

Improving the Quality of End-of-Life Care in the Pediatric Intensive Care Unit: Parents' Priorities and Recommendations

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ABSTRACT

OBJECTIVE. Despite recognition that dying children and their families have unique palliative care needs, there has been little empirical inquiry of parent perspectives to improve the quality of end-of-life care and communication. The purpose of this study was to identify and describe the priorities and recommendations for end-of-life care and communication from the parents' perspective.

METHODS. This was a qualitative study based on parental responses to open-ended questions on anonymous, self-administered questionnaires, conducted at 3 pediatric ICUs in Boston, Massachusetts. Fifty-six parents whose children had died in PICUs after withdrawal of life support participated in this study. We measured parent-identified priorities for end-of-life care and communication.

RESULTS. Parents identified 6 priorities for pediatric end-of-life care including honest and complete information, ready access to staff, communication and care coordination, emotional expression and support by staff, preservation of the integrity of the parent-child relationship, and faith.

CONCLUSIONS. Parental priorities and recommendations offer simple yet compelling guidance to improve pediatric end-of-life clinical practice and research.

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Key Words

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THE DEATH OF a child is an unexpected and unimagined event for most families. Even families of children who are born with life-shortening conditions cannot truly be prepared, because the death of a child inherently violates the natural order and is “always out of season.”¹ Each year, ~55 000 children die in the United States, just over half during the first year of life.¹ Beyond infancy, the most common causes of death are unintentional injuries, congenital anomalies, malignant neoplasms, and intentional injuries.¹⁻³ Most pediatric end-of-life care occurs in acute care hospitals, typically in critical care settings.⁴⁻⁶ Two thirds of deaths in the pediatric intensive care unit (PICU) follow withdrawal of life-sustaining treatment, and withdrawal of mechanical ventilation is the most proximate cause of death.⁷

Questions about what constitutes and how best to provide end-of-life care for children remain inadequately answered. Recent studies with adults have recognized the importance of incorporating the viewpoints of patients, families, and staff to improve the quality of end-of-life care.⁸⁻¹³ Despite recognition that children have significantly different causes of death and special developmental considerations,¹⁴ the unique palliative care needs of dying children and their families have received less empirical inquiry.¹⁵⁻²³ When making end-of-life decisions on behalf of their children, parents place the greatest importance on quality of life, expected neurologic recovery and likelihood of improvement, and perception of the child’s pain and suffering.^{18,22} Children who die of cancer experience considerable pain and symptoms, such as fatigue and dyspnea, according to their parents, diminishing their quality of life and adding to the emotional burden of families.¹⁹ At the end of their child’s life, parents value having adequate information and communication, being physically present with their child, optimized pain management, social support, and empathic relationships with staff members.^{15,16,18,19,22}

The Institute for Medicine¹ has issued an urgent call to improve the quality and delivery of pediatric palliative care, including family-focused research and educational initiatives. Toward that end, the purpose of the study was to identify parents’ priorities and recommendations for improving the quality of end-of-life care and communication in the PICU. The data were derived from qualitative open-ended questions as part of a larger study examining parental decision-making and social support at the end of life.¹⁸ Here, we present the parents’ own words about what was most and least helpful at their child’s end of life, ways to enhance communication, and advice about how to improve care.

METHODS

Design

The study was part of a larger 3-site study, including Children’s Hospital Boston, Massachusetts General Hos-

pital, and Tufts New England Hospital, which used retrospective parent self-report questionnaires to examine parental perspectives about end-of-life care.¹⁸ Responses to open-ended questions were analyzed by using standardized qualitative methods²⁴⁻²⁶ to identify parental priorities.

Participants

Parents whose children had died after the foregoing of life-sustaining treatment were eligible to participate. The deceased children ranged in age from newborn to 18 years of age and represented the full range of medical and surgical diagnoses. Between 12 and 45 months had elapsed after the children’s deaths at the time of questionnaire administration.

Questionnaire and Data Collection

The Parental Perspectives Questionnaire¹⁸ was designed to elicit parent ratings about end-of-life care, adequacy of pain management, decision-making, and social support. The present report focused on 4 open-ended questions (see Table 1) and elicited parent-derived rather than expert-hypothesized priorities.¹⁰ We asked parents specifically how family-staff communication might be improved, because this area has been identified as particularly salient and in need of improvement.^{8,10,15,27-33}

Self-administered, anonymous questionnaires were mailed to the households of 96 children who had died. Two questionnaires were mailed to each address to provide 1 for each of 2 parents in 2-parent households. Parents were asked to complete the questionnaire independently.

