Current Best Evidence: Translating Best Evidence into Best Care

EDITOR'S NOTE: Studies for this issue were identified using alerts from *Archives of Disease in Childhood-Education and Practice, Archives of Disease in Childhood-Fetal and Neonatal, Archives of Disease in Childhood, British Medical Journal, Journal of the American Medical Association, New England Journal of Medicine, Pediatric Infectious Disease Journal, Pediatrics, The Journal of Pediatrics,* and *The Lancet*. Search terms were "paediatrics" [All Fields] OR "pediatrics" [All Fields] OR "pediatrics" [MeSH Terms]. In addition, studies also were identified using the Clinical Queries feature of PubMed. Cleo Pappas, MLIS, Library of the Health Sciences, University of Illinois at Chicago, contributed to the review and selection of this month's abstracts.

—Jordan Hupert, MD

EVIDENCE-BASED MEDICINE PEARL: HAZARD RATIO (HR): The HR is an outcome measure used in studies to analyze the occurrence of a particular event by a specific time. An HR is a ratio of hazards in 2 groups: the hazard in one group divided by the hazard in the other group. A hazard is the probability that an individual at a particular time has an event by that time. Therefore, the HR is the relative probability of an event having occurred in one group versus the other group by any given point in time. For example, in the study by Frederiksen et al (see piece by Virnanen and Naivalainen on page 217 regarding article by Frederiksen et al; *JAMA Pediatr* 2013;167:808-15), the HR was used to demonstrate that by 1.35 years of age (the time point in the study when 97.3% of the patients had complete solid food exposure data) a genetically predisposed infant with early (<4 months of age) exposure to solids had a 1.9 greater chance of developing type 1 diabetes mellitus compared with a baby exposed to solids between 4-6 months of age.

—Jordan Hupert, MD

EVIDENCE-BASED MEDICINE LIBRARIAN PEARL: SEARCH ORGANIZATION: To guide and focus your search, identify major ideas (key concepts) in your question (you may wish to use the PICO format for your question: P = patient or population, I = intervention, C = comparison, O = outcome). Then, generate a list of synonyms for each of those concepts. To develop the list, use subject headings, colleagues, or a thesaurus. As you search, document the databases, search terms, and number of relevant hits that you retrieve. Searching is a highly iterative process, and your documentation will prevent unnecessary duplication of effort.

—Cleo Pappas, MLIS

Risk factors for severe H1N1 infection

Dalziel SR, Thompson J, Macias CG, Fernandes RM, Johnson DW, Waisman Y, et al. Predictors of severe H1N1 infection in children presenting within Pediatric Emergency Research Networks (PERN): retrospective case control study. *BMJ* 2013;347:f4836.

Question Among children with H1N1 influenza infection, what are the key risk factors associated with severe versus nonsevere disease?

Design Multicenter, retrospective case-control study.

Setting 79 emergency departments in 12 countries.

Participants Children <16 years of age, who fulfilled the Centers for Disease Control and Prevention's criteria for influenza-like illness and developed severe outcomes from laboratory confirmed H1N1 infection. For each case, there were two controls with influenza-like illness but without severe outcomes: one random control and one age-matched control.

Intervention Multivariate modeling.

Outcomes Severe outcomes included death or admission to intensive care for assisted ventilation, inotropic support, or both.

Main Results Six factors were associated with severe outcomes in children presenting with influenza-like illness: history of chronic lung disease (OR 10.3, 95% CI 1.5 to 69.8), history of cerebral palsy/developmental delay (OR 10.2, 95 % CI 2.0 to 51.4), signs of chest retractions (OR 9.6, 95 % CI 3.2 to 29.0), signs of dehydration (OR 8.8, 95 % CI 1.6 to 49.3), requirement for oxygen (OR 5.8, 95 % CI 2.0 to 16.2), and tachycardia relative to age.

Conclusions These independent risk factors may alert clinicians to children at risk of severe outcomes when presenting with influenza-like illness during future pandemics.

