**Aims:** To determine the likelihood of finding an antivaccination site on the world wide web and to characterise their explicit claims and rhetorical appeals.

**Methods:** Using “vaccination” and “immunisation”, examining the first 10 sites displayed on seven leading search engines. Detailed examination of content of 100 antivaccination sites found on Google.

**Results:** 43% of websites were antivaccination (all of the first 10 on Google). Main rhetorical appeals involve themes of the scientific veracity of antivaccination argument; rapport with parents seeking to protect their children from harm; and alleged collusion between doctors, the pharmaceutical industry, and government to deny vaccine harm.

**Conclusions:** There is a high probability that parents will encounter elaborate antivaccination material on the world wide web. Factual refutational strategies alone are unlikely to counter the highly rhetorical appeals that shape these sites.

**Rhetorical appeals**

**Evidence of authority and scientific rigour**

Antivaccination groups sought to present themselves as legitimate authorities with scientific credibility: about one in four websites implied official status at national or international level. A majority of sites propounded the scientific validity of their claims by referencing from extensive literature dominated by self published works and the alternative medicine press. Allegedly damning research was often quoted, but without citation of its source. Referencing was frequently incomplete and often indiscriminate, including letters to editors of newspapers and television interviews. Research published in indexed medical journals was also quoted; however, the conclusions drawn were often inconsistent with those of the authors. Overall this produced a spectre of the existence of masses of data on the dangers of vaccination.

Over half of all sites cited rank breaking doctors speaking out against vaccination. Implied division within the medical community reinforced the notion of a “debate” among authorities. One third of sites promoted themselves as sources of non-partisan information on both sides of the immunisation “debate”. Despite these claims a mere 15% contained any information supportive of vaccination. Only a third of sites had links to such sites.

**Emotive appeals**

“This lovable, extremely alert baby had never produced such a blood-curdling scream as she did at the moment the shot was given … four hours later, Lee Ann was dead” (http://www.van.org.uk/index1.htm)

Almost all sites featured the adversarial notion of “us versus them” whereby parents and antivaccinationists stood against the depersonalised “them” of doctors, health bodies, governments, and pharmaceutical companies. Doctors were presented as either willing conspirators cashing in on the vaccine “fraud”, or pawns manipulated by the shadowy vaccine combine; parents’ love and compassion whose intuition about vaccination was not the “artificial” process of vaccination but the
Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

### Table 1 Antivaccination sites encountered in first 10 sites displayed

<table>
<thead>
<tr>
<th>Search engine</th>
<th>“vaccination”</th>
<th>“immunisation OR immunization”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antivaccination in first 10 sites displayed (rank order)</td>
<td>%</td>
<td>Antivaccination in first 10 sites displayed (rank order)</td>
</tr>
<tr>
<td>Google</td>
<td>1,2,3,4,5,6,7,8,9,10</td>
<td>100</td>
</tr>
<tr>
<td>Netscape</td>
<td>2,6</td>
<td>20</td>
</tr>
<tr>
<td>Altavista</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>GoTo*</td>
<td>2,3,5,6,8</td>
<td>50</td>
</tr>
<tr>
<td>HotBot</td>
<td>1,3,4,7</td>
<td>40</td>
</tr>
<tr>
<td>Lycos</td>
<td>3,4,5,7,10</td>
<td>50</td>
</tr>
<tr>
<td>Yahoo</td>
<td>8,9,10</td>
<td>30</td>
</tr>
<tr>
<td>All 7 search engines</td>
<td></td>
<td>43</td>
</tr>
</tbody>
</table>

pursuit of natural lifestyle. Many sites asserted that infectious disease was a consequence of lifestyle, not microorganisms.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)

Nearly all sites referred to the antivaccination struggle as a search for truth against a background of cover up and denial. Antivaccinationists portrayed themselves as crusaders excavating hidden truths. The vaccination hoax was a vehicle for the generation of limitless profit and which would produce epidemics of chronic illness, requiring billions of dollars worth of drugs and medical care. To many groups, compulsory vaccination represented the beginning of the slippery slope towards totalitarianism.

