

Can Hospitalization Precipitate Toxic Stress?

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During morning rounds, I introduced myself to the parent of a patient with bronchiolitis. As trainees, we are taught the medical management of bronchiolitis and how to set families' expectations for the course of illness. However, we are not taught how to help families cope with the stress of a hospitalization. As we entered the room to discuss her child's illness, the mother was on edge. Although her son was due to feed, she firmly requested that we let him sleep. Then she glanced at the textbook in her lap, remarking that her child was finally comfortable. Although she had not slept herself, she needed to catch up with her schoolwork. This interaction prompted our team to consider whether this mother's stress, the challenge she felt juggling her son's illness with her own responsibilities, was affecting her son's clinical course. Could the stress of this hospitalization be toxic to her? To this family?

The 2012 American Academy of Pediatrics Policy Statement called on pediatricians to screen for and act on factors that could precipitate toxic stress responses.¹ The report introduced positive, tolerable, and toxic physiologic responses to stress.¹ Events that trigger positive and tolerable stress may elevate the body's physiologic response system, but buffers such as social supports make the biological response mild and brief, preventing harm. Events

that trigger positive stress provide the opportunity "to observe, learn, and practice healthy, adaptive responses."² Alternatively, events that result in "extreme, frequent, or extended activation of the stress response," without adequate buffering,³ are toxic, leading to functional differences in learning, memory, and executive functioning.²

When multiple adverse childhood experiences (ACEs) accumulate in the absence of buffers, stress can precipitate toxic responses. ACEs are difficult experiences encountered at a young age that result in elevated, prolonged stress responses. Examples include emotional, physical, and sexual abuse, witnessed domestic violence, alcohol or drug abuse, and parental separation or divorce occurring during childhood.⁴ Factors such as peer victimization, single-parent household, and low socioeconomic status have been included as other possible examples of ACEs.^{5,6} Perhaps the experience of hospitalization without adequate buffering could also be considered an adverse experience, which triggers a toxic stress response in the child or parent. Of course, the toxicity of that response may vary given presence or absence of supports felt by that patient or family.

What factors might cause the stress response to go from tolerable to toxic? Clinical teams generally respond to this question



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with a narrow focus, rooted in a biomedical model that focuses on a child's physiology (eg, illness severity, length of stay). We need a more systematic and broad approach, incorporating the community and environmental factors (eg, available supports) into care provision. This approach would prompt a more consistent focus on both the acute illness and the acute stress response. This distinction is relevant because toxic stress may have more long-term impacts than many of the acute illnesses, such as bronchiolitis, that we see so frequently. Given the clinical team's role in supporting families, it is vital to offer trainees guidance on how to help assess, alleviate, and buffer a family's stress during a hospitalization.

Identifying factors that determine whether stress responses will be tolerable or toxic is critical as we seek to support our patients and families. For example, a parent who experienced more childhood adversity may have a lower threshold for toxicity than a parent without such experiences. Does our patient's mother have supports that could mitigate potential harm to her or her child resulting from a stressful hospitalization? Does she cope with stress differently because of her ACE history? Identifying parental ACEs, though not typical in pediatrics, may be highly relevant to how we support our families during clinical encounters, an approach that warrants additional study. If parents are screened for ACEs, conversations must occur in the context of trusting, respectful relationships and must promote movement from adversity (or risk) identification to resilience-promoting actions that accompany families in the transition from the hospital to home.

Such action is especially critical given the multigenerational effect of toxic stress. Animal models have shown that offspring born to nurturing mothers demonstrated

well-regulated stress responses as adults; those born to low-nurturing mothers exhibited more exaggerated responses.³ Human studies have documented heightened stress among institutionalized children, presumably with poorly developed coping mechanisms.³ This finding suggests that parents with higher ACE scores may have more barriers to providing the stable environment that children need. If parents have never experienced positive relationships, they may deal with trauma in maladaptive ways, living "in survival mode and focused on securing the basic essentials for life" instead of responding to the emotional cues and needs of their child.⁷ In addition to teaching trainees how to identify children at risk for clinical deterioration, we should also teach how to recognize those at risk for deterioration resulting from toxic stress responses to adversity.

There is no 1-size-fits-all approach to social history screening and risk management during inpatient stays. Each parent brings not only different expectations and beliefs but also past experiences. A tailored social history may be key to identifying socially complex families with limited ability to cope with stress' potentially harmful effects. Clearly, an acute medical problem may prevent us from delving into families' social histories. However, in the setting of a stable patient, this may be a missed opportunity to identify families who would benefit from resources that build resilience and prevent the stress of a hospitalization from becoming toxic. Outpatient models (eg, WE CARE, SEEK) could provide a starting point for inpatient clinicians.^{8,9}

Timely risk identification, initiated by trainees, could prompt timely action. Coordinating services, including social work, behavioral health, child life, and pastoral care, during hospitalization may buffer parents

and children from the stress of the hospitalization. After discharge, resources that build and stabilize resilience include community-based programs that support the parent-child relationship.⁷ Learning about such programs and connecting families could be a critical component of the hospital-to-home transition. Strategies that improve and minimize adversity in childhood and help engage parents can lead to better health outcomes.⁷ This focus, including determining how to prevent subsequent utilization (eg, readmissions), is especially relevant in this era of accountable care and episode-based payments.

Detailed social histories can be challenging to incorporate into hectic clinician workflows, particularly for trainees serving as the primary contact for families. Still, given the impact hardships and ACEs can have on outcomes, the inclusion of such screening should be the norm. If difficult questions are to be posed, it helps to develop accessible lists of hospital- and community-based resources, streamlining the connection between risk identification and interventions. These efforts may add to clinicians' workloads but are crucial for achieving desired patient- and family-centered outcomes.

Unfortunately, the evidence for how to best approach and sustain an inpatient model that systematically addresses stress remains thin. More work is needed to determine how to best identify and manage risk, potentially translating successes from the outpatient realm onto the wards, work that will undoubtedly involve trainees. The importance of these efforts cannot be overstated as we seek to help our patients and their families build resilience and prevent a hospitalization from leading to adverse emotional effects and precipitating toxic stress.

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ABBREVIATION

ACE: adverse childhood experience

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