Commentary The most recent H1N1 pandemic in 2009 has challenged health services around the globe. Early identification of cases prone to develop severe disease has had crucial importance during the pandemic. Neurodevelopmental disorders, neuromuscular disease, chronic lung disease, heart failure, diseases causing immunosuppression, chronic renal failure, and metabolic diseases are known to be high risk conditions for severe seasonal influenza infection.[1] This study by Dalziel et al is a multicentered case-control study that demonstrates risk factors specific to pediatric populations. In

addition to the six factors listed in above, other co-morbid factors previously found to be associated with severe seasonal influenza (immunosuppression, diabetes, heart and renal failure) were rare in children with H1N1 infection and could not be fully assessed. Furthermore, this study and others have shown that in children admitted to pediatric intensive care units, mortality is similarly high in children with co-morbid illness and healthy children.[2-3] These findings highlight the importance of immunization, early antiviral therapy, and care in the pediatric intensive care unit for decreasing mortality due to influenza.

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A decreased screen-violence "media diet" intervention improves preschool children's behavior

Christakis DA, Garrison MM, Herrenkohl T, Haggerty K, Rivara FP, Zhou C, et al. Modifying media content for preschool children: a randomized controlled trial. *Pediatrics* 2013;131:431-8.

Question Among preschool children, what is the therapeutic benefit of facilitating prosocial media (at the expense of violent media), in impacting behavior?

Design Randomized controlled trial.

Setting Seattle, Washington.

Participants Parents of preschool children ages 3 to 5 years.

Intervention Parents were assisted in substituting high quality prosocial and educational programming for aggression-laden programming without trying to reduce total screen time. The control group received a nutritional intervention designed to promote healthier eating habits.

Outcomes Primary outcomes were internalizing (anxious, depressive, and withdrawn) and externalizing (angry, aggressive, oppositional) behaviors, as well as a social competence.

Main Results After 6 months, the overall mean Social Competence and Behavior Evaluation score was 2.11 points better (95% CI 0.78–3.44) in the intervention group as compared with controls, and similar effects were observed for the externalizing subscale (0.68 [95% CI 0.06–1.30]) and the social competence subscale (1.04 [95% CI 0.34–1.74]). The effect for the internalizing subscale was in a positive direction but was not statistically significant (0.42 [95% CI -0.14 to 0.99]). In a stratified analysis of the effect on the overall scores, low-income boys appeared to derive the greatest benefit (6.48 [95% CI 1.60–11.37]).

Conclusions An intervention to reduce exposure to screen violence and increase exposure to prosocial programming can positively impact child behavior.

Commentary Children spend a lot of time watching television, exposing them to programming that commonly portrays violence.[1] Excessive viewing of violent content during childhood is concerning because it poses a risk for the development of antisocial behavior.[2] Christakis et al developed an intervention to reduce child exposure to media violence by employing cognitive behavioral therapy with parents to help them learn to substitute prosocial and educational programs for violent content without reducing overall screen time. Children whose parents were randomly assigned to the media intervention showed short-term reductions in externalizing behavior and more sustained improvements in social competence. The program was most effective for disadvantaged boys, a group particularly vulnerable to media violence. Replication with high-risk children such as those with symptoms of attention deficit hyperactivity disorder and high levels of externalizing behavior would be helpful to increase program generalizability. Combined with efforts to reduce overall screen time, modifying child media diet represents a promising strategy for preventing the development of antisocial behavior across the population.

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Timing of solid-food introduction is associated with of type 1 diabetes mellitus

Frederiksen B, Kroehl M, Lamb MM, Seifert J, Barriga K, Eisenbarth GS, et al. Infant exposures and development of type 1 diabetes mellitus: the diabetes autoimmunity study in the young (DAISY). *JAMA Pediatr* 2013;167:808-15.

Question Among children at increased genetic risk for type 1 diabetes mellitus (T1DM), what is the association of solid food initiation with development of T1DM?

Design Longitudinal, observational cohort study.