

PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Finding Reliable Information About Vaccines

Diego Pineda and Martin G. Myers

Pediatrics 2011;127;S134; originally published online April 18, 2011;

DOI: 10.1542/peds.2010-1722T

The online version of this article, along with updated information and services, is located on the World Wide Web at:

http://pediatrics.aappublications.org/content/127/Supplement_1/S134.full.html

PEDIATRICS is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. PEDIATRICS is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2011 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0031-4005. Online ISSN: 1098-4275.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



Finding Reliable Information About Vaccines

abstract

Misinformation about vaccines confuses parents who may delay or refuse vaccines for their children, which places them and others at risk of vaccine-preventable diseases. Many parents do not understand the risks and severity of these diseases but also are unaware that they are uninformed. There are a number of favorable factors available for educating parents about these diseases, their prevention, and how to counter misinformation: most parents are seeking a trusting health care relationship; they want more information; they appreciate guidance; and they are looking for means to validate the information that they find. These factors represent opportunities to enhance confidence in immunization programs by providing parents with the tools that they need. *Pediatrics* 2011;127:S134–S137

AUTHORS: Diego Pineda, MS,^a and Martin G. Myers, MD^{a,b}

^aNational Network For Immunization Information, Galveston, Texas; and ^bDepartment of Pediatrics, University of Texas Medical Branch, Galveston, Texas

KEY WORDS

immunization, patient participation, health promotion

ABBREVIATION

CDC—Centers for Disease Control and Prevention

www.pediatrics.org/cgi/doi/10.1542/peds.2010-1722T

doi:10.1542/peds.2010-1722T

Accepted for publication Nov 29, 2010

Address correspondence to Martin G. Myers, MD, University of Texas Medical Branch, 301 University Blvd, MR 0350, Galveston, TX 77555-0351. E-mail: magmyers@utmb.edu

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2011 by the American Academy of Pediatrics

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

In the absence of visible vaccine-preventable disease in the community, parents perceive no infection risk and fail to comprehend that their child is potentially at risk of exposure. Without fear of these diseases, parents have begun to fear hypothetical vaccine-safety risks regardless of whether they are substantiated by facts. With the wide dissemination of misinformation about vaccine safety, parents' perceptions of the cost-effectiveness of immunizations may seem to favor delaying or refusing vaccines for their child; their perceived concern for their child's safety is always their foremost responsibility.

Misinformation about vaccine safety confuses parents, leads to vaccine hesitancy, and may have tragic consequences for both the child and others in the community when immunization levels decline and disease outbreaks occur.¹

Most parents immunize their children,² but even many of these parents have misperceptions about both the risks of vaccine-preventable diseases and the safety of vaccines.^{3,4} Indeed, parents want additional information about vaccines, the diseases they prevent, and vaccine safety.⁴ For example, we observed that widely publicized misinformation events about vaccine safety are associated with corresponding increased search-engine activity about that topic, as well as searches on our National Network for Immunization Information Web site (www.nnii.org) for specific material about that topic.¹ In addition, once specific information has been located, many people will follow links to information about how to check the reliability of the information they located, an observation that may have important implications for helping parents locate reliable information.¹

LOOKING FOR INFORMATION

Uninformed people, including some who have had advanced education,

represent a special challenge, because they often do not appreciate that they are uneducated. Thus, many parents—and future parents—need to be educated about the risks and severity of vaccine-preventable diseases. Many health professionals, including some pediatricians, have never encountered these diseases and may also be uninformed, which compounds the problem. One provider, for example, has offered alternative immunization schedules with statements such as “in truth, tetanus is not an infant disease,” “I have never seen . . . tetanus in my office,” and “a baby could skip the tetanus . . . shots for a few years and be just fine,” intending to make the points that the disease is no longer much of a concern and that vaccine prophylaxis is unnecessary⁵ rather than recognizing that these personal observations identify a triumph of decades of tetanus immunization of expectant mothers and young infants and that continuing the implementation of these recommendations is critical to protecting young infants and children; tetanus spores are ever-present in soil.

Trying to locate reliable information about vaccines, vaccine safety, and vaccine-preventable diseases can seem to be a daunting task for providers as well as parents. When seeking vaccine information, parents seem to use 3 major resources: health professionals; the media; and the Internet.²

Health Professionals

It is fortunate that most parents seek and largely trust health information obtained from health professionals.² It is unfortunate, however, that health professionals may themselves be uninformed or misinformed. For example, a physician in Texas denied influenza vaccine for a child at high risk for complications of influenza because he did not have a thimerosal preservative-

free vaccine available; this response was a result of misinformation that resulted in severe consequences for the child.⁶ In addition, some health providers are antivaccine activists. Also, health professionals have limited time available to discuss vaccine issues.⁷ Finally, we often do not appreciate that what we intend to mean by the use of words may differ remarkably from what is understood by even well-educated parents.⁶

The Media

Radio, television, and social networking reach almost every segment of the American public and influence what Americans know and consider important. Health stories, for example, constitute 11% of local nightly news time but are not intended to be a public service; they give few recommendations, cite limited data, and may contain egregious errors that could harm viewers who rely on the information.⁸

The media enhance the development of misinformation by providing inaccurate information, purporting scientific controversy, granting validity to misinformers, and sowing seeds of doubt.⁹ In addition, Americans worry about celebrity concerns.

The Internet

An increasing number of people in the United States and elsewhere are using the Internet. Most American parents use the Internet, and most of them (61%) will use it to look for health information or find information about specific health issues.¹⁰ Although the Internet can be a valuable resource, the quality of health information on the Web is extremely variable and difficult to assess. It is unfortunate that the majority of people use a search engine to locate information, because they do not understand that much of what they find in that manner is misinformation. For example, search engines such as

Google, Yahoo, or MSN only identify topics and provide lists of Web sites; they do not determine whether the content is reliable. A search for a vaccine-safety term is as likely (and sometimes more likely) to take a person to misinformation than to reliable information.

FINDING RELIABLE HEALTH INFORMATION

The first step for health professionals and parents is to start with reliable sources.

Most parents trust information given to them by their health providers. As a consequence, it is imperative that health professionals have information readily available to give parents for them to be able to locate reliable health information and to be able to assess disease and exposure risks (including community risks). When it comes to vaccines and vaccine-preventable illnesses, it is critical that health professionals and their staff be knowledgeable to be able to provide educational materials for their patients. There are many publication sources for health information, but there are no regulations about the quality of information in print, in the entertainment media, or on the Internet. Because young parents are increasingly seeking health information on the Internet, we focus on those resources here.

Instead of relying on a search engine, the first rule for finding reliable health information on the Internet is to always start at a known, trustworthy Web site¹¹ such as the following:

- The National Library of Medicine's Medline Plus (www.medlineplus.gov) is one of the best places to begin a search about health care matters, and this site provides links to other reliable information on the Web.
- The Centers for Disease Control and Prevention (CDC) (www.cdc.gov) is

the lead federal agency for protecting the health and safety of people in the United States and abroad. Its Web site provides a wealth of information about health, travel, the environment, and disease prevention.

- The National Institutes of Health is the steward of medical and behavioral research for the United States. A great deal of information on health issues can be found at www.health.nih.gov and at the Web sites of its 27 institutes and centers (see www.nih.gov/icd).
- The World Health Organization is the United Nations' agency for health. A global perspective on many health issues may be found at its Web site (www.who.int).
- The American Academy of Pediatrics is a professional organization that represents 60 000 pediatricians. Its Web site (www.aap.org), aimed toward parents and health professionals, covers a wide range of information about children's health.
- The Tufts University Child & Family WebGuide (www.childandfamily.info) includes evaluations of Web sites that contain information about children and families. The site is divided into various categories of information: family/parenting; education/learning; typical child development; health/mental health; resources/recreation; and medical pages.

When evaluating a health Web site, it is important to keep the following in mind:

- A good site will display who is responsible for the site and how it is funded, and it should show a way to contact the information provider.
- Do sponsoring organizations allow their name and prestige to be displayed?
- The purpose of the Web site should be clearly stated.

- Information should not be slanted in favor of a sponsor and should be accurate and unbiased. Does the Web site show/cite the scientific evidence for the statements that are made? Can facts and opinions be easily distinguished? Be aware that some misinformation Web sites inaccurately cite legitimate publications.
- One should ask, do scientific experts review the medical information before it is posted? What are their credentials? Remember that credentials are difficult to assess on the Internet, and many claim to be "experts." Is the date of preparation of the information available?
- Does the Web site feature anecdotes about serious adverse events instead of scientific evidence? If so, it is not likely to be reliable.

FINDING TRUSTWORTHY INFORMATION ABOUT VACCINES AND THE VACCINE-PREVENTABLE DISEASES

It is important that parents be able to easily locate reliable information about the risks from vaccine-preventable diseases and about the real safety profile of each vaccine and for answers to their questions.

- The National Network for Immunization Information (NNII) Web site* (www.immunizationinfo.org or www.nnii.org) is designed to provide parents, health care professionals, the media, policy-makers, and others with up-to-date, science-based information about immunizations and the diseases they prevent. The site features a searchable database of information about diseases prevented by immunizations, a listing of all state vaccination requirements, and weekly news briefs that highlight vaccine issues in the news.

*Mr Pineda is the Webmaster and science writer and Dr Myers is the editor of the www.nnii.org Web site.

It features essays about vaccines, vaccine safety, immunization recommendations, and other vaccine matters. Topics that are reviewed have largely been suggested by readers of the Web site. For example, a number of readers asked for an article on the fetal components of vaccines, because there was no good summary available elsewhere; the subsequent article has been reviewed and reprinted many times. Once an essay has been prepared for the Web site, it is then reviewed by experts for accuracy and reviewed by a panel of non-technically trained parents for clarity. Most of the Web content is available in various formats appropriate for distribution in offices or elsewhere. The NNii Web site also includes a compendium of other Web sites from which reliable information about vaccines may be obtained. The 2008 book *Do Vaccines Cause That?! A Guide for Evaluating Vaccine Safety*

*Concerns*⁶ is also available at this Web site.