Data Analysis

The data were read and coded independently by the first 2 authors (E.C.M. and M.D.R.), who served as the primary coders, and parental priorities were identified. Content analysis^{24-26,34} was conducted on the parental responses to the open-ended questions by marking and categorizing key words and phrases to identify topics and issues of relevance to the parents. In face-to-face discussions between the primary coders, the coded responses

TABLE 1 Parent Perspectives Questionnaire: Open-Ended Questions

What was most helpful to you in getting through the time at the end of your child’s life?
What was least helpful to you in getting through the time at the end of your child’s life?
How can hospital staff improve their communication with parents at this difficult time?
What advice do you have for hospital staff members in helping parents during this difficult time?
What advice do you have for other parents who are facing a similar situation?

The Parent Perspectives Questionnaire includes the 5 open-ended questions listed above. The analysis for this article was based on parental responses to the first 4 questions. The fifth question was deemed significantly different in nature and will be analyzed separately.

were then grouped into broader thematic categories and labeled accordingly. Agreement about thematic content and labeling occurred when the primary coders reached consensus through the process of rereading and discussion. Parental priorities were established if they appeared in $\geq 20\%$ of the parental responses. Independent reading and coding of the parental responses by coauthors (J.P.B. and R.D.T.) served as an additional source of coding validation. Overall, the interrater percentage of agreement reached 80% between the primary and secondary coders.

Research Ethics

The institutional review boards of the 3 participating hospitals approved the study design and Parental Perspectives Questionnaire. A cover letter and consent form accompanied each questionnaire explaining the purpose of the study, directions, and study methods designed to assure confidentiality. Parents were instructed to read the informed consent and to check a box on the questionnaire if they wished to participate. Information that could identify the patient, parent, or particular PICU was not solicited.

RESULTS

Of 96 eligible households, we analyzed 56 completed questionnaires (58%) from 56 different parents, including 36 mothers (64%) and 20 fathers (36%). The mean age of parent respondents was 42.3 years (± 8.4), and 75% were married. Ninety-one percent (91%) were white. Regarding religious identification, 50% were Catholic, 34% Protestant, 5% Jewish, 2% Muslim, and 9% indicated no religious affiliation. Parents identified 6 priorities as important: honest and complete information, ready access to staff, communication and care coordination, emotional expression and support by staff, preservation of the integrity of the parent-child relationship, and faith. Table 2 summarizes the parental priorities with illustrative quotations.

Honest and Complete Information

Parents were clear that honest and complete information needs to be forthcoming and shared with families. Some parents advocated that the “big picture” be presented, to the extent possible, noting that the broader clinical per-

spective aids with end-of-life decision-making and psychological adjustment after the child’s death.

“Listen. Answer all questions. Give all information—parents can handle it. What we cannot handle is not knowing what is going on. If something is going wrong, tell us.”

“Give parents more of a context for the experience—let them know, while you don’t know the exact outcome for any particular child, more often than not this is the course of the next few hours, days, weeks, months ... this would give us a better perspective to face and make better decisions down the road rather than responding to the limited situation/crisis immediately in front of us.”

“Tell the truth—no matter what the truth is! It’s the only way to help free some of the parents’ guilt of whether or not they made the right decision for their child, especially after the child’s death. Keep them informed about everything that is being done to their child.”

Ready Access to Staff

Many parents emphasized ready access to staff members as a means not only to gain information but also to foster reassurance, trust, and emotional peace of mind. Some parents suggested a widened variety of means to enhance their access to staff.

“Just keep updated with regular meetings. It is so hard when you miss the doctor at the bedside. Set a regular time for “office hours at the bedside.”

“Make sure the primary doctor is around as much as possible. The parents have learned to trust this person and can get much comfort from just knowing they are there.”

Frustration over accessing physicians or inability to have contact with particular staff engendered considerable stress for some parents. The perception that staff members were in a hurry or, worse, reluctant to meet sent powerfully dispiriting messages to parents.

“They need to spend more time talking with parents. They were in too much of a hurry.”

“The biggest problem was that it was too late before anyone really spoke to us, despite our asking.”

“The doctor could meet with parents, not just promise they will when they don’t want to.”

