

Article

# Thimerosal-Preserved Hepatitis B Vaccine and Hyperkinetic Syndrome of Childhood

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**Abstract:** (1) Background: Hyperkinetic syndrome of childhood (HKSoC) is an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9) category in which the majority of the children are also diagnosed under the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR), where the umbrella term is “Attention-Deficit and Disruptive Behavior Disorders”. The diagnostic criteria for HKSoC are developmentally inappropriate inattention, hyperactivity, and impulsivity. Some studies have implicated mercury (Hg) exposure as a risk factor. (2) Methods: This hypothesis testing study; using the Vaccine Safety Datalink; assessed the toxicological effects of bolus exposure to organic-Hg from Thimerosal-containing vaccines (TCVs) by examining the relationship between Thimerosal-preserved hepatitis B vaccines (TM-HepB) given at varying levels and at specific intervals in the first six months after birth and the risk of a child being diagnosed with HKSoC. (3) Results: Children diagnosed with HKSoC were significantly more likely to be exposed to increased organic-Hg from TM-HepB doses given within the first month (odds ratio = 1.45; 95% confidence interval (CI) = 1.30–1.62); within the first two months (odds ratio = 1.43; 95% CI = 1.28–1.59); and within the first six months (odds ratio = 4.51; 95% CI = 3.04–6.71) than controls. (4) Conclusion: The results indicate that increasing organic-Hg exposure from TCVs heightens the risk of a HKSoC diagnosis.

**Keywords:** ADHD; Thimerosal; neurodevelopmental disorder; Hyperkinetic syndrome of childhood

## 1. Introduction

Hyperkinetic syndrome of childhood (HKSoC) is behaviorally defined in the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9) [1]. HKSoC is an ICD-9 category (314.xx) for the group of conditions, which include the following six subtypes: attention deficit disorder (ADD) without mention of hyperactivity (314.00); attention deficit disorder with hyperactivity (ADHD) (314.01); hyperkinesis with developmental delay (314.1); hyperkinetic conduct disorder (314.2); other specified manifestations of hyperkinetic syndrome (314.8); and unspecified hyperkinetic syndrome (314.9). The specific diagnostic criteria are features of developmentally inappropriate inattention, hyperactivity, and impulsivity [2]. The disorder is characterized by a marked pattern of inattention and/or hyperactivity-impulsivity that is inconsistent with developmental level and clearly interferes with normal functioning in at least two settings (e.g., at home and at school). At least some of the symptoms must be present before the age of seven years. Most children in this category are labeled with the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision