Resurgence of Whooping Cough May Owe to Vaccine's Inability to Prevent Infections

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The startling global resurgence of pertussis, or whooping cough, in recent years can largely be attributed to the immunological failures of acellular vaccines, School of Public Health researchers argue in a new journal article.

The article, published in *F1000 Research*, points to the differences in mucosal immunity between whole-cell pertussis (wP) vaccines and the newer acellular pertussis (aP) vaccines, first introduced in the 1990s, as playing a pivotal role in the resurgence of the disease.

"This disease is back because we didn't really understand how our immune defenses against whooping cough worked, and did not understand how the vaccines needed to work to prevent it," said Christopher J. Gill, associate professor of global health and lead author of the article. "Instead we layered assumptions upon assumptions, and now find ourselves in the uncomfortable position of admitting that we may made some crucial errors. This is definitely not where we thought we'd be in 2017."

Up until the 1950s, there were millions of cases of whooping cough around the globe each year, with numerous fatal cases in infants. The introduction of whole-cell pertussis (wP) vaccines led to a 99 percent reduction in cases. Later, as wP vaccines raised concerns of possible rare neurologic adverse events, aP vaccines were licensed and used in a number of countries starting in the early 1990s. Since then, cases of whooping cough have risen sharply. In 2014, there were more than 32,000 cases reported in the US.

"The resurgence of pertussis in the US to its highest levels since the 1940s emphasizes the need for answers to these questions," the authors wrote.

The researchers examined mathematical models of pertussis transmission, data derived from the aP and wP vaccines responses in animals, and recent insight into the immunology of pertussis and pertussis vaccines. They found that, contrary to existing assumptions, although both vaccines blocked symptomatic disease, wP vaccines blocked also infections in animals while aP vaccines did not. Other differences included wP vaccines' ability to induce a stronger herd immunity and robust TH17 responses, which confer mucosal immunity, while aP vaccines only induced TH2 responses.

Experimental and immunologic data has shown that aP vaccines do not provide herd immunity, while mathematical models imply otherwise. The researchers proposed a hypothesis to reconcile the contradictory findings: Herd effects from aP vaccines may be the result of modifications in disease presentation that lead to reduced possibility of transmission rather than induced resistance to infection.

The researchers also considered the role of several known factors in the rise of whooping cough cases, including detection bias, waning of immunity, and evolutionary shifts in the bacteria's genome. They found that, while contributing to the increase in incidence, these factors alone do not fully explain existing epidemiologic data.

Citing the urgency of the growing health crisis, the authors emphasized the need to go beyond the limitations of animal models and provide human data to further examine the arguments put forth in their article.

"The resurgence of pertussis in the aP vaccine era is evolving into a slow-moving global public health crisis," the researchers wrote. "But, with the public's trust in vaccines waning, this has also become a public relations crisis."

Don Thea, professor of global health, was a co-author on the article.

—*Salma Abdalla*

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Unusual for vaccine enthusiasts to admit that they screwed up.

Reply

> I wonder if there is a “new and improved” whooping cough Vaccine on the way.
> Perhaps a singular which will be met with less skepticism even from the mainstream vaccine enthusiasts.
> Perhaps the huge push of the Dtap in recent years was either to get rid of old stock, or milk whatever they could before they knew it would come off the market.
>
> Reply

> > Hmm..... Perceptive.
> >
> > Reply

> Exactly ! I have never taken a vaccine and unfortunately my husband was a PHD in law and an undergraduate masters in natural resource science, so he wanted our son vaccinated. Mind you I grew up in NYC travelled the world and have rarely been sick a day in my life. His son was unfortunately severely vaccine injured. It has changed our entire world. HIB vaccine within 48 hours – Kawasaki Disease, MMR – Vaccine strain Mealses, Mumps and Atypical Kawasaki Disease – he lost the use of his legs and speech and was placed on Autism Spectrum. After 8

years of aggressive therapy and nearly a million dollars we have our son back. I do not understand how those in Science continue to pretend the scientific data – without conflict of interest – exists. I have yet to see a study of multi dosing vaccines vs a true placebo group, and I guess we shall continue to wait for the CDC to fund a Fully unvaccinated vs the CDC vaccine recommended schedule for overall health. I am terrified that those who sit on the vaccine recommendation panel of the CDC have a 63% stated monetary conflict of interest. I am not so worried about surviving measles, mumps, whooping cough etc in the USA but I am highly concerned about an aggressive schedule of vaccinating when the Science is brought to us by the manufacturers who have serious conflict of interest and who cannot be sued in their vaccine divisions. I am not sure what sort of doctors assume that a Corporation which routinely engages in criminal and civil fraud and is sued to such extent in every department it can be sued; is not up to the same antics in the department where it cannot be sued. Whooping cough to me is the most difficult of the childhood illnesses but the vaccine is totally flawed. It has been flawed in every study I can find . I have found that it is in the 97% vaccinated that the whooping cough is flourishing. Thank you for this study.