Communication and Care Coordination

Many parents identified the sheer number of professionals and the coordination of communication and care as

TABLE 2 Parents’ Priorities for Pediatric Palliative Care

Honest and complete information	“What we cannot handle is not knowing what is going on.”
Ready access to staff	“Set a regular time for office hours at the bedside.”
Communication and care coordination	“There were too many doctors explaining things.”
Emotional expression and support by staff	“People need to feel that people really care, not that it’s just a job.”
Preservation of the integrity of the parent-child relationship	“Show more sincere compassion for the parents’ and child’s needs.”
Faith	“Prayer and the services of my rabbi.”

problematic. This situation sometimes eroded the parents' confidence and trust in the care, often placing additional time and emotional burden on parents to sort through issues and to seek clarification. For some parents, poor coordination contributed to a nagging, anxiety-provoking sense of "not knowing what is going on." Our data revealed 2 different and, indeed, contradictory parent preferences for communication. Some parents preferred a single familiar figure (or few) to serve as spokesperson who was capable of lessening the confusion and offering understanding, whereas others preferred to hear all of the viewpoints.

"[There were]...too many doctors explaining things, there really should be just a few. It is too confusing."

"There were many different MDs involved in my child's care. This became difficult when information was given to me. They sometimes had very different opinions and ways of dealing with the critical illness of my child. If there was a way of meeting together with all of them and myself it would have been very helpful."

"Share with us the dilemmas the medical staff may be facing, what bias the doctors and nurses may have to stop or keep going."

Emotional Expression and Support by Staff

Parents strongly endorsed staff members' genuine expression of kindness and compassion. Staff emotional expression occurred both verbally and behaviorally and was generally perceived as authentic and reflecting care beyond that embedded in the professional role. Some parents encouraged staff to "be real people" and to allow themselves to express real feelings. Staff members who were perceived as aloof, detached, or unexpressive were described as "stone-faced" and viewed as less empathic.

"Be compassionate and ask how parents are. Don't fall into that detached type of working. Parents need to feel that people really care, not that it's just a job. The people at the hospital who allowed themselves to have genuine feelings helped me the most."

"Communicate honestly, false hope in this situation is unfair. I can appreciate detachment by the staff who go through these situations on a regular basis. However, that personal touch becomes so important to people who are functioning at a low level. The staff becomes the only link between you and the unknown."

Beyond spoken words, parents valued behavioral expressions of kindness and empathy when staff members took actions to soften and humanize the harshness of the environment and situation.

"The doctor changed my infant's vent to a more quiet one. We were able to have our friends and family in the room with us. The nurse lowered the lights and shut off the monitors before they went off."

"[The staff] ... stood there with us and shared our grief. How can you improve on that? They communicated volumes with that simple act."

Preservation of the Integrity of the Parent-Child Relationship

Many parents emphasized the sanctity of the parent-child relationship and fulfillment of parental duties. In general, parents wanted to be recognized for their vital role, responsibility, and contribution to the child's care. Parents valued being listened to, respected, not judged, and included in the decision-making process.

"Listen to what the parents have to say. Show more sincere compassion for the parents' and the child's needs. In the long run, the parents do know what is best for their child."

"When I would read my child's chart and see "impaired coping" written, there was nothing more disrespectful. I'd like to see some of these people "cope" with the same situation and have to read that someone thinks they're 'impaired.' I personally saw to it that one nurse who wrote that in the chart not take care of my son again."

Most parents expressed a strong desire and need to be physically close and to care for their child. Privacy was highly valued during the final hours and days together. Some parents described "quiet time" as moments of peacefulness when they could "reach out and touch him" or "go and see him at all hours of the night." It was essential that parents not be rushed or intruded on during these special moments. Several parents emphasized the importance of being with their child throughout hospitalization, including after death. For many, there was a wish to focus intensely on the time to "say good-bye."

"The nurse who took care of my infant was so kind and compassionate. She stayed in the room with us but also gave us our space, which was really good. They let us take as much time as we needed to say good-bye."

"[Being able] to sleep with my son one final time."

"[It was most helpful] to be with her through the discontinuation of life support and to be able to bathe her and keep her in the hospital room and not the morgue while waiting for the funeral home to come."

