

Abstract from Current Literature

Predictors of Poor School Readiness in Children Without Developmental Delay at Age 2

Bergen B. Nelson, Rebecca N. Dudovitz, Tumaini R. Coker, Elizabeth S. Barnert, Christopher Biely, Ning Li, Peter G. Szilagyi, Kandyce Larson, Neal Halfon, Frederick J. Zimmerman, Paul J. Chung

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Background and Objectives: Current recommendations emphasize developmental screening and surveillance to identify developmental delays (DDs) for referral to early intervention (EI) services. Many young children without DDs, however, are at high risk for poor developmental and behavioral outcomes by school entry but are ineligible for EI. We developed models for 2-year-olds without DD that predict, at kindergarten entry, poor academic performance and high problem behaviors.

Methods: Data from the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), were used for this study. The analytic sample excluded children likely eligible for EI because of DDs or very low birth weight. Dependent variables included low academic scores and high problem behaviors at the kindergarten wave. Regression models were developed by using candidate predictors feasibly obtainable during typical 2-year well-child visits. Models were cross-validated internally on randomly selected subsamples.

Results: Approximately 24% of all 2-year-old children were ineligible for EI at 2 years of age but still had poor academic or behavioral outcomes at school entry. Prediction models each contain 9 variables, almost entirely parental, social, or economic. Four variables were associated with both academic and behavioral risk: parental education below bachelor's degree, little/no shared reading at home, food insecurity, and fair/poor parental health. Areas under the receiver-operating characteristic curve were 0.76 for academic risk and 0.71 for behavioral risk. Adding the mental scale score from the Bayley Short Form—Research Edition did not improve areas under the receiver-operating characteristic curve for either model.

Conclusions: Among children ineligible for EI services, a small set of clinically available variables at age 2 years predicted academic and behavioral outcomes at school entry.

Association Between Maternal Prepregnancy Body Mass Index and Plasma Folate Concentrations With Child Metabolic Health

Guoying Wang,; Frank B. Hu; Kamila B. Mistry, Cuilin Zhang, Fazheng Ren, Yong Huo, MD⁷; David Paige, Tami Bartell, Xiumei Hong, Deanna Caruso, Zhicheng Ji, BS⁹; Zhu Chen, Yuelong Ji, ; Colleen Pearson, Hongkai Ji, Barry Zuckerman, Tina L. Cheng, Xiaobin Wang,

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Importance Previous reports have linked maternal prepregnancy obesity with low folate concentrations and child overweight or obesity (OWO) in separate studies. To our knowledge, the role of maternal folate concentrations, alone or in combination with maternal OWO, in child metabolic health has not been examined in a prospective birth cohort.

Objective To test the hypotheses that maternal folate concentrations can significantly affect child metabolic health and that sufficient maternal folate concentrations can mitigate prepregnancy obesity-induced child metabolic risk.

Design, Setting, and Participants This prospective birth cohort study was conducted at the Boston Medical Center, Boston, Massachusetts. It included 1517 mother-child dyads recruited at birth from 1998 to 2012 and followed up prospectively up to 9 years from 2003 to 2014.

Main Outcomes and Measures Child body mass index z score calculated according to US reference data, OWO defined as a body mass index in the 85th percentile or greater for age and sex, and metabolic biomarkers (leptin, insulin, and adiponectin).

Results The mean (SD) age was 28.6 (6.5) years for mothers and 6.2 (2.4) years for the children. An L-shaped association between maternal folate concentrations and child OWO was observed: the risk for OWO was higher among those in the lowest quartile (Q1) as compared with those in Q2 through Q4, with an odds ratio of 1.45 (95% CI, 1.13-1.87). The highest risk for child OWO was found among children of obese mothers with low folate concentrations (odds ratio, 3.05; 95% CI, 1.91-4.86) compared with children of

normal-weight mothers with folate concentrations in Q2 through Q4 after accounting for multiple covariables. Among children of obese mothers, their risk for OWO was associated with a 43% reduction (odds ratio, 0.57; 95% CI, 0.34-0.95) if their mothers had folate concentrations in Q2 through Q4 compared with Q1. Similar patterns were observed for child metabolic biomarkers.

Conclusions and Relevance In this urban low-income prospective birth cohort, we demonstrated an L-shaped association between maternal plasma folate concentrations and child OWO and the benefit of sufficient folate concentrations, especially among obese mothers. The threshold concentration identified in this study exceeded the clinical definition of folate deficiency, which was primarily based on the hematological effect of folate. Our findings underscore the need to establish optimal rather than minimal folate concentrations for preventing adverse metabolic outcomes in the offspring.

Zika Virus Infection with Prolonged Maternal Viremia and Fetal Brain Abnormalities

Rita W. Driggers, Cheng-Ying Ho, Essi M. Korhonen, M.Sc., Suvi Kuivanen, M.Sc., Anne J. Jääskeläinen, Ph.D., Teemu Smura, Ph.D., Avi Rosenberg, M.D., Ph.D., D. Ashley Hill, M.D., Roberta L. DeBiasi, M.D., Gilbert Vezina, M.D., Julia Timofeev, M.D., Fausto J. Rodriguez, M.D., Lev Levanov, Ph.D., Jennifer Razak, M.G.C., C.G.C, Preetha Iyengar, M.D., Andrew Hennenfent, D.V.M., M.P.H., Richard Kennedy, M.D., Robert Lanciotti, Ph.D., Adre du Plessis, M.B., Ch.B., M.P.H., and Olli Vapalahti,

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The current outbreak of Zika virus (ZIKV) infection has been associated with an apparent increased risk of congenital microcephaly. We describe a case of a pregnant woman and her fetus infected with ZIKV during the 11th gestational week. The fetal head circumference decreased from the 47th percentile to the 24th percentile between 16 and 20 weeks of gestation. ZIKV RNA was identified in maternal serum at 16 and 21 weeks of gestation. At 19 and 20 weeks of gestation, substantial brain abnormalities were detected on ultrasonography and magnetic resonance imaging (MRI) without the presence of microcephaly or intracranial calcifications. On postmortem analysis of the fetal brain, diffuse cerebral cortical thinning, high ZIKV RNA loads, and viral particles were detected, and ZIKV was subsequently isolated.

