Disproving the Fear—Autism Linked Vaccinations

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Background

• 1998- Wakefield’s publication suggested link between autism and MMR vaccine
• Wakefield’s findings produced fear of vaccinating children
• 2004- Britain's General Medical Council investigation found Wakefield “dishonest and irresponsible”
• 82% of parents received advice from media on vaccines

(Allan, 2010); (Recame, 2012)
• 2008, CDC—98% of those with measles had no prior vaccinations
• Survey of 203 parents—“Fear of side effects” number one reason for not vaccinating
• 2010- *Lancet* medical journal fully retracted Wakefield study
• Present- 20 higher-quality studies failed to show link between MMR vaccine and autism

(Allan, 2010); (Recame, 2012)
This literature review was performed to answer the question, are children who are immunized as infants compared to children who are not immunized as infants at increased risk of developing autism?
Literature Search Strategy

- Databases: Medline and CINAHL
- Key search terms: Infant through 5 years of age, immunizations OR vaccines, and autistic disorder OR autism
- Target population: Infant-5 years
- Inclusion/exclusion criteria: Published from 2008 to present, infancy to 5 years of age, and the MMR vaccine
- 45 articles found and reviewed, 9 articles used
Background

• Level I* evidence, a systemic review, examined 12 studies of evidence for and against alleged association
  – No association found between MMR vaccine and autism

• Four Level IV* studies concluded no association between autism and vaccination trends nor evidence supporting a causal relationship between the two  (See Table 1 for result details)

*See Figure I for Evidence Hierarchy
Figure 1. Evidence Hierarchy

- **Level I**: Systemic Review or Meta-analysis
- **Level II**: Randomized Control Trial
- **Level III**: Controlled Trials (not randomized)
- **Level IV**: Case Control or Cohort Studies
- **Level V**: Systemic Reviews of Descriptive and Qualitative Studies
- **Level VI**: Descriptive or Qualitative Study
- **Level VII**: Opinions of authorities and/or reports of Experts

(Melnyk, 2011)
<table>
<thead>
<tr>
<th>Study</th>
<th>EH*</th>
<th>Design</th>
<th>Sample</th>
<th>Duration</th>
<th>Measures</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smeeth, L., et al., 2004</td>
<td>IV</td>
<td>Matched Case Control Study</td>
<td>1294 autistic and 4469 non-autistic children</td>
<td>January 1991-Decembe 1998</td>
<td>OR of autism disorder in vaccinated children versus unvaccinated</td>
<td>OR for association between MMR and disorder was 0.86 (95% CI, 0.68-1.09)</td>
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<tr>
<td>Madsen, K., et al., 2002</td>
<td>IV</td>
<td>Retrospective Cohort Study</td>
<td>500,000 children (440,655 received MMR vaccine)</td>
<td>4 year study</td>
<td>Analyzed link between MMR vaccine and autism through RR</td>
<td>RR of autism amongst vaccinated children, compared to unvaccinated was 0.92 (95% CI, 0.68 to 1.24)</td>
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<tr>
<td>Taylor, B., et al., 1999</td>
<td>IV</td>
<td>Time-Series analyses</td>
<td>498 autistic children</td>
<td>Birth records after 1979</td>
<td>Change in incidence when MMR vaccine was received and autism diagnosis</td>
<td>Relative incidence compared with control period 0.94 [95% CI, 0.60-1.47] and 1.09 [0.79-1.52]</td>
</tr>
<tr>
<td>Kaye, J., del Mar Melero-Montes, M., &amp; Jick, H., 2001</td>
<td>IV</td>
<td>Time-Series analyses</td>
<td>305 children with diagnosis first recorded during 1988-1999</td>
<td>Children diagnosis records between 1988-1999</td>
<td>Annual and age specific incidence of first recorded diagnosis analyzing cumulative incidence</td>
<td>Cumulative incidence for boys ages 2 to 5 years rose almost fourfold in 1993 birth cohort compared with the 1988 birth cohort. Prevalence of MMR vaccination was over 95% Incidence continued to rise when MMR prevalence remained relatively constant.</td>
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*Note.* See Figure 1; OR = Odds Ratio; RR = Relative Risk; CI = Confidence Interval; See Results for findings summary
Recommendations for Practice

- Fully inform parents on most recent research results
- Provide parents with understandable information on vaccination safety
- Educate parents on proven risks and benefits of MMR vaccine

- Advantages of Recommendations:
  - Provides parents with simplistic resources they are unable to obtain themselves
  - Eliminates parent’s fears and frustrations

(Gardner, 2010); (Hilton, 2007)
Limitations

• Time needed to properly inform parents is limited
• Parents unwilling to visit healthcare services cannot be informed
• Parents’ distrust of the healthcare system may cause barriers
• Overcoming Limitations:
  – Provide simple informational packets to schools, hospitals, daycares, and nurseries, who, in turn, can distribute this information to the parents
Conclusions

• Based on the most recent evidence found, there is no association between the MMR vaccination and the risk for developing autism
• Education of parents will aid in increasing vaccination rates among children
References


