

Antivaccination activists on the world wide web

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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.

Campaigns by those opposed to immunisation have been followed by falling immunisation rates and outbreaks of vaccine preventable disease.¹ The internet has provided antivaccinationists with unprecedented opportunities for exposure. In the USA, 55% of adults with internet access use it to seek health related information.²

For all its benefits, the internet has great potential to disseminate health information that is incorrect and potentially dangerous.³ To date, all studies on health information on the internet have assessed content against a priori standards of evidence, and have not considered the rhetorical subtexts and wider social discourses in which this information is embedded.^{4 5}

We examined the content of 100 antivaccination websites, considering not only the explicit claims made about vaccination, but also the ways these claims are framed to maximise their appeal and influence.

METHODS

On 23 July 2001 we entered the term "vaccination" and "immunisation OR immunization" into seven leading search engines and examined the first 10 sites delivered by each to estimate the probability of a person seeking information on immunisation quickly encountering a site expressing opposition to vaccines.

Next, using the term "vaccination" on the Google search engine, 845 separate sites were returned, of which 44 were found to contain content encouraging vaccine refusal or emphasising the dangers of vaccines. Further sites linked to this original cohort of 44 were methodically identified in order of discovery until 100 sites had been located (see Appendix 1, available on *ADC* web site: www.archdischild.com). Sites were then reviewed and their explicit claims and rhetorical appeals noted and categorised, drawing on previous work by the authors (see box 1).⁴

RESULTS

Across all seven sites, 43% of hits using "vaccination" returned antivaccination sites (100% on Google) (table 1). The term "vaccination" was more likely to result in an antivaccination website than the terms "immunisation or immunization".

Of the 100 sites examined, just over half represented groups or individuals concerned exclusively with opposition to vaccination with the remainder being alternative health, civil rights, and parenting sites containing antivaccination material. Tables 2 and 3 show the proportion of these 100 antivac-

ination sites which utilised particular rhetorical appeals and which made various explicit claims about vaccines.

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 harms was considered a stronger force than cold, analytical science. Accounts of children said to be maimed or killed by vaccines were prominent. The answer to disease prevention was not the "artificial" process of vaccination but the

Box 1 Rhetorical appeals and explicit claims

Rhetorical appeals

Authoritative and scientific

- **Quasi official:** organisations with names implying authority or official status
- **“Scientific” references:** referenced information from established medical journals, alternative health literature, published works by antivaccination “experts”, etc
- **Both sides:** claim to present “both sides” of the vaccination debate for readers to appraise
- **Actually present both sides:** present arguments for and against vaccination
- **Links to provaccination groups:** links to government or health agencies promoting vaccination

Emotive appeals

- **Personal testimony:** contain personal accounts of illness said to be caused by vaccination or persecution caused by antivaccination beliefs
- **Responsible parenting:** the decision not to vaccinate is in the best interests of children, and parents who refuse are acting responsibly and lovingly in accordance with parental instincts
- **Us versus them:** antivaccinationists are caring and concerned friends and allies of parents, together pitted against the collusive interests of uncaring doctors and government
- **Back to nature:** “natural” methods of preventing disease are more desirable than the “artificial” practice of vaccination, and a natural lifestyle makes vaccination unnecessary

Conspiracy/search for truth

- **Cover up:** information about vaccination is being wilfully distorted, suppressed, or otherwise withheld from the public
- **Excavation of the facts:** sites present allegedly reliable but hitherto neglected or hidden information that counters accepted wisdom about the benefits, safety, and efficacy of vaccines
- **Free and informed choice:** an informed decision about vaccination can only be made by parents in the absence

of coercion by medical authorities, and only after becoming familiar with the facts as presented by antivaccinationists

- **Foolish doctors:** medical orthodoxy is ill informed and outdated against the enlightened and compassionate antivaccinationists. Doctors are ignorant, have a vested interest in clinging to outdated myths about vaccination, and are too insecure to acknowledge the truth
- **Rebel doctors:** thoughtful and enlightened medical doctors have broken with medical orthodoxy and now question vaccination
- **Unholy alliance for profit:** promotion of vaccines is motivated by collusion for monetary gain between doctors, pharmaceutical companies, researchers, and public health bureaucrats towards totalitarianism—regulation of the administration of vaccines is a threat to civil liberties and is an excessive exertion of government control