Reply

You said “his son was injured by vaccines”..is it not your son as well?

Reply

Perhaps a comparison study of vaccinated populations and unvaccinated populations would shed some light on the necessity of this vaccine at all.

Reply

In the 20+ years that I have been investigating vaccines, I have noticed that the study that might result in an unfavorable outcome, will never be done!
So no honest comparison study between vaccinated and unvaccinated children will ever seriously be done!...

Reply

Are there any?

Reply

See the Mawson Study

Reply

The ‘no pertussis vaccine’ experiment has been done repeatedly and results in dead children. This is exactly what happened in Sweden and Japan. About whether these vaccines save lives, there is no reasonable debate whatsoever. The question is why aP vaccines do not work as well as wP vaccines, not whether neither are needed at all. Simply look at figure one in our paper: prior to wP vaccines, there were close to a million cases or pertussis in the US each year. Now we are concerned because we have 30,000 cases per year. 30,000 is too high to feel that the job is complete in my book. But it is still 95% + better than what we had before. Don’t throw out the baby. . . .

Reply

You quote Japan and Sweden as experience which landed up with death. That is not completely true. And please don’t quote Gangerosa, because he got all his data on Japanese vaccination rates vastly higher than they actually were before the whole cell vaccine was stopped, and Gangerosa quoted the wrong studies as well. Dr James Cherry once said that most whooping cough studies suffered from observer bias (PMID: 9755264) The same is true of the Japanese studies, and in fact is true of most of the studies published today. Doctors are blind to pertussis in the vaccinated, but swoop on pertussis in the unvaccinated to try to get rid of any exemptions at all.

As to Sweden, I corresponded with Dr Victoria Romanus, who kindly provided me all their data, and they considered no vaccine to be infinitely preferable to the whole cell vaccine in terms of benefits and risks. Now they are in the unenviable position of starting to see an increase in pertussis in the vaccinated, which is a lot later than in other countries, becuase they held out against vaccines for longer.

New Zealand is one country where the whooping cough vaccine, either whole cell, or acellular, has never made a discernable difference to hospital discharges or admission data, and that information is all in the medical literature, as well as Department of Health Bulletins, and inhouse vaccine reviews, copies of which I have. before 1971, vaccine uptake was less than 30%. Before 1954, when vaccines were temporarily suspended before of provocation polio, the pertussis vaccine had a 9% uptake. Before a vaccine was used, deaths had long since dropped out and bottom lined and most years there were no death. All the graphs from the Department of Health over the years, clearly show that the vaccine made no impact on disease. However starting from 1974, pertussis in the under-ones increased, and by 1996, it was

eight times higher than it was before a vaccine was used. Now it is even higher, but what is really concerning is that a paper published in 2017 (PMID 27902649) shows that since the acellular vaccine was started in this country, deaths have increased to a level not seen before a vaccine was used.

Figure 2 in Hewlett 2005 (PMID: 15788498) clearly shows how the vaccine has destroyed personal immunity. Three other studies this year, Burdin (PMID: 28289064) , Eberhardt (PMID: 28289058) and Diavatopoulos (PMID: 28289059) explain why the vaccine has destroyed personal immunity and worse, made the vaccinated carriers and spreaders, which doesn't happen in the naturally immune.

Both vaccines created the pathway for that disaster, and the acellular vaccines accelerated the disaster.

It is baffling that in the face of all this evidence clearly laid out in this youtube video, https://www.youtube.com/watch?v=q4ejx_EsyFQ that this vaccine continues to be defended to the hilt.

Reply

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thank you for this excellent information... I am researching all you wrote . I appreciate your detailed analysis

Reply

Hilary, may I use your comment as a quote?

Reply

It is not encouraging to see someone in your position, as a public health official, who is so willing to mislead the public. As is the case with most graphs one can see on the CDC website, Figure 1 from your paper does not even come close to giving an accurate representation of the impact of DTP vaccine on disease incidence in the US. Why? Because it only goes back to a point in time just before DTP was started. Here is a much better graph which shows pretty clearly that the DTP vaccine did not seem to make much difference:

https://www.cdc.gov/pertussis/images/incidence-graph-2017_med.png

That you cite Sweden and Japan as examples of reduction in DTP uptake causing increased mortality just shows that you are not familiar with what really happened there. Hillary does a great job deconstructing your claims.

Reply

I'm so grateful to you for taking another look at this vaccine, which has been problematic for so many. The fact that it is pushed so hard on the public, despite its many flaws and the harm it has caused over the years, really upsets me. My son is one of those harmed. He started having seizures within 24 hours of receiving the DTaP and spent four days in the pediatric ICU. He nearly died.

His seizures looked identical to Hypotonic Hyporesponsive Episodes (HHE), which I have found very interesting considering that HHE used to happen to 1 in every 1,750 infants after the whole cell pertussis vaccine (according to a study sent to me by the CDC). He turned gray/blue due to lack of oxygen, he lost muscle tone and was unable to move his arms or legs or vocalize, and then he collapsed and stopped breathing. The CDC claims that HHE is so rare now, that we don't know how often it happens. Then again, HHE is not one of the adverse events that medical professionals are required by federal law to report to the Vaccine Adverse Event Reporting System (VAERS). I think it is hard to know how often something happens if you don't collect the data on it. And I do not consider the Vaccine Safety Datalink (VSD), which only covers 2-3% of the U.S. population and for which there is no accountability or transparency, to be adequate either.

I asked both the CDC and my son's neurologist if HHE and the type of seizures he experienced could be related, or even the same thing. Perhaps the only difference between HHE and his seizures was that he was hooked up to an EEG machine in the hospital and it happened to catch one of his episodes and detect seizure activity. An EEG machine isn't usually available and waiting, it has to be ordered by the neurologist. The CDC would not answer and referred me to my son's neurologist, even though I made it clear I was asking for evidence of a link between HHE and seizures that look just like HHE, not asking for a diagnosis in my son's particular case. My son's neurologist said he didn't know.

HHE is treated as harmless, but I don't find anything harmless about an infant not being able to move its limbs, not being able to vocalize, and not getting enough oxygen, especially if that infant is alone in its crib. Frankly, it makes me wonder about the SIDS cases that occur within proximity to the DTaP vaccine (and that occurred with its predecessor, the whole cell version).

I also asked the CDC if any studies had ever been done – by any government agency – to determine whether these children had long term neurological effects from experiencing either HHE or the type of seizures my son had. I specified that by long term, I meant had any study ever followed these kids until they entered school (and remember, with the whole cell vaccine, there were a TON of them as it happened to

every 1 in 1,750 children, so they had plenty of potential subjects). They said no, they couldn't find any studies like that, so I find it amazing that they can claim HHE is harmless without even knowing if a higher proportion of these kids end up in special education classes receiving support for learning issues. I know my son did.

My point in sharing this with you is to show that neurological adverse events were probably nowhere near as rare as you think, and that the CDC never did its due diligence to protect our kids, and still does not, when it comes to this vaccine. If the vaccine saves lives, keep in mind that it has harmed thousands of other lives. I wonder if we would be much better off at this point in time with a very aggressive public announcement campaign teaching adults, teenagers, and especially teachers and medical professionals, what whooping cough can look like in older kids and adults, encouraging people to get tested if they think they might have it, and stressing that the illness is very dangerous for infants and how important it is to get antibiotic treatment and stay out of public spaces until you are not infectious anymore. And maybe going back to keeping infants at home for the first few months as much as possible, as parents used to do decades ago, instead of taking them out as newborns to very public places where they are exposed to all kinds of germs and expecting everyone there to have received a flawed vaccine which will supposedly "protect" their baby.

Reply

Vitamin C cures pertussis. No need for any shots. I've watched C work in newborn and elderly alike. Don't spread fear!

Reply

There are millions of nonvaxxed kids around the globe, as well as millions who are...so why then, can we not simply analyze the medical history of these kids and compare/contrast?

Why hasn't anyone examined the available information yet?

A study of nonvaxxed vs vaxxed kids doesnt inherently have to result in dead babies, to say that it does, is fear mongering.