Effective Parenting Interventions to Reduce Youth Substance Use: A Systematic Review

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Context: Parenting interventions may prevent adolescent substance use; however, questions remain regarding the effectiveness of interventions across substances and delivery qualities contributing to successful intervention outcomes.

Objective: To describe the effectiveness of parent-focused interventions in reducing or preventing adolescent tobacco, alcohol, and illicit substance use and to identify optimal intervention targeted participants, dosage, settings, and delivery methods.

Data Sources: PubMed, PsycINFO, ERIC, and CINAHL.

Study Selection: Randomized controlled trials reporting adolescent substance use outcomes, focusing on imparting parenting knowledge, skills, practices, or behaviors.

Data Extraction: Trained researchers extracted data from each article using a standardized, prepiloted form. Because of study heterogeneity, a qualitative technique known as harvest plots was used to summarize findings.

Results: A total of 42 studies represented by 66 articles met inclusion criteria. Results indicate that parenting interventions are effective at preventing and decreasing adolescent tobacco, alcohol, and illicit substance use over the short and long term. The majority of effective interventions required ^d12 contact hours and were implemented through in-person sessions including parents and youth. Evidence for computer-based delivery was strong only for alcohol use prevention. Few interventions were delivered outside of school or home settings.

Limitations: Overall risk of bias is high.

Conclusions: This review suggests that relatively low-intensity group parenting interventions are effective at reducing or preventing adolescent substance use and that protection may persist for multiple years. There is a need for additional evidence in clinical and other community settings using an expanded set of delivery methods.

Does pulse oximeter use impact health outcomes? A systematic review

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Objective Do newborns, children and adolescents up to 19 years have lower mortality rates, lower morbidity and shorter length of stay in health facilities where pulse oximeters are used to inform diagnosis and treatment (excluding surgical care) compared with health facilities where pulse oximeters are not used?

Design Studies were obtained for this systematic literature review by systematically searching the Database of Abstracts of Reviews of Effects, Cochrane, Medion, PubMed, Web of Science, Embase, Global Health, CINAHL, WHO Global Health Library, international health organisation and NGO websites, and study references.

Patients Children 0–19 years presenting for the first time to hospitals, emergency departments or primary care facilities.

Interventions Included studies compared outcomes where pulse oximeters were used for diagnosis and/or management, with outcomes where pulse oximeters were not used. Main outcome measures: mortality, morbidity, length of stay, and treatment and management changes.

Results The evidence is low quality and hypoxaemia definitions varied across studies, but the evidence suggests pulse oximeter use with children can reduce mortality rates (when combined with improved oxygen administration) and length of emergency department stay, increase admission of children with previously unrecognised hypoxaemia, and change physicians' decisions on illness severity, diagnosis and treatment. Pulse oximeter use generally increased resource utilisation.

Conclusions As international organisations are investing in programmes to increase pulse oximeter use in low-income settings, more research is needed on the optimal use of pulse oximeters (eg, appropriate oxygen saturation thresholds), and how pulse oximeter use affects referral and admission rates, length of stay, resource utilisation and health outcomes.

Neonatal hypoglycaemia: learning from claims

Jane M Hawdon¹, Jeanette Beer², Deborah Sharp³, Michele Upton⁴

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Objectives Neonatal hypoglycaemia is a potential cause of neonatal morbidity, and on rare but tragic occasions causes long-term neurodevelopmental harm with consequent emotional and practical costs for the family. The organisational cost to the NHS includes the cost of successful litigation claims. The purpose of the review was to identify themes that could alert clinicians to common pitfalls and thus improve patient safety.

Design The NHS Litigation Authority (NHS LA) Claims Management System was reviewed to identify and review 30 claims for injury secondary to neonatal hypoglycaemia, which were notified to the NHS LA between 2002 and 2011.

Setting NHS LA.

Patients Anonymised documentation relating to 30 neonates for whom claims were made relating to neonatal hypoglycaemia. Dates of birth were between 1995 and 2010.

Interventions Review of documentation held on the NHS LA database.

Main outcome measures Identifiable risk factors for hypoglycaemia, presenting clinical signs, possible deficits in care, financial costs of litigation.

Results All claims related to babies of at least 36 weeks' gestation. The most common risk factor for hypoglycaemia was low birth weight or borderline low birth weight, and the most common reported presenting sign was abnormal feeding behaviour. A number of likely deficits in care were reported, all of which were avoidable. In this 10-year reporting period, there were 25 claims for which damages were paid, with a total financial cost of claims to the NHS of £162 166 677.

Conclusions Acknowledging that these are likely to be the most rare but most seriously affected cases, the clinical themes arising from these cases should be used for further development of training and guidance to reduce harm and redirect NHS funds from litigation to direct care.