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Why Parents Say No to Having Their Children Vaccinated Against Measles: Social Determinants of Parental Perceptions to Vaccine Hesitancy

M. Lelinneth B. Novilla  
*Brigham Young University*

Michael C. Goates  
*Brigham Young University*, michael_goates@byu.edu

Mallory Showalter  
*Brigham Young University*

Lynneth Kirsten B. Novilla  
*Brigham Young University*

Tyler Leffler  
*Brigham Young University*

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Authors
M. Lelinneth B. Novilla, Michael C. Goates, Mallory Showalter, Lynneth Kirsten B. Novilla, Tyler Leffler, Russell B. Doria, Michael T. Dang, and Katelyn Aldridge

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Why Parents Say No to Having Their Children Vaccinated Against Measles: Social Determinants of Parental Perceptions & Approaches to Vaccine Hesitancy

Len Novilla, MD, MPH; Michael Goates, MS, MLS; Mallory Showalter, BSPH (c); Lynneth Kirsten B. Novilla, BSPH (c); Tyler Leffler, BSPH (c); Russell B. Doria, MD (c); Mike T. Dang, MD (c); Katelyn Aldridge, BSPH (c)
### 2020 Recommended Immunizations for Children from Birth Through 6 Years Old

<table>
<thead>
<tr>
<th>Age</th>
<th>1 month</th>
<th>2 months</th>
<th>4 months</th>
<th>6 months</th>
<th>12 months</th>
<th>15 months</th>
<th>18 months</th>
<th>19-23 months</th>
<th>2-3 years</th>
<th>4-6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>HepB</td>
<td>HepB</td>
<td>RV</td>
<td>RV</td>
<td>RV</td>
<td>HepB</td>
<td>HepB</td>
<td>DTaP</td>
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<td>IPV</td>
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<td></td>
<td></td>
<td></td>
<td>Inf. Vacc.</td>
<td>MMR</td>
<td>Varicella</td>
<td>HepA</td>
<td>MMR</td>
<td>Varicella</td>
</tr>
</tbody>
</table>

**NOTE:**
If your child misses a shot, you don’t need to start over. Just go back to your child’s doctor for the next shot. Talk with your child’s doctor if you have questions about vaccines.

**FOOTNOTES:**
1. Two doses given at least four weeks apart are recommended for children age 6 months through 8 years of age who are getting an influenza (flu) vaccine for the first time and for some other children in this age group.
2. Two doses of HepA vaccine are needed for lasting protection. The first dose of HepA vaccine should be given between 12 months and 23 months of age. The second dose should be given 6 months after the first dose. All children and adolescents over 24 months of age who have not been vaccinated should also receive 2 doses of HepA vaccine.

If your child has any medical conditions that put him at risk for infection or is traveling outside the United States, talk to your child’s doctor about additional vaccines that he or she may need.

For more information, call toll-free 1-800-CDC-INFO (1-800-232-4636) or visit [www.cdc.gov/vaccines/parents](http://www.cdc.gov/vaccines/parents)

[See back page for more information on vaccine-preventable diseases and the vaccines that prevent them.](#)
7-10 days after contact:
- Fever (≥104°F)
- Cough
- Coryza
- Conjunctivitis

2-3 days after onset: Koplik spots

3-5 days from onset: Rash

CONSIDER MEASLES

in patients presenting with febrile rash illness and clinically compatible measles symptoms (cough, coryza, and conjunctivitis)

Ask patients about recent travel internationally or to domestic venues frequented by international travelers, as well as a history of measles in the community.

www.cdc.gov/measles/hcp/index.html
# Contagion Factor - Viral Transmissibility

<table>
<thead>
<tr>
<th>$R_0$</th>
<th>Disease</th>
<th>How it Spreads</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 to 18</td>
<td>Measles (Whooping cough)</td>
<td>Airborne droplets</td>
</tr>
<tr>
<td>12 to 17</td>
<td>Pertussis</td>
<td>Airborne droplets</td>
</tr>
<tr>
<td>6 to 7</td>
<td>Rubella</td>
<td>Fecal-oral route</td>
</tr>
<tr>
<td>5 to 7</td>
<td>Polio</td>
<td>Airborne droplets</td>
</tr>
<tr>
<td>5 to 7</td>
<td>Smallpox</td>
<td>Airborne droplets</td>
</tr>
<tr>
<td>4 to 7</td>
<td>Mumps</td>
<td>Airborne droplets</td>
</tr>
<tr>
<td>2 to 4</td>
<td>SARS</td>
<td>Airborne droplets</td>
</tr>
<tr>
<td>1 to 4</td>
<td>Ebola</td>
<td>Bodily fluids</td>
</tr>
</tbody>
</table>

*Image: Thompson Reuters*
Measles Cases in 2020 - 12 confirmed cases in 7 jurisdictions* (Aug 19, 2020)
*Any of the 50 states, New York City, & District of Columbia

Measles Outbreaks in the U.S.
- Increase in travel-associated measles abroad
- Spread in communities with unvaccinated individuals