Reply

I don't believe you are correct about what you are calling the 'no pertussis vaccine' experiment. If you are looking at population data from the past there would be multiple problems with 'proving' unvaccinated people died of pertussis because they were unvaccinated. I am glad that some honesty is being presented about our lack of knowledge regarding aP vaccines, but a wiser approach than the standard "but get vaccinated" anyway mantra is in order. To my knowledge there is no such thing as a pertussis vaccine anyway. We are talking Tdap or DTap depending upon the age of the potential recipient. This "shot" , as you must know, contains antigens from 3 infections organisms and is called a "tetanus" shot when given nearly ubiquitously in ERs for just about any type of cut. I think the pertussis acellular component is highly likely to create the potential for asymptomatic carriage and GSKs irresponsible "Big Bad Cough" campaign (for US audiences only!) compounds the problem by suggesting that every adult near a newborn get the shot. Those inoculated could, I believe, shed pertussis bacteria for weeks, endangering the very newborns the vaccine is supposed to protect. Mother Nature and Father G-d are wiser than man, providing for IgA immunoglobulin in the milk of naturally immune mothers to provide passive immunity to infants. Denying natural immunity to a mother by vaccination is robbing her of the ability to protect her child, IMO. Thank you for opening an important discussion.

Reply

Alexis raises some good points, but some clarifications are needed.

First, its true that pertussis antigens are usually given in combination with tetanus and diphtheria antigens, and we call that DTaP when formulated for kids and Tdap when used as a booster for adolescents and older. There is also a standalone tetanus vaccine used widely in the US, and is the one that you'd likely get if you had stepped on a nail. Usually ERs don't give Tdap, but of course they could and it would work fine. It would just be vaccinating against pertussis and diphtheria as well, and that costs a bit more money for the vaccine.

Second, acellular pertussis vaccines do not contain live pertussis germs, and so cannot lead one to spread pertussis as implied. They are a concoction of several protein subunits that alone, or in combination, seek to limit the ability of pertussis to cause illness. What we had assumed, and which now seems not to be true after all, is that these would also block infections, even if those infections were asymptomatic. That was the rationale for vaccinating the contacts of newborns, which, as Alexis points out correctly, doesn't seem to work. What we have since learned is that aP vaccines are great at stopping one who is infected with pertussis from showing symptoms, and so are great at preventing hospitalizations and deaths, but are less effective than one would wish at stopping pertussis from moving through populations.

Lastly, not to be a stickler, but the details of the immunology are important. Secretory IgA in human breast milk is NOT absorbed by babies systemically, meaning it does not get into their blood streams. This is in contrast to mice, where breast milk antibodies ARE absorbed systemically.

This has an important effect on the kinds of diseases that breast milk protects against. And there are many many that it does protect. Sadly, to my knowledge, pertussis is not one of them. That's because the effect of the toxins secreted by pertussis, which is a toxin mediated disease, are felt at a distance from the site of infection (usually the nose/throat). To inactivate pertussis toxin, for example, the antibodies must be in the blood stream. But IgA in breast milk cannot get into the blood stream. By contrast, maternal antibodies that cross the placenta are VERY effective at inactivating pertussis toxin. That's why maternal Tdap works so well (see excellent paper in the Lancet showing use of mTdap reduced infant pertussis rates in the UK by 90%, http://dx.doi.org/10.1016/S0140-6736(14)60686-3), while cocooning seems pretty ineffective. And its also important to note that vaccinating a mother against pertussis, or other infectious diseases, or the baby after birth, in no ways denies maternal antibodies from also protecting. They merely augment those defenses. It is not a case of either or. They are better together.

A totally separate issue, which was focus of our paper, is whether a third generation pertussis vaccine could be generated that was well tolerated (like aP), blocked symptomatic disease (like aP and wP vaccines), but also blocked carriage (just wP vaccines)? That would be the best of all worlds. Until then, we live in an imperfect world where our options are merely 'pretty good'.

