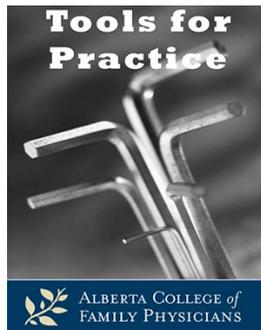


**Tools for Practice** is proudly sponsored by the Alberta College of Family Physicians (ACFP). ACFP is a provincial, professional voluntary organization, representing more than 3,900 family physicians, family medicine residents and medical students in Alberta. Established over fifty years ago, the ACFP strives for excellence in family practice through advocacy, continuing medical education and primary care research. [www.acfp.ca](http://www.acfp.ca)

**Reviewed: October 28, 2013**  
**Evidence Updated: Systematic Review added and context updated**  
**Bottom Line: Unchanged**  
**First Published: June 21, 2010**



## **The Autism and Vaccine Story: Fiction and Deception?**

**Clinical Question: Is there any link between the MMR vaccine and autism?**

**Bottom-line: There is convincing evidence from multiple countries showing there is no association between the MMR vaccine (or thimerosal) and autistic disorders. The controversy is based on unethical and untruthful findings.**

### **Evidence:**

- In 1998, Wakefield and colleagues published a study<sup>1</sup> of 12 children that suggested a link between MMR vaccine, gastrointestinal symptoms and autism.
- Since then, at least 20 higher quality studies<sup>2,3</sup> have failed to show any link between MMR and autism. For example:
  - Cohort study of 500,000+ children followed for mean four years: no difference in autistic or autistic spectrum disorder.<sup>4</sup>
  - Case-control study of 1,294 autistic children with 4,469 non-autistic children: no association between vaccination and autism.<sup>5</sup>
  - Time series analyses reveal no association between start of MMR immunization and autism,<sup>6,7</sup> and no association between trends in MMR vaccination rates and autism.<sup>8,9</sup>
  - Canadian research also shows no link between MMR vaccination and neurodevelopmental disorders.<sup>10</sup>
  - A Cochrane review of 10 studies found no association between MMR vaccination and autism.<sup>11</sup>
- Thimersol, a preservative in vaccines, has been suggested as another possible cause of autism but a number of studies have failed to show an association.<sup>12-14</sup>

### **Context:**

- The truth about the Wakefield Study:
  - The 12 children in the study were carefully selected and many parents already felt MMR was the cause of their child's autism.<sup>15</sup>

- The children's medical histories were altered, e.g. of nine children reported to have regressive autism, three did not have autism diagnosed at all.<sup>16</sup>
- Dr. Wakefield had serious undisclosed financial conflicts: funded by lawyers involved in lawsuits against immunization manufacturers and applying for a new vaccine patent.<sup>15,17</sup>
- In 2004, 10 of 13 authors retracted their support for the MMR-Autism association.<sup>18</sup>
- Britain's General Medical Council has subsequently investigated Wakefield and found him guilty of dishonesty and irresponsibility.<sup>17</sup>
- In 2010, Lancet fully retracted the Wakefield study.<sup>15</sup>
- The legacy of this unfortunate publication includes decreased immunization rates with increased measles rates<sup>18</sup> and continued parental immunization fear.<sup>20</sup>

### Original Authors:

G Michael Allan MD CCFP, Noah Ivers MD CCFP

### Updated:

Adrienne J Lindblad BSP ACPR PharmD

### Reviewed:

G Michael Allan MD CCFP

### References:

1. Wakefield AJ, Murch SH, Anthony A, *et al.* Lancet. 1998; 351:637-41.
2. DeStefano F. Clin Pharmacol Ther. 2007; 82(6):756-9.
3. Hornig M, Briese T, Buie T, *et al.* PLoS One. 2008; 3(9):e3140.
4. Madsen KM, Hviid A, Vestergaard M, *et al.* N Engl J Med. 2002; 347:1477-82.
5. Smeeth L, Cook C, Fombonne E, *et al.* Lancet. 2004; 364:963-9.
6. Taylor B, Miller E, Farrington CP, *et al.* Lancet. 1999; 353:2026-9.
7. Taylor B, Miller E, Lingram R, *et al.* BMJ. 2002; 324:393-6.
8. Dales L, Hammer SJ, Smith NJ. JAMA. 2001; 285:1183-5.
9. Kaye JA, del Mar Melero-Montes M, Jick H. BMJ. 2001; 322:460-3.
10. Fombonne E, Zakarian R, Bennett A, *et al.* Pediatrics. 2006; 118(1):e139-50.
11. Demicheli V, Rivetti A, Debalini MG, *et al.* Cochrane Database System Rev 2012; 2:CD004407.
12. Hviid A, Stellfeld M, Wohlfahrt J, *et al.* JAMA. 2003; 290:1763-6
13. Andrews N, Miller E, Grant A, *et al.* Pediatrics. 2004; 114:584-91.
14. Verstraeten T, Davis RL, DeStefano F, *et al.* Pediatrics. 2003; 112:1039-48.
15. Eggerston L. CMAJ. 2010; 182(4):e199-200.
16. Deer B. BMJ. 2011; 342:c5347.
17. Dyer C. BMJ. 2010; 340:c593.
18. Murch SH, Anthony A, Casson DH, *et al.* Lancet. 2004; 363:750.
19. Asaria P, MacMahon E. BMJ. 2006; 333(7574):890-5.
20. Freed GL, Clark SJ, Butchart AT, *et al.* Pediatrics. 2010; 125:654-9.

**Tools for Practice** is a biweekly article summarizing medical evidence with a focus on topical issues and practice modifying information. It is coordinated by G. Michael Allan, MD, CCFP and the content is written by practising family physicians who are joined occasionally by a health professional from another medical specialty or health discipline. Each article is peer-reviewed, ensuring it maintains a high standard of quality, accuracy, and academic integrity. If you are not a member of the ACFP and would like to receive the TFP emails, please sign up for the distribution list at <http://bit.ly/signupfortfp>. Archived articles are available on the ACFP website.

This communication reflects the opinion of the authors and does not necessarily mirror the perspective and policy of the Alberta College of Family Physicians.