Evidence of conspiracy, search for truth

“[is immunisation] really designed for prevention or cure or is it planned for increasing diseases and dependency on treatments and medicines?” (http://home.iae.nl/users/lightnet/health/vaccination.htm)
Table 2  Rhetorical appeals and explicit claims

<table>
<thead>
<tr>
<th>Rhetorical appeal</th>
<th>% sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence of authority and scientific rigour</td>
<td>27</td>
</tr>
<tr>
<td>Quasi official</td>
<td>75</td>
</tr>
<tr>
<td>“Scientific” references</td>
<td>33</td>
</tr>
<tr>
<td>Claim to present both sides</td>
<td>15</td>
</tr>
<tr>
<td>Actually present both sides</td>
<td>31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Explicit claims</th>
<th>% sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diseases are trivial</td>
<td>38</td>
</tr>
<tr>
<td>Poisons</td>
<td>79</td>
</tr>
<tr>
<td>Vaccines harmful</td>
<td>99</td>
</tr>
<tr>
<td>Vaccines ineffective</td>
<td>83</td>
</tr>
<tr>
<td>Vaccines kill</td>
<td>63</td>
</tr>
<tr>
<td>Eradicate immune system</td>
<td>54</td>
</tr>
<tr>
<td>Natural lifestyle gives immunity</td>
<td>39</td>
</tr>
<tr>
<td>Alternative health superior</td>
<td>45</td>
</tr>
<tr>
<td>Infectious diseases declined for other reasons</td>
<td>57</td>
</tr>
<tr>
<td>Diseases caused</td>
<td>93</td>
</tr>
<tr>
<td>Idiopathic (various)</td>
<td>63</td>
</tr>
<tr>
<td>Sudden infant death syndrome</td>
<td>56</td>
</tr>
<tr>
<td>Autism</td>
<td>71</td>
</tr>
<tr>
<td>AIDS</td>
<td>39</td>
</tr>
<tr>
<td>Cancer</td>
<td>58</td>
</tr>
<tr>
<td>Diabetes</td>
<td>40</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>34</td>
</tr>
</tbody>
</table>

Explicit claims

“Recent epidemiological studies show homeopathic remedies as equaling or surpassing standard vaccinations in preventing disease” (http://www.unc.edu/~aphillip/www/chf/myths/dvm28.htm)

Vaccination was said to have been shown to be completely ineffective in preventing infectious diseases. Decreases in infectious disease were solely a result of social changes such as better sanitation. Vaccines were demonised as pollutants, alleged to cause numerous idiopathic disorders, usually of children, such as sudden infant death syndrome or autism, and other feared diseases including cancer and AIDS. Vaccines were also responsible for the rise in social “disorders”, such as falling literacy and violent behaviour.

Being unnatural, vaccinations deranged the function of the immune system. The natural immunity provided by infection was considered superior. Many sites urged parents to intentionally expose their children to infectious diseases alleging health benefits.

Many sites proposed that complementary health offered options for disease prevention superior to that of vaccination.

DISCUSSION

Anyone searching for vaccination information on the internet will rapidly encounter florid antivaccination material. With many such sites masquerading as official scientific sites, some web users may not question the veracity of such material.

Other researchers have criticised antivaccination websites for factual inaccuracies, and have examined some of the characteristics of antivaccination sites.

The antivaccination message on the internet is far more unbridled than in other media. For this reason the internet represents a greater potential for the public to make uninformed decisions about vaccination.

Refutations based solely on “the facts” fail to address the core appeals that attract people to antivaccination sentiment in the first place. Any response to antivaccination rhetoric must also acknowledge the wider social discourses from which those arguments generate their appeal.

Much of the appeal of antivaccination argument lies in the genuine pain of those touched by the tragedy of childhood death or illness. Where medicine is impotent to provide a culprit for many idiopathic disorders, antivaccinationists can fill the void, providing answers and solidarity for parents who feel abandoned by medical authorities. A questioning of authority and scepticism regarding the motivations of doctors and governments pervades antivaccination literature.

Along with alternative health and natural parenting, antivaccination sites represent a return to an idealised, natural existence. Accordingly the antivaccination message has infiltrated these movements.

Concerns about immunisation reveal an individualistic ideology that reveres personal rights and freedoms. In a generation which has rarely seen these diseases first hand the risk of adverse reaction seems more immediate than the bigger picture of disease prevention.

Response to the problem

To defuse conspiratorial claims the public should be made aware of efforts to address the issue of vaccine safety through more active surveillance of adverse events and studies investigating hypothesised links between vaccination and serious chronic diseases.

Since antivaccination websites share many of the characteristics we have described, the themes identified in this article might act as a tool for parents to discern whether the source is trustworthy. The checklist might include:

- Highly emotive content
- Conspiratorial claims
- Privately published material, newspapers articles, etc given as sources of information
- Claims to have privileged information unknown to medical authorities.

Where refuting antivaccination arguments on the basis of fact alone is insufficient, it may be possible to use similarly emotive tactics to promote immunisation. Emphasis could be given to images and stories of children harmed by vaccine preventable illnesses (see, for example, http://www.immunize.org/stories/unprot.htm).