Explicit claims

- **Trivial diseases:** the diseases childhood vaccinations are said to guard against are a normal part of growing up and are necessary developmental milestones. Vaccines interfere with this natural process and cause adverse health outcomes
- **Poisons:** vaccines are toxic and poisonous and made from undesirable, bizarre products
- **Harmful:** vaccines cause various diseases
- **Vaccines erode the immune system**
- **Idiopathic ills:** vaccines cause diseases or behavioural problems erroneously said to be of unknown or uncertain origin
- Vaccines are **ineffective**
- **Alternative health treatments** (particularly homeopathy and naturopathy) are superior alternatives to vaccination
- **Natural lifestyle** ensures natural immunity. Those who get sick from these diseases have “unnatural” lifestyles
- Disease declines predated vaccination: **infectious diseases have declined for reasons other than vaccination**

Table 1 Antivaccination sites encountered in first 10 sites displayed

Search engine	Search term		“immunisation OR immunization”	
	“vaccination”			
	Antivaccination in first 10 sites displayed (rank order)	%	Antivaccination in first 10 sites displayed (rank order)	%
Google	1,2,3,4,5,6,7,8,9,10	100	0	0
Netscape	2,6	20	4	10
Altavista	3	10	1,5	20
GoTo*	2,3,5,6,8	50	3	10
HotBot	1,3,4,7	40	0	0
Lycos	3,4,5,7,10	50	0	0
Yahoo	8,9,10	30	0	0
All 7 search engines		43		6

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.

Table 2 Rhetorical appeals and explicit claims

	% sites
Rhetorical appeal	
<i>Evidence of authority and scientific rigour</i>	
Quasi official	27
"Scientific" references	75
Claim to present both sides	33
Actually present both sides	15
Links to proimmunisation groups	31
<i>Emotive appeals</i>	
Us and them	99
Responsible parenting	67
Horror stories	39
Back to nature	41
<i>Evidence of conspiracy, search for truth</i>	
Cover up	88
Excavation of the facts	98
Free and informed choice	86
Support of rebel doctors	56
Foolish doctors	87
Unholy alliance for profit	62
Towards totalitarianism	79
Explicit claims	
Diseases are trivial	38
Poisons	79
Vaccines harmful	99
Vaccines ineffective	83
Vaccines kill	63
Erode immune system	54
Natural lifestyle gives immunity	39
Alternative health superior	45
Infectious diseases declined for other reasons	57
Diseases caused	
Idiopathic ills (various)	93
Sudden infant death syndrome	63
Autism	56
Brain damage	71
AIDS	39
Cancer	58
Diabetes	40
Multiple sclerosis	34

Explicit claims

"Recent epidemiological studies show homeopathic remedies as equalling 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,⁶ and have examined some of the characteristics of antivaccination sites.⁷

The antivaccination message on the internet is far more unbridled than in other media.⁴ 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.⁸ Any response to antivaccination rhetoric must also acknowledge the wider social discourses from which those arguments generate their appeal.⁴

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.^{9, 10}

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>).



Appendix 1 (list of identified websites) can be viewed on the ADC website (www.archdischild.com)

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POSTCARD FROM DOWN UNDER.....

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.

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 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



Photo used with kind permission of Bill Loveday, president of Bicycle Queensland.

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 also influence cycling? 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 other 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 startle—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 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.

