'll offer an activity or engage the child in some play. I reassure parents, that we can work on a screen plan together and to "lose the guilt." I try to remind or do in the moment teaching parent strategies to help the child self-regulate without the screen. A caveat here is that parents need to be available to help their child co-regulate. I would remind Adam's mom here, that at this age, Adam's restlessness or fussing is his way of communication. Adam needs her attention to help manage his emotions, preferably before a full melt-down sets in. I often model by shifting gears myself, and I start the developmental assessment or physical exam. I will also have other novel toys at the read. Mom may have a snack or water bottle, so together, we can redirect Adam to a toy or play (blocks, coloring, or other age-appropriate activities).*

Dr. Jackman*: I agree completely with Dr. Ponti. I like the ideas that she had to empower parents in our office to use non-screen type ways to teach emotional regulation, like 3-D toys. This a great idea and consideration. I would also like to touch on Dr. Ponti's point about parental guilt. We have a parent who has actually recognized, and has some insight on the increased use and dependence on screen time that she's had on the last while with her family. With the emergence of digital media, screen use has increased dramatically in Canadian life, especially with COVID 19. This has caused new concerns and worry amongst all parents about how screen time is affecting their child and family relationships. I would pause for a minute, and I would like to acknowledge and validate this mother's care and concerns, as well as commend her on recognizing this. I believe we also must be mindful of the stress that caregivers have been under, particularly during the pandemic for safe and affordable childcare.*

Mattea: *What are common questions you hear from parents regarding screen time?*

Dr Ponti: *A survey was done by the CPS and we found that parents questions have very similar themes. Parents want to know:*

1) *How much is too much?*
2) *What is appropriate content*
3) *How to set limits?*
4) *The biggest question I hear is: What are the possible harms? Is screen time affecting my child's brain, development, and overall health?*

*Those are the common themes and questions pediatricians are seeing in our offices on a regular basis. A distinction I like to reinforce is that how we use screens is much more valuable than discussing how much. For example, is the child using screens to learn a new skill? Is the child co-viewing with their parent? What is the age and developmental stage of the child? Is the content appropriate? What is the context? Is it for early literacy? Interactive app? Educational TV? These are the details I like to focus on in the conversation when parents bring up screen time questions.*

Mattea*: How would you recommend we set limits in Adams household?*

Dr. Ponti*: we know that a child's early screen encounters can be formative. Younger children, like Adam, are more susceptible to the negative impacts of heavy screen use. WE also know that early over-exposure increases the likelihood for overuse when they're older. Limit setting and routines are more easily established in early childhood, rather than cut back later. Start early! It is great that in this case example, Adam is only 4 years old, this is a great time to set screen time limits Screen use tends to increase over time to become more entertainment rather than educational viewing. Limit setting for screen should be no different that limit setting for other routines, like meal planning, bedtime routines, or even safety. I like to use the analogy of bike helmets. When we start to teach our children how to ride a tricycle, we always tell our kids to wear a bike helmet! We need to set the limits for screen use too.*
*Parents can also use timers, there are simple and free timers to help set limits, as an external reminder. Parents can also add passcodes to apps, such as guided access, and finally, turn off location services for safety. I also suggest parents to consider screen free zones in the home, like bedrooms and mealtimes. I will encourage parents to monitor and model their own screen time limits. Children can observe their parents putting their own phone away. Adam could observe his mother not pulling out a phone, and instead go into her purse for a book, a fidget toy, a water bottle, for example. Finally, screen free mealtimes cannot be emphasized enough. Parents should be able to ignore the ringer and the dings if they are engaged in an activity with their child, so their child realizes they are the priority!*

Mattea: *We talk a lot about quality content in this CPS statement, do you have any recommendations of what constitutes quality content?*

Dr. Jackman: *Great question, Mattea. I like to dovetail off of what Dr. Ponti was saying, and let's go back to our guiding principles, and look at how content is viewed. This is the most important factor. Co-viewing is the most important principles, as well as the most important factor with how young children can derive benefits from quality content. Recent evidence has suggested that video-chats with loved one during the pandemic has given some benefits to children. We would all agree that videos with loved one in moderation is positive content. Another positive content that has shown evidence for enhancing development is quality TV shows, with educational programming. But again, these are best done co-viewed with a caregiver. For resources for parents, I will often refer parents to local city libraries, which have paper books that are best for this age group! There is evidence that the tactile benefits and parent-child interaction that takes place with reading paper books, best supports a child's fine-motor development, social*