Reply

> Not fully true. We no longer give just a tetanus shot in ERs. I've asked when offered and was informed that no they no longer make them here. They are only available as DT or TDaP. It was true several years back. They've gone to only combination shots.
>
> Reply

> > Jen, DT shots ARE tetnanus shots and are still widely given to adults if needed. The DT covers diptheria and tetnus but this combination is only given to young adults or older adults, but, never to a child under 10 years.
> >
> > Reply

> Does the aP portion create an asymptomatic carrier state? I do not feel Tdap or Dtap to be good vaccine I have seen many damaged by this particular vaccine – Dtap. I did not see long term antibody studies... do you have any I can look to ? Thank you
>
> Reply

I noticed you failed to mention that Tdap is being given to Pregnant woman in the USA which should be considered a crime as it is not FDA approved for use in the pregnant and has never been studied for fetal outcome or carcinogenic effect. You seemed to hide this point in your discussion on Tdap. My question is can a mother getting Tdap inadvertently pass pertussis to her child? I believe the answer is yes but I am open to clarification. Wouldn't the entire point be stopping pertussis from moving through a populace not just masking the symptoms of the illness?

Reply

"There are four kinds of vaccines used today to protect against tetanus, all of which are combined with vaccines for other diseases:
Diphtheria and tetanus (DT) vaccines
Diphtheria, tetanus, and pertussis (DTaP) vaccines
Tetanus and diphtheria (Td) vaccines
Tetanus, diphtheria, and pertussis (Tdap) vaccines"

No one here is claiming that pertussis vaccine is going to itself cause pertussis in other people through live viral shedding etc. We all understand that this is a killed vaccine, and in the case of acellular pertussis vaccine it does not even include the entire cell. What we are saying is that the use of aP vaccine leads to asymptomatic carriers of the disease who then transmit it to others.

Why is everyone pretending that this is brand new information? We have known this for nearly 4 years:

FDA study helps provide an understanding of rising rates of whooping cough [2013]
https://web.archive.org/web/20170219235003/https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm376937.htm

Acellular pertussis vaccines protect against disease but fail to prevent infection and transmission in a nonhuman primate model
http://www.pnas.org/content/111/2/787.short
http://www.pnas.org/content/111/2/787.abstract
http://www.ncbi.nlm.nih.gov/pubmed/24277828

You make this claim:

“And its also important to note that vaccinating a mother against pertussis, or other infectious diseases, or the baby after birth, in no ways denies maternal antibodies from also protecting. They merely augment those defenses. It is not a case of either or. They are better together.”

It took me 5 minutes to find the following:

Infants’ responses to multiple vaccines affected by maternal antibodies
http://www.mdedge.com/familypracticenews/article/138179/vaccines/infants-responses-multiple-vaccines-affected-maternal

http://www.sciencedirect.com/science/article/pii/S0264410X15010634
“However, maternal antibody has been shown repeatedly to inhibit the immune responses of young children to vaccines.”

http://www.hpsc.ie/a-z/vaccinepreventable/pertussiswhoopingcough/niac/File,13702,en.pdf
“The reason for the poor immune response in infants vaccinated at birth (or shortly thereafter) is believed to be the immaturity of the neonatal immune response as well as the impact of competing maternal antibodies. Historic studies demonstrated that the immune response to immunization with wP vaccine was lower in infants with high cord blood anti-PT antibody levels than in infants with a low level of circulating maternal antibodies.7,11,14,29,31,33,34 In contrast with maternal antibodies inhibiting infants’ immune responses to wP vaccine, immunization with aP vaccine is not inhibited by circulating maternal antibodies.”

The real problem here is that, while it is good to see even public health officials and researchers acknowledging this problem with aP vaccine, when it comes time to debate about vaccine mandate laws like California’s SB277 these same folks immediately start making assertions which are only true for wP vaccine. You cannot use pertussis as an example for why we must remove vaccine exemptions in order to maintain herd immunity in childrens’ classrooms, for two reasons. First, the concept of herd immunity does not even apply for aP vaccine. Second, children receiving aP are actually more likely to SPREAD pertussis disease than unvaccinated children, since at the very least for the unvaccinated children if they have pertussis they will also have symptoms…so they stay home.

Reply

I had had whooping cough as an adult so when I got pregnant I reminded my doctor and suggested that I would not need to vaccinate my newborn as they would be protected initially with my immunity.
Doctor told me quite clearly that Pertussis antibodies are TOO BIG TO CROSS THE PLACENTA BARRIER so my newborn would not be protected. I did agree on this basis that perhaps the vaccine might be a good idea but chose a homoeopathic nosode which I was able to get free on the national health service.
It amazes me that the science has changed so drastically that unborn babies can be protected by vaccinating pregnant women – how did they modify pertussis antibodies so they can now cross the placenta?????