- The CDC's vaccines and immunizations Web site (www.cdc.gov/vaccines) features publications and fact sheets, including vaccine recommendations designed for the public and health professionals. A 68-page booklet titled "Parents' Guide to Childhood Vaccines" is available for free at www.cdc.gov/vaccines/pubs/parents-guide/default.htm. Topically, the CDC Web site has up-to-date information about H1N1 2009 influenza (www.cdc.gov/h1n1flu), vaccine production, and vaccine-safety testing. It also publishes the national health policies being developed in response to this pandemic strain. Another CDC Web site (www.cdc.gov/travel) is useful for travelers and their health providers, because it is updated frequently and provides useful information for travelers, whatever their destination.

- The World Health Organization's Global Advisory Committee on Vaccine Safety Web site (www.who.int/immunization_safety/safety_quality/vaccine_safety_websites/en/index.html) provides a list of Web sites that meet specific standards that they have established for ensuring the quality of information about vaccines. The site is also helpful for learning about immunization programs in other countries.
- The Vaccine Education Center at the Children's Hospital of Philadelphia Web site (www.vaccine.chop.edu) provides parent-friendly information about how vaccines are made, when vaccines should be given, and why they are still necessary.
- The Immunization Action Coalition Web site (www.immunize.org) is more suitable for health professionals than parents. It makes available all of the CDC's Vaccine Information Statements in many languages.

REFERENCES

1. Myers MG, Pineda D. Misinformation about vaccines. In: Barrett A, Stanberry LR, eds. *Vaccines for Biodefense and Emerging and Neglected Diseases*. London, United Kingdom: Elsevier; 2009:255–270
2. Gellin BG, Maibach EW, Marcuse EK. Do parents understand immunizations? A national telephone survey. *Pediatrics*. 2000;106(5):1097–1102
3. Gust DA, Strine TW, Maurice E, et al. Underimmunization among children: effects of vaccine safety concerns on immunization status. *Pediatrics*. 2004;114(1). Available at: www.pediatrics.org/cgi/content/full/114/1/e16
4. Gust DA, Kennedy A, Shui I, Smith PJ, Nowak G, Pickering LK. Parent attitudes toward immunizations and healthcare providers the role of information. *Am J Prev Med*. 2005;29(2):105–112
5. Sears R. *The Vaccine Book: Making the Right Decision for Your Child*. New York, NY: Little, Brown & Company; 2007
6. Myers MG, Pineda D. *Do Vaccines Cause That?! A Guide for Evaluating Vaccine Safety Concerns*. Galveston, TX: IAPH Press; 2008
7. Davis TC, Fredrickson DD, Kennen EM, et al. Childhood vaccine risk/benefit communication among public health clinics: a time motion study. *Public Health Nurs*. 2004;21(3):228–236
8. Pribble JM, Goldstein KM, Fowler EF, Greenberg MJ, Noel SK, Howell JD. Medical news for the public to use? What's on local TV news. *Am J Manag Care*. 2006;12(3):170–176
9. Boyce T. Health risk and news: the MMR vaccine and the media. In: Sut J, Justin L, eds. *Media and Culture*. Vol 9. Oxford, United Kingdom: Peter Lang Publishing; 2007; 195–200
10. Pew Foundation. The social life of health information. Available at: www.pewinternet.org/Reports/2009/8-The-Social-Life-of-Health-Information.aspx?r=1. Accessed September 14, 2009
11. Pineda D, Myers MG. *Are Vaccines Safe? Evaluating Information on the Internet*. Galveston, TX: Immunizations for Public Health; 2009

Finding Reliable Information About Vaccines

Diego Pineda and Martin G. Myers

Pediatrics 2011;127;S134; originally published online April 18, 2011;

DOI: 10.1542/peds.2010-1722T

Updated Information & Services	including high resolution figures, can be found at: http://pediatrics.aappublications.org/content/127/Supplement_1/S134.full.html
References	This article cites 5 articles, 1 of which can be accessed free at: http://pediatrics.aappublications.org/content/127/Supplement_1/S134.full.html#ref-list-1
Citations	This article has been cited by 1 HighWire-hosted articles: http://pediatrics.aappublications.org/content/127/Supplement_1/S134.full.html#related-urls
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): Infectious Disease & Immunity http://pediatrics.aappublications.org/cgi/collection/infectious_disease
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://pediatrics.aappublications.org/misc/about.xhtml#permissions
Reprints	Information about ordering reprints can be found online: http://pediatrics.aappublications.org/misc/addir.xhtml#reprintus

PEDIATRICS is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. PEDIATRICS is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2011 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0031-4005. Online ISSN: 1098-4275.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

