Research-based information for **government agencies and policy makers** to support the optimal development of children ages 0 to 3

AWARENESS ALERT

Direct and Indirect Exposure to Digital Devices is Associated with Serious Developmental Risks for Babies and Toddlers

3 out of 4 children under age 2 exceed screen media time guidelines, but caregivers who become aware of specific recommendations allow young children significantly less time with digital devices than parents who are not aware

From birth to three years of age is an extraordinarily sensitive period when 85% of a child's brain development occurs. To grow and thrive, babies and toddlers need responsive face-to-face interactions with human beings and the ability to move freely and use all of their senses.

While digital devices have become integral to the lives of adults, extensive global research has intensified earlier findings that frequent and prolonged exposure to screen-based digital products among children ages 0 to 3 can disrupt their cognitive, physical, language, and social-emotional development. In addition, artificial intelligence products are rapidly transforming young children's real-world and media environments, despite that most products have little to no scientific evidence they are safe for use by children 5 and under.

Higher levels of screen-based digital device exposure in early life are associated with:

- Decreased quality of caregiver-to-infant attachment and interaction.
- Atypical brain development.
- Language delay.
- Autistic-like symptoms.
- Atypical sensory processing
- Poor executive functioning and problem-solving skills.
- Problems socializing with peers.
- Decreased sleep quantity and quality.
- Diminished motor skills.
- Greater risk of accidental injury.

"What [parents] need is palatable, simple information that explains how screens can disrupt a child's developing brain, why children's brains are vulnerable to this kind of injury from screens. They need to know that. And then, if necessary, they need to know how to undo that."

– Comment from a mother who weaned her 18-month-old from screen dependency by stopping his digital device exposure and greatly increasing his non-tech play and face-to- face interaction with people.

Caregiver digital device use in the presence of children (generally known as "technoference") can evoke a distress response in infants and interfere with vocabulary development. When technology interferes with adult responses to very young children's bids for attention, it can result in fewer adult words spoken, fewer child vocalizations, and fewer adult-child conversations. Caregiver digital device use in the presence of young children is also associated with weaker caregiver-child attachment, declines in children's cognitive and social-emotional health, increased child digital device usage, and poorer language development.

Frequent use of digital devices to calm very young children is associated with increasing their emotional reactivity and may displace their opportunities to learn emotion-regulation strategies. Having the TV on distracts the play of young children, results in fewer caregiver-child interactions, can increase their oppositional defiant behaviors and interferes with language acquisition. Young children's heavy tablet use is linked to more anger outbursts over time.

Compared to how babies learn in person, a learning deficit is associated with babies' viewing of media content on screen-based devices. Mobile apps aimed at very young viewers may also use manipulative design techniques to keep children viewing. Video chats between small children and loved ones have been shown to support relationships, but social interactions in person are preferable.

Taking steps to prevent harms associated with digital device use and exposure among young children may help lessen their rapidly growing need for costly speech, behavioral, and other therapeutic interventions.

These actions can help close the gap between what researchers have learned and what the public knows:

- Inform caregivers of what babies need for healthy early brain development. That is, gentle touch; responding to coos, babbles and cries; using words directed toward baby and baby's interests; reading together; providing indoor and outdoor play time and

non-electronic, non-tech playthings such as balls, blocks, pots and spoons; and imaginative play, as with dolls, fabric pieces, water, sand, mud, and empty boxes.

- Provide strategies for caregivers to manage their own technology use, such as silencing and placing their digital devices out of sight when interacting with young children. Encourage all caregivers, including parents-to-be, to prioritize quality, face-to-face engagement with their young children, such as having times of the day (like meals) and spaces in the home (like bedrooms) that will be tech-free for all family members.
- When allowing any screen exposure, caregivers should operate the device. Young children are not advised to have their own digital devices or be left to use digital devices independently.
- Ensure that clinicians and other care professionals know digital device exposure recommendations and that caregivers are supported and informed about the association of early life digital interactions with poorer developmental outcomes.
- Encourage clinicians to provide supportive, empathetic guidance to caregivers about digital device management. If negative effects on a child's development due to digital device usage is suspected, stopping the child's digital exposure and greatly increasing non-tech play and face-to-face human interactions has been shown to be helpful.
- Concerns have been raised about AI-enabled products, including the effects of low quality AI-created media content on infant perceptions. Placing infants into environments that have AI-enabled products (such as smart bassinets) have the potential for harming early relational health through reduced parent soothing, which is critical for early bonding. Little to no scientific evidence on the impacts of AI-enabled toys on the development of children aged five and under, but early research shows the products can misinterpret children's emotional cues and are ineffective at supporting critical developmental play. Until more is known about the effects of AI products, UK government guidance can serve as a model that young children should avoid interacting with AI toys, AI apps, AI tools, robots, chatbots, and smart speakers.
- Communicate digital device exposure guidelines. Recommendations vary by country. Most advise no digital device use by or around children until at least age 2, except for brief video chats with caring adults. The French Health Ministry and German national guidelines recommend that children under age 3 avoid direct and indirect digital device exposure. The World Health Organization recommends no sedentary screen time under age 2 (such as watching TV or videos, playing computer games) and that children ages 2 to 5 have no more than 1 hour (or preferably less) sedentary screen time in a day.
- Any digital media consumed by young children should be slow-paced, age-appropriate, non-violent, and ideally co- viewed with an attentive adult.
- Adults should avoid prolonged digital device use in the presence of young children and keep audible notifications to a minimum.
- Support caregiver mental health by addressing sources of stress, which can potentially lead to increased caregiver or child digital device usage.
- Reinforce digital device use guidelines and support the caregivers who follow them by promoting affordable nurseries, childcare centers and preschools that do not allow child-facing digital devices.
- Educate primary and secondary school students about brain development and avoiding harmful effects of technology.
- Allocate safe and secure public spaces including playgrounds, parks, sidewalks, and community centers. Provide lending libraries for books and non-tech toys and playthings.
- Label digital product boxes and digital media about the risks to young children.
- Initiate public health campaigns that:

  (1) Within families, promote face-to-face, supportive interactions with babies and toddlers, as well as enjoyable, low-cost non-tech play and activities.

  (2) Convey how exposure to digital products can negatively impact the development and well-being of very young children and that artificial intelligence products have not been proven safe for very young children to use.
- In devising policy, prioritize independent research and carefully scrutinize industry-funded studies.

Prevention is the solution. Public awareness of young children's needs for play and face-to-face, caring human interaction and of the harms associated with digital products will form a firm foundation for thriving citizens and a healthier world.