Authors’ affiliations

P Davies, S Chapman, Department of Public Health and Community Medicine, University of Sydney A27, NSW 2006, Australia
J Leask, National Centre for Immunisation Research and Surveillance

REFERENCES

Cycling with myth Australia

My family and friends know me as a keen cyclist and, true to form, one of my first purchases in Brisbane was a bicycle. Those of you who have bought a bike—and the surveys would suggest that this is significantly more than those of you regularly use one—know that the bicycle is only the half of it, with the accessories costing as much again. Certainly in the UK you need the lights and lock and, unless you plan to be a fair weather peddler, you’ll need some waterproofs. These can seem expensive until you compare them with the cost of a minor service for a car.

The first purchase is the cycle helmet. In Brisbane there are two other important things to buy before you leave the bike shop. The first is the water bottle, which you need if you intend to go more than about 100 metres. The 20 ice cubes topped up with refrigerated water in my bottle each morning melt in less than two kilometres of travel.

The second purchase is the cycle helmet. Many health advocates in the UK are envious of the now nearly country wide Australian laws regarding cycle helmet use, while health advocates in Australia are plainly puzzled by the sort of pro/anti helmet debate taking place in the pages of the BMJ in December 2000.

Some Myths and Truths

Myth number one: All Australian cyclists wear cycle helmets. Truth: It seems to depend who you are and where you are. Although you can be fined for failure to wear, there is still apparently a rite of passage where a scoff-law teenage lad will brandish his helmet free head as a mark of maturity or badge of honour. I’ve only seen one person stopped and cautioned in two years on the roads and bike paths.

Myth number two: You’ve just got to get them wearing the helmet. Truth: You actually have to get them wearing the helmet properly. I don’t understand why, if someone is going to go to the fairly minor discomfort of wearing a helmet, they wouldn’t do it up the strap. Or why they’d wear the strap so loose it could double as a medallion. Or why they’d wear the helmet at a jaunty angle, exposing their forehead—and frontal lobes—to the world. The law here states that the helmet should be properly fixed for good reason; however, this too is poorly policed.

Myth number three: Helmet laws reduce the number of cyclists, as a consequence of the negative publicity about cycle safety during helmet campaigns, and thus reduce the net health of the population. Truth: Tricky; very tricky. I’d have to say, though, that if this is true then Brisbane must have looked more like Beijing prior to the introduction of the law. The problem is with the denominator—the number of people cycling before the law was introduced. Moreover, are the reductions in cycling demonstrated by some studies within a couple of years of the introduction of the law sustained after a settling-in period? Are there secular trends or other events which might be obscuring the law’s influence? As a purely subjective observation, it is an unusual Saturday morning when I see fewer than three or four hundred cyclists while I’m out on a pre-eight o’clock ride beside the river.

Myth number four: Helmets increase risk taking behaviour. Truth: I have no idea, but then I don’t see why helmets should be any different from any other safety measure like anti-lock braking, seat belts, or crumple zones, so I’d have to defer to the experts. Again, very difficult to measure the denominator. The pertinent question here is “What is risk taking behaviour?” This is less easy to define than it first appears, especially if you would agree that we don’t want children to grow up having never experienced anything with the slightest whiff of risk about it. There are two other excellent reasons to wear a helmet on Brisbane streets. The first is that a sun visor can come in very handy in a city where sunburn is a serious consideration at 7 am. The second is the magpies. These vicious, sharp clawed birds nest in spring and regard anyone coming within 50 metres of their nest as an invader, upon whom to swoop and attack. The combination of startled—causing wobble—and the occasional scratch from a claw can be very challenging to someone with a “live and let live” outlook on life. Half a kilometre of my path to work is a gauntlet I ride daily; on a good day I’m only stuck twice. I took local advice and painted my eyes on my helmet—there is now a magpie with a white paint circle on his wings after he dive bombed my still-drying helmet.

Health messages are sometimes simple, like “Don’t smoke, you’ll get sick and maybe die”. Others are much more complex, like “We’d like you to cycle because it is good for you, and good for the environment. However, you place yourself at higher risk of head injury, so we’d like you to wear a helmet too.” The challenge is to get this across clearly and effectively. Maybe we should import some Australian magpies to help tip the balance.

Dr Wacogne was on secondment at the Royal Children’s Hospital, Brisbane for two years and is now completing his SpR training at the North Staffordshire Hospital.
Antivaccination activists on the world wide web

P Davies, S Chapman and J Leask

Arch Dis Child 2002 87: 22-25
doi: 10.1136/adc.87.1.22

Updated information and services can be found at:
http://adc.bmj.com/content/87/1/22

These include:

Supplementary Material
Supplementary material can be found at:
http://adc.bmj.com/content/suppl/2002/06/21/87.1.22.DC1

References
This article cites 8 articles, 1 of which you can access for free at:
http://adc.bmj.com/content/87/1/22#BIBL

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Topic Collections
Articles on similar topics can be found in the following collections

- Drugs: infectious diseases (965)
- Immunology (including allergy) (2018)
- Vaccination / immunisation (334)

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/