I D Wacogne

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

Appendix 1

Sites analysed

http://ctvia.org/
http://health.microworld.com/html/vaccine.html
http://home.iae.nl/users/lightnet/health/vaccination.htm
http://home.sprynet.com/~gyrene/index.htm
http://medicinegarden.com/Homeopathy/VACCINATION.html
http://members.aol.com/ht_a/mccfhc/index.htm
http://members.aol.com/Tauwillow/index.htm
http://members.nbc.com/niin/vaccinationupdate/vac.up.html
http://members.theglobe.com/mstopp/IVYLEAGUE/
http://members.tripod.com/Dr_Sugi/vaccines.html
http://mothernurture.co.nz/vaccination.htm
http://users.pandora.be/vaccine.damage.prevention/
http://vaccineinfo.net/
http://www.909shot.com/default.htm
http://www.alanlam.demon.co.uk/vaccine.htm
http://www.alphaomega.se/english/vaccination.html
http://www.alternamoms.com/vac.html
http://www.alternativeparenting.com/
http://www.argonet.co.uk/users/jabs/
http://www.avn.org.au/
http://www.bcity.com/harpub/pitcairn.htm
http://www.bestfed.com/vaccination/
http://www.cchc-mn.org/
http://www.ccid.org/index.htm
http://www.cco.net/~trufax/vaccine/vacmaste.html
http://www.chetday.com/links/vaccination.html
http://www.childbirthsolutions.com/content/postpartum/dispelling/
http://www.chronicillnet.org/
http://www.cogforlife.org/
http://www.crosswinds.net/~vaxchoice/
http://www.crosswinds.net/~vaxchoice/
http://www.ctanet.fr/vaccination-information/
http://www.dallasw.quik.com/cyberella/index.htm
http://www.drcarley.com/id23.htm
http://www.drday.com/vaccination.htm
http://www.drweed.com/newsletters/flu.html
http://www.eaglefoundation.net/
http://www.enigami.com/~ckempf/vaccine.html
http://www.eurosolve.com/charity/bava/vaccination.html
http://www.familiesonline.co.uk/topics/health/health_against_vaccine.htm
http://www.forhealthfreedom.org/
http://www.freedomofchoice.org/
http://www.garynull.com/issues/Vaccines/VaccinationActionFile.htm

http://www.geko.net.au/~mark/Medical/Vax.html
http://www.geocities.com/~kasmom/vaccines.html
http://www.geocities.com/Heartland/8148/vac.html
http://www.geocities.com/HotSprings/1101/
http://www.geocities.com/HotSprings/1158/VACCINES.HTM
http://www.geocities.com/HotSprings/Villa/2009/
http://www.geocities.com/rnroy03570/
http://www.gn.apc.org/inquirer/vaccio.html
http://www.goodlight.net/nyvic/
http://www.goodlight.net/nyvic/
http://www.gval.com/
http://www.g-vision.com/vaccination.htm
http://www.heall.com/body/healthupdates/vaccination/
http://www.healthwell.com/hnbreakthroughs/jan99/vaccine.cfm?path=hw&cond=12&mcat=61
http://www.healthy.net/clinic/familyhealthcenter/children/vaccination/articles.asp
http://www.homestead.com/immunization/index.html
http://www.iahf.com/20000222b.html
http://www.ias.org.nz
http://www.ideasign.com/chiliast/vaccine/dvm2.htm
http://www.ideasign.com/chiliast/vaccine/dvm2.htm
http://www.ino.it/~lois/vaccine.htm
http://www.intuitiveparenting.org/immunizations.html
http://www.ipav.org/
http://www.lightparty.com/Health/HomeopathicAnswers.html
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http://www.ms-society.ie/msnews/issue52/16vaccination.html
http://www.naturalmom.com/vacdebat.htm
http://www.ncn.net/~wwithin/vaccine.htm
http://www.nexusmagazine.com//shakenbaby.html
http://www.odomnet.com/vaccines/index.htm
http://www.oneflesh.org/Child-TOC.html
http://www.ouralexander.org/
http://www.planetc1.com/cgi-bin/n/search.cgi?category=1&keyword=vaccines
http://www.pnc.com.au/~cafmr/coulter/vacc-deb.html
http://www.realitybytes.com.au/visa/newsletter.html
http://www.rense.com/ufo2/massvacc.htm
http://www.salineguide.com/mom/
http://www.sumeria.net/health.htm
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http://www.vaccinedamage-prevention.org/
http://www.vaccineinfo.net/
http://www.vaccines.bizland.com/
http://www.vaccines.net/
http://www.vaccinfo.karoo.net/index.html
http://www.van.org.uk
http://www.voicesofsafety.com/
http://www.vran.org/
http://www.webpak.net/~goffe5/
http://www.whale.to/vaccines.html
http://www.woodmed.com/