Faith

Many parents acknowledged their faith as central to their efforts to make meaning of the situation, to provide guidance and permission around end-of-life decision-making, and to cope better. Faith helped to sustain some parents and offered comfort in the act of praying for God's help and guidance, seeking counsel from religious personnel, and receiving social and emotional support from faith communities. Of the parents who reported their faith to be important to them, most emphasized its positive aspects. Some parents, however, acknowledged their deep spiritual distress. Consider the contrast of these 2 responses to what was most helpful and least helpful.

"My faith and trust in God, who was in charge of Jessie. Knowing she would not suffer no more when she went to be home to be with the Lord."

"Just when I needed my faith, I hated it, for deceiving both my child and myself!"

DISCUSSION

From the parents' perspective, quality end-of-life care includes 6 simple yet compelling priorities: honest and complete information; ready access to staff; communication and care coordination; emotional expression and support by staff; preservation of the integrity of the parent-child relationship; and faith.

Information, Access, Communication, and Coordination

The information available to parents, access to providers, communication, and care coordination are central to any discussion of parent-identified priorities and are interrelated from a clinical perspective. In a word, most parents advocated that "everything" be shared about their child's end-of-life care. Practically, parents want and deserve to have a complete picture of relevant information and clinical judgment, tailored to their individual needs and preferences. As reported previously, there was variability regarding how well parents were informed, with parents typically best informed about their child's condition and treatment, and just more than 70% were well informed about their child's chances for survival.¹⁸ Alarming, Davies and Connaughty¹⁶ found only 14% of parents adequately informed about their child's deteriorating physical condition as death approached. However well intentioned, parents criticized paternalistic communication. Our findings are consistent with mounting evidence that most parents prefer full disclosure of information as a means to better comprehend the issues, to make meaning of seemingly incomprehensible events, and to more fully participate in decision-making and partnership.^{16,18,35} For example, parents of children with cancer who were better informed were more likely to have care that met the goals for palliative care, including earlier hospice referrals, greater satisfaction with home care, and greater focus on relief of suffering.^{19,20} Psychologically, free access to information and personnel can provide parents with a modicum of control. Ongoing communication and regular information have also been associated with decreased parental anxiety and worry.^{36,37} Thus, information and access may help parents to hold their position and place of importance in their child's life amid the largely unfamiliar and threatening hospital setting.

Although there is variability, most families want a voice in their child's end-of-life care rather than specific control over each life-sustaining treatment decision.^{10,38,39} Family needs and preferences for information and communication style may be influenced by the nature of the child's illness and death trajectory, previous illness and loss experiences, personality styles and family dynamics, and cultural and religious backgrounds.^{40,41} Unfortunately, the prevailing mode of end-of-life discus-

sions focusing on laboratory values, organ systems, and individual treatments may be too specific and disjointed to facilitate understanding and decision-making or to meet the family's psychosocial needs.^{10,18} End-of-life discussions that focus on organ systems or offer information only on a need-to-know basis may not hit the mark^{18,39,42} and can leave some families feeling overwhelmed, underinformed, or wondering what the information means relative to their child's quality of life and survival.

Many parents emphasized that information needs to be forthcoming and communicated by clinicians in a manner that "connects the dots." The American Academy of Pediatrics¹⁴ considers access to care providers and their services to be an essential principle of good palliative care. Generally, parents wanted their questions answered as they arose and at their own pace, with some perspective on the "big picture." Unfortunately, some parents must work hard to get information: to ask the right questions, track down the right people, and be at the bedside at the right time.^{16,43} Working this hard can add to the emotional and logistic burden of parents who are already under considerable stress. To address these concerns, parents recommended not only traditional family-staff conferences but also more informal and varied means of communication such as staff-family journals, e-mail, and "office hours at the bedside."

Several parents reported being "overwhelmed" by the sheer number of staff members and uncertain about how to integrate the input of consultants. Some parents described the natural tension that can arise when the input of others is sought. Differences of opinion and conflict can and do occur between staff members regarding end-of-life decision-making and withdrawal of life support.^{44,45} Indeed, Breen et al⁴⁴ reported that health care providers perceived conflict in 78% of cases of decision-making for critically ill patients. Some parents acknowledged that they were not only aware of differing opinions among staff members but also concerned about them. For clinicians who prefer to delay meeting to present a "united front," it is worth noting that parents are often well aware that differences of opinion and conflict may exist within the team. It is not unusual for parents to hear differing perspectives expressed privately or during rounds. As noted, some parents prefer and may benefit from hearing the range of views and possible treatment options. Clinicians are encouraged to assess and accommodate parents' preferences for how information should be communicated and exchanged. It is recommended that clinicians ask parents directly about their communication preferences and to remain attuned to parental cues³⁹ and to periodically check the "goodness of fit" between their communication style and parent preferences.^{46,47}

Similar to the findings of Meert et al,²² there were differences among parents in their preferences for re-

ceiving information and interacting with the team. Some parents preferred only 1 staff spokesperson, whereas others preferred hearing all viewpoints of the health care team. Whether parents prefer to hear everyone's opinion or are distressed by medical uncertainty may depend, in part, on their access to multiple providers and the degree of cohesion or dissonance of the information provided. It is likely that parental preferences and experiences are also influenced by factors such as one's ability to endure complexity and tolerate ambiguity during an emotionally trying time. Several parents suggested that regular team meetings might be helpful as a means to discuss and better understand differing opinions. This approach acknowledges the complexity of PICU care, models teamwork and decision-making, and may potentially minimize parental stress.

Emotional Expression and Support of Staff

Parents have identified the social support of family, friends, community pediatricians, and religious support persons as central to their coping efforts.¹⁸ Previous work has also documented the pivotal and often intense role that critical care staff can play in supporting some families at the end of life.^{18,42,45,47,48} Staff members' genuine expression of emotions and concern is generally perceived positively, encouraged, and well-remembered by parents.^{18,49} Indeed, clinicians need not fear displaying their empathy and own emotions, for this is the very substance that can convey one's humanity and matters deeply to parents.^{16,49-51} Among a sample of 150 bereaved parents whose children had died traumatically, for example, the sensitivity and interpersonal skills of the informant were more important than previous contact or professional position.⁵⁰ Police officers, in fact, were rated as more sympathetic and supportive than either physicians or nurses. Interestingly, some parents felt more supported when the informant also appeared distressed, perhaps reflecting the value of shared human experience and empathy in time of sorrow. Consistent with our findings, parent-professional interactions that smacked of detachment were devalued, interpreted as being uncaring and unsympathetic, and caused offense to families.^{49,50,52}

Given the preference of most patients and families for candid, empathic communication, there are now a number of educational models and curricula⁵³⁻⁵⁶ that emphasize the importance of asking families early on what they know, what they want to know, and what is important to them. Although guidelines and curricula for end-of-life communication skills are important, they alone are not sufficient. There is also growing recognition that clinicians' relatedness, trustworthiness, self-awareness, and expression of humanity are critically important abilities that influence the perceived quality of care.^{51,55-62} Consistent with the expressed needs and wishes of many parents in this study, clinicians are encouraged to adapt

their communication style and to demonstrate their compassion by listening more, tolerating silence, bearing witness to families as they express their grief, and inviting reflection.^{9,43,51,61,62} When clinicians speak less and listen more in family conferences, for example, families are afforded more time to absorb information, to process what it means, and to express their own concerns and worries.^{9,18} Moreover, Meert et al²³ have reported that caring emotional attitudes by staff and a sympathetic PICU environment were associated with healthy immediate and long-term parental bereavement adjustment.

Preservation of the Integrity of the Parent-Child Relationship

In many ways, staff members can be most helpful to parents when they honor the rightful place and privilege of parents, and support them in their efforts to be the best parents they can be. Miles and Carter^{63,64} have documented that parental role alteration and its attendant threats to one's identity are the most stressful aspects of critical care hospitalization. In the PICU, parents can feel displaced, vulnerable, and ashamed for not knowing how to help their child. Preserving the parent-child relationship entails supporting parents to fulfill their traditional roles as caregiver, protector, decision-maker, and provider of love and physical tenderness. Many parents described the importance of continuing to love and care for their child throughout the dying process, and some wished to accompany the child's lifeless body to its final resting place. Preserving the integrity and sanctity of the parent-child relationship can help parents begin to cope with feelings of helplessness associated with the heartbreaking realization that they will no longer be able to parent their child in the future.