Reply

The tetanus vaccine is not available as a single vaccine in Australia.

Reply

Look carefully Chris. It said millions around the globe before the 1950s, Not the U S... And it also said Reasurgence was at its highest level since the 1940s. Translation – More now than before the vaccine was introduced.

The CDC and their affiliates are masters of destraction by comparing apples with oranges, written in a way that most people don't pick up as we are more likely to perceieve what we expect. They do this all the time on the CDC website and contradict themselves more than the Bible.

Reply

I am extremely surprised that you would say someone with a deep non-bleeding puncture wound could be given Dtap or Tdap in the ER and be "fine". This demonstrates a lack of knowledge of Tetanus, and how the disease progresses and also how the vaccines work.

If you truly believe you have been exposed to Tetanus, you need the Tetanus Immunoglobulin shot, NOT the vaccine. Assuming you were able to raise sufficient antibody response to the vaccine, it would still take so long that you would have been dead of Lockjaw first.

Also, the hospitals have gotten into the habit of giving out the vaccine for any injury at all. I don't know how they keep their kitchen knives at home, but I would not want to eat at their house if getting a cut from a supposedly clean kitchen knife puts you at risk for Tetanus, which is an anaerobic bacteria present most commonly in horse dung.

I have heard from several people who went to the ER for stitches, that the doctors attempted to give them the combo vaccine rather than the Immunoglobulin shot. Clearly, if something is going to be pushed in the name of preventing people from getting sick with Tetanus, the medical community needs some more education in this area.

Reply

Great comment Alexis K!

Reply

@Chris Gill,

I appreciate your comments overall, but I do have a few comments I would like to make, most especially as to your following comment:

..."There is also a standalone tetanus vaccine used widely in the US, and is the one that you'd likely get if you had stepped on a nail. Usually ERs don't give Tdap, but of course they could and it would work fine. It would just be vaccinating against pertussis and diphtheria as well, and that costs a bit more money for the vaccine. .."

I became pregnant with our first son in 1992. Prior to my pregnancy, I had had a complete blood work up/panel and was deemed extremely healthy (I still have the paperwork). During my 2nd trimester, I received a very mild cat scratch – not even large enough to break the skin. Being somewhat paranoid nonetheless, I contacted my OB/GYN's office and informed them about the scratch. Unbelievably, a nurse responded and stated I would need to have a tetanus shot or else my baby could possibly die.

Not knowing any better, I did as instructed (albeit with a few concerns about the vaccine re how it would impact my pregnancy). Shortly after I received the 'tetanus' booster, I went into pre-term labor. This occurred approx. within two weeks POST vaccination.

When I asked the nursing/physician staff at the hospital (I was admitted w/pre-term labor pains) just why I suddenly went into pre-term labor, they told me they simply didn't know. The ONLY thing that changed during this time-frame, was the fact that I had had a 'tetanus' vaccine. I had not changed my dietary habits, my exercise routine...nothing else was changed. Just that one vaccine...

Years later, I happened to review my paperwork re my pregnancy (I have copies of my medical file). Turns out, I was given the whole cell pertussis vaccine for that mild cat scratch – the one that didn't even break my skin.

I would given turb to quell my labor pains during my hospital stay after my pre-term labor started. Unfortunately, both I and my baby reacted severely to that medication; it increased both our heart rates to an alarming rate. It was therefore decided that I should not be given any more of this medication, because of the obvious side effects it was having on both mom and baby.

I remained, thereafter, on complete bed rest, until the approx. due date.

We could have LOST OUR SON because of a simple cat scratch. The scratch was so superficial; it defies imagination as to why I would have been pressed SO HARD to take this vaccine, when it was nothing more than a scratch (a scratch I washed thoroughly afterwards).

So – no. I was not given a 'tetanus' booster for this scratch, but rather the whole cell DPT vaccine.

This entire scenario still infuriates me to this day.

Reply

Just wondering how long it takes for comments to get moderated...

Reply

Helloa, great article, but please can you draw a casual relation between vaccines and the vanning fatal cases or at least give some data? (RE: "The introduction of whole-cell pertussis (wP) vaccines led to a 99 percent reduction in cases.") While for example in Switzerland this corellation is clearly non-existant as you can see in this data set: https://imgur.com/a/9OqA3

Thanks,

Elisabeth

Reply

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