*development, and improves parent-child relationship. Another great resource mentioned in the guidelines, is the "MediaSmart" website which will have links to quality content and age-appreciate viewing. There is also a website called Brain Story Narrative (an Alberta Family Wellness initiative); I encourage parents, caregivers, and pediatrician to seek this out as it explains the neuroscience behind the benefits of reading, play and parent-child interaction in the developing brain. Finally, there are a lot of apps that have child-friendly content. I would like to caution against YouTube and even YouTube Kids children due to advertisements and commercials. There are ways parents can try to make modification of these apps, to ensure that their child is viewing it in a safe way.*

Dr. Ponti: *I love all of Dr. Jackman's suggestions. I will often recommend the CPS website for parents called "caring for kids." "MediaSmart" (as previously mentioned), "Common Sense Media" and "CBC kids," all have great suggestions and rating system already available. There is another website, "Canadian Home Video Rating System" which is good. I will often refer parents to these sites because I can't keep up with all the content. These reputable sites will do this work for us. I want to pick up the conversation of what Dr. Jackman mentioned about paper books compared to e-books. The literature on this subject is very nuanced. There are some benefits to e-books, that it promotes some early literacy skills, with certain families, certain kids as long as the parents is co-viewing with the kids. They must be right there, interacting with them, helping them transfer they're learning from the screen to real life experiences. We know that kids are social learners, and that a baby's brain is not wired to understand TV and screens. But babies are well equipped to learn from social interactions, as Dr. Jackman mentioned. At birth, these brain networks that support interactive learning have already been developed. A newborn can recognize voices and faces and is sensitive to social cues such as eye contact, facial expression, and tone of voice. These are the cues and learning aids that help babies and toddlers understand their surroundings. This is known as the serve and return concept, where babies learn from the back-and-forth interaction, using eye contact, reciprocal smiling, cooling, babbling, and pointing. When siting and reading a book, sometimes an e-book can take over with all of the bells and whistles and can become more distracting. With a traditional book, a parent can pause and stop, a baby and toddler can touch the book, feel different textures, and it is much easier to have that back-and-forth compared to a screen.*

Mattea: *To address the elephant in the room, COVID 19 drastically changed all of our lives. An effect of this pandemic has been an increased use of screen time. What have you noticed in the past year and a half regarding screen time, COVID19 and questions from parents?*

Dr. Jackman: *There has been significant increase in screen time in children of all ages during the COVID pandemic. A recent study from the University of Western Ontario showed that screen time may be consumed in excess of 10 hrs a day with the initial onset of the pandemic with the push to online schooling. That has been very concerning in terms of the displacement of not only family-child interactions, but also in physical activity. In my work at the Centre of Wellness and Health, I have seen a significant increase in the metabolic co-morbidities associated with obesity. Again, this goes back to our first point about validating a parents' concerns and trying to alleviate their guilt. It Is also important to recognise that the pandemic has been out of all our control. A benefit from screen time, is that we have been able to keep in touch with loved ones, family, and friends with video chats. Finally, it is important to frame it that there is a balance with screen time. What do we want to see, and what we want for our children in the future? And what we are role-modelling as parents.*

Dr. Ponti: *Those are all great points, Dr. Jackman. I think that screens have got us all through this pandemic in ways that weren't possible just 10 or 15 years ago. They have allowed us to connect, to educate, and to continue working. I often tell parents these are the positive use of screens, and when we choose to be on a screen, teach your child to prioritise these positive uses. For example, is it a social use, an educational use, an active use (like Dr. Jackman mentioned), interactive, or creative use? I will discuss that the Canadian Pediatric Society's 4M principle of screen time still hold true despite the pandemic. I reassure parents that increased time on screens itself isn't inherently risky. Rather it is the context, the content and co-viewing, that are important in maintaining healthy use of screens. A final mantra I tell parents, "Lets focus on progress, not perfection when it comes to our family's screen rime. Make a small change today, use tech to our advantages with positive healthier use." Finally, if parents are really struggling, I encourage parents to seek help with their health care provider, a teacher, or even other care provider.*