Yearly Cases:
- 2010: 63
- 2012: 55
- 2014: 667
- 2016: 86
- 2018: 120
- 2019: 375
- 2020: 1282

CDC, 2020
Breaking the Chain of Infection

CDC Recommendation

**MMR - Measles, Mumps, Rubella**
- All children need to **2 doses** of MMR vaccine
  - **1st Dose:** 12 - 15 months old
  - **2nd Dose:** 4 - 6 years old
    - 1 dose - 93% effective
    - 2 doses - 97% effective

**MMRV - Measles, Mumps, Rubella, Varicella**
Licensed for 12 months - 12 years of age
- **1st Dose:** 12 - 15 months old
- **2nd Dose:** 4 - 6 years old or 3 months after 1st dose
Systematic Analysis

- Conducted systematic review of the social determinants of measles vaccine hesitancy
- Searched 7 databases for primary research articles and literature reviews
- Analyzed a total of 73 articles in final synthesis
RQ 1: Why do parents delay or refuse vaccination, particularly MMR?

Key Takeaways

- Perceived risk of autism is the primary driver of MMR vaccine hesitancy.
- There are several concerns for vaccines in general.

### Danger/Risk Themes

<table>
<thead>
<tr>
<th>Concern</th>
<th>Number of Articles* Vaccines in General</th>
<th>Number of Articles Specific to MMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccine adverse reactions/ hypersensitivity reactions</td>
<td>60</td>
<td>25</td>
</tr>
<tr>
<td>General/other safety concerns</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>Risk of Autism</td>
<td>34</td>
<td>43</td>
</tr>
<tr>
<td>Overwhelms immune system</td>
<td>28</td>
<td>5</td>
</tr>
<tr>
<td>Pain on Injection Site</td>
<td>21</td>
<td>7</td>
</tr>
<tr>
<td>Concerns with vaccine ingredients</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

### Personal Concern Themes

<table>
<thead>
<tr>
<th>Concern</th>
<th>Number of Articles* Vaccines in General</th>
<th>Number of Articles Specific to MMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too many vaccines/ vaccine schedule concerns</td>
<td>34</td>
<td>7</td>
</tr>
<tr>
<td>Mistrust of government and health officials</td>
<td>29</td>
<td>4</td>
</tr>
<tr>
<td>Preference for ‘natural immunity’</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>Philosophical/ moral objection</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Cost or access to vaccines</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Religious opposition</td>
<td>16</td>
<td>5</td>
</tr>
</tbody>
</table>

### Perceived Benefit Themes

<table>
<thead>
<tr>
<th>Concern</th>
<th>Number of Articles* Vaccines in General</th>
<th>Number of Articles Specific to MMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not necessary (low susceptibility)</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Vaccine efficacy concerns</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Not recommended by healthcare provider</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

*Articles may be counted multiple times based on the theme(s) mentioned
RQ 2: Which vaccine information sources do parents use?

Key Takeaways
- Vaccine-hesitant parents are more likely to use the internet/social media.
- Both vaccine-compliant and hesitant parents consider physicians/healthcare providers as the most trusted source of vaccine information.
RQ 3: What social factors affect vaccine hesitancy?

Key Takeaways

- Medical/Healthcare, Education, and Economy/Income are the most influential factors for vaccine compliance.
- Psychosocial/behavioral factors greatly hinder vaccine compliance.
RQ 4: What is the role of families in countering vaccine hesitancy?

Gaps in the Literature
- Gender-Based Role
  - Emphasis on Mothers
  - Fathers
  - Family Unit

Family Approaches
- Shared-Health Decisions
- Emotions + Science Tailored Messages
- Story-telling & Narratives
- Grandparents/ Multi-generational Support
RQ 5: What are the strategies to vaccine hesitancy?

Primary Care/Healthcare:
- Parental Trust & Physician Time
- Early Education on Vaccines
- Inviting Questions & Listening to Concerns
- Other Parent/Family Involvement
- Interdisciplinary Emphasis On Vaccine
- Update Vaccine Knowledge
- Vaccination Records
- Other Parent/Family Involvement
RQ 5: What are the strategies to vaccine hesitancy?

Public Health
- Tailored approaches to vaccine education
- Evidence-based interventions
- Vaccine records & compliance
- Tools for messaging, content, communication, & dissemination

Government
- Policies on Non-Medical Exemptions
- Socio-Political Context
- Innovative Outreach & Easy Access
- Rigorous Vaccine Research & Approval

Rigorous Vaccine Research & Approval
Conclusion & Public Health Implications

A one-size-fits-all approach is unlikely to be successful.

- Optimize social determinants that facilitate parental assent
- Use a variety of messaging platforms, personal narratives, historical horrors of VPDs
- Use clear, consistent, culturally-appropriate messaging, presumptive tone, and a C.A.S.E. Method (Corroboration, About me, Science, Explain)
- Strengthen family-physician trust & increase interaction time
- Share health decision-making with fathers and/or family
- Utilize family-centered approaches & build multigenerational support networks