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Thimerosal and autism? A plausible hypothesis that should not be dismissed☆

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Summary The autism–mercury hypothesis first described by Bernard et al. has generated much interest and controversy. The Institute of Medicine (IOM) reviewed the connection between mercury-containing vaccines and neurodevelopmental disorders, including autism. They concluded that the hypothesis was biologically plausible but that there was insufficient evidence to accept or reject a causal connection and recommended a comprehensive research program. Without citing new experimental evidence, a number of observers have offered opinions on the subject, some of which reject the IOM's conclusions. In a recent review, Nelson and Bauman argue that a link between the preservative thimerosal, the source of the mercury in childhood vaccines, is improbable. In their defense of thimerosal, these authors take a narrow view of the original hypothesis, provide no new evidence, and rely on selective citations and flawed reasoning. We provide evidence here to refute the Nelson and Bauman critique and to defend the autism–mercury hypothesis.

Introduction

In 1999, the US Public Health Service and the American Academy of Pediatrics (AAP) called for the reduction or elimination of the ethylmercury preservative thimerosal from vaccines, saying that the cumulative amount of mercury in infant vaccines exceeded US Environmental Protection Agency (EPA) guidelines for methylmercury [1]. In 2000, Bernard et al. published an extensive literature review which outlined the shared traits and biological abnormalities between mercury poisoning and autism. They suggested that many cases of idiopathic autism may be induced by early mercury exposure and represent an unrecognized mercurial syndrome. They further postulated that genetic and non-genetic factors establish susceptibility whereby mercury's adverse effects do not occur in all children exposed to mercury [2,3]. Since then, the topic has generated a great deal of controversy. In 2001, the IOM reviewed the science literature on thimerosal and found insufficient evidence to accept or reject an association between thimerosal and neurodevelopmental disorders but found the hypothesis ''biologically plausible''. The IOM committee recommended a comprehensive program of research to resolve the

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