Dear Strategic Planning Group,

This letter serves to provide comments to the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) as they update their strategic plan to help guide their research priorities over the next five years. We represent the scientists from the Center for Injury Research and Prevention (CIRP) at the Children’s Hospital of Philadelphia (CHOP). CIRP is a Center of Emphasis at the CHOP Research Institute and is dedicated to advancing the health and safety of children, adolescents, and young adults through comprehensive injury prevention and safety research resulting in practical tools to reduce injury and promote recovery. CHOP researchers, including several of those at our Center, have had long-standing support from NICHD as historically our missions have been in alignment. We are gravely concerned, however, that although NICHD's future research priorities, as outlined in Notice NOT-HD-18-031, are worthwhile topic areas, they 1) are misaligned with what we know to be the leading causes of child and adolescent morbidity and mortality; and 2) overlook critical aspects of NICHD's mission.

The absence of a focus on injury and violence in the new overarching research themes of NICHD is alarming. It is unclear how the proposed themes—which have an overwhelming focus on women’s reproductive and gynecological health, and little specific mention of pediatric illness and injury outside of infancy or transition to adulthood—will allow all branches of NICHD to achieve their mission.

RECOMMENDATIONS:

We respectfully request that NICHD delay finalization of these Research Themes and hold a workshop to develop additional themes that address injury and violence, the leading contributor to ensuring “all children have the chance to achieve their full potential for healthy and productive lives.” These preventable causes of childhood morbidity and mortality need a focus at the federal level – there is no other home within the National Institutes of Health for this research. Funding for injury and violence research is already woefully inadequate; of all disease conditions, injury has the largest disparity between the proportion of overall disease burden and proportion of overall NIH funding (-12% for injury; +11% for cancer)(National Academies of Science, Engineering and Medicine, 2016 using data from Moses et al, JAMA, 2015). The absence of priorities focused on the leading cause of death and acquired disability for children from NICHD’s research themes will only exacerbate this problem. Historically, of all the institutes, NICHD has been an important source of funding to build the scientific foundation for injury prevention. As a simple assessment of this contribution, a query of NIH Reporter revealed close to 400 projects with the keyword phrase “injury prevention” funded by NICHD since 1991 with over $100M in support. This likely dramatically underestimates the contribution as many projects relevant to the field may be labeled with other keywords. Simply put, there is no other agency that will fulfill this role at this level of funding.

In addition to the development of additional themes to incorporate injury and violence, we strongly suggest key insertions to the current proposed themes to ensure injury and violence prevention remains a key component of NICHD’s research portfolio. These suggestions are delineated at the end of this letter.

To support these recommendations, we provide the following evidence:
Misalignment with child/adolescent morbidity/mortality statistics: According to the National Center for Health Statistics of the Centers for Disease Control and Prevention, injury is the leading cause of death in the US from ages 1-44, encompassing children, adolescents, young adults and those of child-bearing age. Injury is between 10 and 18 times more likely to kill a 15-34 year old than the next leading cause of death in that age group, and 2 to 3 times the next leading cause of death for 1- to 14-year-olds (2017 NCHS data, CDC). Considering this from another perspective: injuries represent more deaths in the age group of focus for NICHD than all other diseases combined. Common mechanisms include drownings, road traffic crashes, fires, poisoning, homicide, and suicide. When you consider non-fatal but debilitating injuries, the numbers increase exponentially and mechanistic themes expand to include falls, sports injuries, bullying and interpersonal violence.

Overlooking critical aspects of NICHD’s mission: While we are encouraged to see that Proposed Research Theme 4 “focuses on change brought on by normal development or by injury or disease”, this is an inadequate mentioning. Focusing research on tertiary prevention – after the injury has already occurred – is necessary but insufficient. We agree that there is great value in addressing resuscitation, acute and critical care and psychosocial/rehabilitation/recovery after injury. However, this does not prioritize research that is most likely to be effective. Current science has revealed that the most effective approaches to reducing the burden of injury are primary prevention (prevention of the events that can result in injury) and secondary prevention (reducing the incidence and severity of injury given an event), neither of which is emphasized in these research priorities. Further, violence, suicide, drug overdose/poisoning – leading causes of child/adolescent death with increasing incidence -- are not mentioned at all.

We are concerned that given these research priorities, the NICHD, the primary funder of child health research, will no longer prioritize critical topics for child health. Historically, NICHD has supported research to combat these alarming statistics through their Child Development and Behavior Branch and the Pediatric Trauma and Critical Illness Branch. Current selected “high research priorities” of these two branches as indicated on the NIH website include:

- General and cause-specific prevention and intervention research studies on areas most likely to cause death or disability, including motor vehicle crashes, firearms, poisonings, drowning, self-injurious behavior, fires, burns, and injuries from all forms of aggression and violence against children
- Examination of how treatments in the pediatric intensive care unit or emergency department for adults can be modified to address the unique needs of children.
- Understanding the pathophysiology of psychological trauma, injury, and critical illness
- Psychological trauma, traumatic stress, violence and violence-related injury, and child maltreatment
- Social, environmental, and economic factors and biological factors that impact infant and child brain development and function, stress reactivity, adaptive behavior development, and school functioning (both short- and long-term outcomes)
- Behavioral and health promotion interventions within pediatric primary care
- Psychosocial adjustment for individuals in high-risk environments

The Pediatric Trauma and Critical Illness Branch, in particular, “supports [for the children of our country] research and research training focused on preventing, treating, and reducing all forms of childhood trauma, injury, and critical illness across the continuum of care.” These priorities are absent from the six new scientific themes proposed.

