preservative thimerosal.

- A Cochrane systematic review of 64 studies assessing the effectiveness and adverse effects associated with the trivalent measles, mumps, and rubella (MMR) vaccine on healthy patients up to 15 years old found no significant association between MMR with either autism or other conditions (Demicheli, Rivetti, Debalini, et al, 2012). Previously done studies supported the same conclusion, because the studies found no association between thimerosal-containing vaccines and ASD (Demicheli, Jefferson, Rivetti, et al, 2005; Hurley, Tadrous, and Miller, 2010; Parker, Schwartz, Todd, et al, 2004; Schultz, 2010; World Health Organization, 2012).

- Two large studies in Europe found no evidence that childhood vaccination with thimerosal-containing vaccines was associated with the development of ASDs. One longitudinal study evaluated more than 14,000 children in the United Kingdom. The mercury exposure from thimerosal-containing vaccines was recorded and calculated at ages 3, 4, and 6 months and compared with cognitive and behavioral-developmental assessments performed from 6 to 91 months old (Heron, Golding, and ALSPAC Study Team, 2004). The second study, a cohort of 467,450 children in Denmark, compared the incidence of ASDs in children vaccinated with thimerosal-containing vaccines with the incidence of ASDs in children vaccinated with a thimerosal-free formulation of the same vaccine. Another study that evaluated 1047 children from early life to 7 to 10 years old and their biologic mothers found no statistically significant associations between thimerosal exposure from vaccines early in life. It noted a small but statistically significant association between early thimerosal exposure and the presence of tics in boys and recommended there be further research in this area (Barile, Kuperminc, Weintraub, et al, 2012).

- Case-control studies have also found no relationships between MMR vaccination and the increased risk of ASDs (Price, Thompson, Goodson, et al, 2010; Uno, Uchiyama, Kurosawa, et al, 2015). Another small case control study investigated the mercury level in maternal prenatal serum and early postnatal