The importance of parental presence during children's hospitalizations has been understood historically in terms of fulfilling attachment needs necessary for healthy child development.^{65,66} At the end of life, however, parental presence takes on a special significance as a way of easing the process of "saying good-bye." The continued presence and nurture of parents at the end of life has the potential to create dear and sustaining memories that can begin to support the grieving process.^{16,40,67}

Many parents emphasized the need for privacy at end of life, asking for "quiet time" and the wish to be in private, intimate communication with their child. Our findings are consistent with previous studies that have documented the compelling need for parents to stay with the child's body and to have unhurried time.^{16,22,50} In the PICU, parents typically spend their final hours in a public environment that can sometimes be experienced as an insult added to their already vulnerable state. Although parents in our study acknowledged and appreciated the emotional support and involvement of staff members, they indicated that they also needed time when they were not interrupted, "hovered over," or intruded on by well-meaning staff. Private time and

space between parent and child can allow for tenderness and the unfolding of conversations, parting words, tears, anger, and the stuff of intimate endings without the strain or indignity of public display. We speculate that the tension that staff may experience between staying close by to provide support or offering privacy reflects the complexity of family needs and clinical circumstances and requires gentle inquiry and clinical judgment to discern.

Faith

Evidence has grown that faith is a core aspect of some patients' and families' coping efforts when faced with life-threatening illness and death.⁶⁸⁻⁷¹ Several taxonomies of adult end-of-life care incorporate spiritual and existential beliefs and well being.^{10,72,73} Our data provide corroborative evidence that faith can be central for some parents facing the death of a child and for the delivery of pediatric palliative care. Faith may help some parents at the end of life by providing understanding, guidance, and emotional support. Faith rituals and practices (eg, praying) may offer an active way of seeking help and comfort for the beloved ill child. Our data suggest the value of creating a culture of acceptance and integration of spiritual concerns in the PICU. In particular, when parents experience spiritual distress, they require the specialized services of professional chaplains.

Limitations of the Study

There are several limitations to this study. The sample size was relatively small and consisted of predominantly white, English-speaking parents, which represents a limitation, given the importance of cultural influences on the role of parenting, family dynamics and preferences, and the dying process.^{40,41} The 3 participating institutions were located in the same Northeastern city and, thus, generalizability may be limited. The response rate (58%) was at the low end of the acceptable range for such studies, and the subjects' willingness to participate may reflect a bias in their experiences and views about end-of-life care. Because the questionnaires were administered anonymously to encourage candor, it was not possible to determine whether the respondents differed significantly from the nonrespondents. It also was not possible to follow-up on parental comments or probe inconsistencies given the nature of the questionnaire design. The study included parents of children who represented a wide range of disease processes and for whom the bereavement period varied, thus precluding the ability to make specific conclusions about any particular death trajectory or specific time since death. In addition, the parents' priorities were derived through qualitative analysis, and reliability can be difficult to insure, because the identity of the researcher may influence the selection of the themes.³⁴ To address these issues, >1 researcher participated in the coding, researchers repre-

sented a range of disciplines, and there was acceptable interrater agreement. Last, the study was subject to the limitations of all studies that rely on self-report measures.

CONCLUSIONS

From a parental perspective, there are 6 priorities of end-of-life care and communication, including honest and complete information, ready access to staff, communication and care coordination, emotional expression and support by staff, preservation of the integrity of the parent-child relationship, and faith. These priorities represent simple yet compelling guidance that can improve pediatric end-of-life clinical practice and research.

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SEE BABY TOUCH A SCREEN. BUT DOES BABY GET IT?

“New media products for babies, toddlers and preschoolers began flooding the market in the late 1990’s, starting with video series like ‘Baby Einstein’ and ‘Brainy Baby.’ But now, the young children’s market has exploded into a host of new and more elaborate electronics. . . . Despite the commercial success, though, a report released yesterday by the Kaiser Family Foundation, ‘Teacher in the Living Room? Educational Media for Babies, Toddlers and Pre-schoolers,’ indicates there is little understanding of how the new media affect young children, and almost no research to support the idea that they are educational. . . . In 1999, the American Academy of Pediatrics recommended no screen time at all for babies under 2, out of concern that the increasing use of media might displace human interaction and impede the crucially important brain growth and development of a baby’s first two years. But it is a recommendation that parents routinely ignore. . . . In a line of experiments on early learning included in a research review by Dan Anderson, a University of Massachusetts psychology professor, one group of 12 to 15-month-olds was given a live demonstration of how to use a puppet, while another group saw the demonstration on video. The children who saw the live demonstration could imitate the action, but the others had to see the video six times before they could imitate it. ‘As a society, we are in the middle of a vast uncontrolled experiment on our infants and toddlers growing up in homes saturated with electronic media,’ Mr. Anderson said.”

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Noted by JFL, MD