Review of the current portfolio of funded research by NICHD is replete with projects on the list of topics above. Previously funded NICHD studies have paved the way in the development of innovative techniques and
methods for advancing knowledge of primary, secondary, and tertiary prevention. Continued support of these endeavors is vital to address the leading cause of pediatric death.

RECOMMENDED KEY INSERTIONS TO THE CURRENT PROPOSED THEMES

**Theme 1: Understanding Early Human Development**

- Should be expanded beyond its current focus at the single- and multi-cell level to include societal level influences such as understanding parent-child relationships, early communication, adverse childhood experiences, toxic stress, and early pre-school experiences.

**Theme 2: Setting the Foundation for a Healthy Pregnancy and Lifelong Wellness**

- Lifestyle factors should include not only biological factors but environmental and societal factors that influence wellness especially for females, including a focus upon their peer relationships and relational aggression, the most common form of aggression exhibited among young girls and females (e.g., aggressive behaviors designed to manipulate peer relationships and social standing).

**Theme 4: Identifying Sensitive Time Periods to Optimize Health Interventions**

- The concept of sensitive time periods must not be limited to “different periods during gestation” or “early development” but must also include sensitive time periods throughout childhood, adolescence and young adulthood where interventions would have the greatest impact. For example, are there particular developmental time periods where it is more relevant to develop anti-bullying strategies, implement concussion prevention, alter massive transfusion protocols, or teach driving skills?

- Health interventions are not only applicable “after disease or injury”. It is important to also emphasize primary and secondary prevention in this theme because it has been demonstrated to be the most effective health intervention strategy to mitigate negative health outcomes related to disease or injury.

- This theme can be further expanded beyond “sensitive time periods” to include “specific populations”. Identifying high-risk populations to target is equally important.

- The absence of intentional injury and violence in this theme is notable and ignores many research studies designed to better understand and ameliorate the causes and contributors of intentional injury and violence.

- The mention of social determinants is encouraging; however research that explores the role of social determinants, both alone and in conjunction with biological factors, is necessary.

- The crucial role of parents, peers, teachers and schools in prevention and interventions that improve health outcomes is missing.

**Theme 5: Improving Health During the Transition From Adolescence to Adulthood**

- This theme should be expanded to not only include the factors that place the adolescent at higher risk for specific disorders but also for poorer health outcomes.

- An emphasis on schools’ and peers’ influence during this pivotal transition period is currently lacking.

- Intentional injury is one of the most common causes of death and disability in this age group, and by far the most common for certain high risk populations. Neglecting to include research in intentional injury topics will likely sustain and contribute to our nation’s considerable health disparities. In order to create real change, it is imperative that all NIH institutes identify and address these disparities.

**Theme 6: Ensuring Safe and Effective Therapeutics and Devices**
This theme specifically focuses on the statement that, “Evaluating medications, including safe and effective dosing, in these specific populations will allow for better management and treatment of common conditions.” However, children (and other NICHD populations) should not only be included in testing of therapeutics and devices, but pediatric-specific issues should be emphasized and prioritized for therapeutics and device development.

Examples of pediatric-specific issues include innovations such as car seats, driver-training devices, child-safe packaging, and child-safe firearm storage devices as well as diseases/events with high burden in children, but less impact on adult, such as sports-injuries, dehydration, falls, and accidental ingestions. Topics such as these would be left out unless specific emphasis is placed on research developing and evaluating interventions that address them.

Areas where adult-specific development is near-complete, but pediatric-specific development is lacking, should be specifically prioritized as areas of unacceptable disparities including topics such as; tourniquets, pelvic-binders, long-bone stabilization, vascular access considerations, massive transfusion protocols, and use of whole blood.

In summary, we believe that the proposed NICHD research priorities fail to address many of the critical questions that need to be answered in order to ensure that all children have the chance to achieve their full potential for healthy and productive lives (part of NICHD’s mission). As researchers who have deep roots in clinical medicine, psychology, engineering, epidemiology, education, and social work, we strongly believe that the proposed research priorities need to be expanded in order to best reflect the verifiable threats to the long term health and safety of our nation’s children. We offer our time and expertise to accomplish those revisions and look forward to a continued dialogue around the above-mentioned themes and concerns.

Respectfully submitted,

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