

## Child abuse research 2015: it's time for breakthroughs

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**C**hild abuse and neglect pose a grave threat to US children. The statistics are overwhelming: 4% of US children receive a child welfare system response each year (1). The Harvard Center for the Developing Child has demonstrated that abuse, neglect, and family dysfunction contribute to toxic stress, which affects brain development and subsequent health and well-being (2). The Centers for Disease Control and Prevention estimates that each year's child abuse and neglect results in \$125 billion in lifelong medical costs, and nearly \$500 billion in overall economic consequences (3).

Despite these grim statistics, research involving child abuse and neglect is still in its infancy. In his commentary, Dr. Krugman describes the many structural problems that have led to this situation. He echoed the recent National Research Council report (4) in calling for a concerted effort to build child abuse research. Development of the national network of centers of excellence called for in these reports would radically improve the ability to conduct research.

What can we hope to accomplish through further research into the prevention, detection, and treatment of child abuse? Concrete examples of pressing questions illustrate the need for investment in scientific research. Not only do they illustrate important questions, but the answers are well within our grasp.

Child abuse prevention efforts have been modestly effective: rates of child abuse have undergone a gradual decline in the past decades, despite the recent recession (5). However, more rapid progress is hampered by a disconnect between best practices—which promote resilience, and available research instruments—which measure risk. The Centers for Disease Control and Prevention's Essentials for Childhood promotes the importance of safe stable nurturing relationships or environments in the prevention of child abuse and neglect (6,7), the Center for the Study of Social Policy has disseminated the Strengthening Families approach (8). Despite their focus on improving resilience, the development of validated measures of social connection and parental capacity lag far behind measures of social isolation and parental mental illness. Validated measures of resilience and similar intermediate outcomes would simplify evaluation and speed progress. Techniques for developing validated measures have been well-developed; with sufficient funding, there is no reason to doubt that they could be rapidly produced.

The diagnosis of child abuse is complex, controversial, and subject to cognitive bias. Objective tests would help. For example, identification of serum markers for infant brain injury could direct the evaluation of infants with vomiting and lethargy, just as cardiac biomarkers direct the evaluation of adults with chest pain. Application of new analytic techniques, now used in the study of proteomics, combined with the ability of a new research network samples, should lead to the rapid identification of biochemical markers of brain injury.

Some infants with abusive head trauma may experience devastating brain damage in the first days following their initial injury (9). Knowledge of the cellular and biochemical pathways of "big black brain" would lay the foundation for treatments that might reduce this secondary brain injury. A variety of techniques have been developed to study intercellular signaling; while this problem is complex, there is little doubt that the techniques to approach the problem are well-developed.

As described, many of the answers to these and other research issues lie well within the capacity of modern science. Dr. Krugman highlights some of the historical reasons that have so far failed to develop a sustained national research effort to address child abuse and neglect. With so many children suffering adverse experiences, and becoming disfigured, disabled or dead, it is well past time to start working.

Disclosures: R.D.S is a member of the Board of Directors of Prevent Child Abuse America, Chicago, Illinois, and is employed by the Medical Foundation Division of Health Resources in Action, which administers health-related grant programs.

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Received 3 August 2015; accepted 5 August 2015; advance online publication 11 November 2015. doi:10.1038/pr.2015.204

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