

The Efficacy of Vaccination

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Abstract

Vaccination efficacy has been a controversial subject since the time of Edward Jenner and his Cow Pox to protect against Small Pox. Throughout the years vaccination has been attributed to the eradication of Whooping Cough, Small Pox, Diphtheria and many other great diseases of days gone by. Although, inspite of this the cries from the anti-vacinist camp have yet to cease about the great casualties and destroyed lives that have ensued as a result of its protection. Therefore it would be necessary to revisit this issue of vaccination efficacy with both eyes open and examine the facts as they are from early on in its history to the present to determine if the claims of efficacy given unto it are rightfully so.

The Efficacy of Vaccination

Disease has been one of the greatest plights of man since early time. Some of the greatest scourges of times past have been that of scurvy, small pox, typhoid fever, scarlet fever and diphtheria along with others. In the attempts to curb the onslaught of these diseases vaccination made its debut in the 1700's and has been with us since. Since its inception vaccination has been one of the most debated about subjects in the medical arena. The emotions that mix with the thought of this subject range from that of terror to outright objection. This rift has for the most part divided people into two camps, pro-vacinists and anti-vacinists. At the very heart of this intense debate lie issues such as these:

1. The evidence in support of the notion of vaccine efficacy to the extent that it actually does protect from the disease vaccinated against is questionable.
2. The evidence in support of the notion that vaccinations are rightly dubbed the champion of riding the world of diseases such as measles, diphtheria and smallpox is questionable.
3. The evidence in support of the notion of vaccination being necessary to protect against disease is questionable.
4. The notion of those vaccinated being better off or at less risk than those unvaccinated is questionable.

It is of significant importance to establish what vaccination efficacy actually means. Especially so; in consideration of the vast claims by organizations such as the CDC and the World Health Organization that vaccinations protect people from or prevent disease. According to Andre et. al. (2008) "Efficacious vaccines protect individuals if administered before exposure. Pre-exposure vaccination of infants with several antigens is the cornerstone of successful immunization programs against a cluster of childhood diseases." Also the CDC (2012) states that

“Unlike most medicines, which treat or cure diseases, vaccines *prevent* them.” It is for this proposed protection and prevention of vaccination in which the premise for their worth is touted. In other words without vaccinations we are to assume that no protection exists from the scourges of disease. In accordance with efficacy (n.d.) its derivative roots lie in Latin from “*efficacia*, from *efficax* (gen. *efficacis*) "effective," from *efficere* "work out, accomplish." Also as defined by efficacy (n.d.) it means “capacity for producing a desired result or effect; effectiveness: a remedy of great efficacy.” So the efficacy of vaccination lies in its effectiveness of disease prevention and protection from it. The efficacy of a vaccination lies in its ability to shield or defend the vaccinated from the disease it was taken for.

While the terms of effectiveness and efficacy are widely used separately by the medical society in reference to vaccination, it leads to the questioning of the credibility of the reasoning for pushing the issue for vaccinations. In order to fully gain a well grounded understanding of the efficacy of vaccination it is necessary to review a population that has data comparing the effects during and without vaccination under a period of epidemic. The best sample to arrive at such a conclusion would be the people of Leicester. It is also for this reason that the people of Leicester in the late 1800’s have proven themselves to be a formidable model for humanity against the efficacy of the proposed protection of vaccination from the disease it is immunized for.

Method

The LIRN database was the primary resource; Google Scholar along with a Public Domain toolbar were also utilized. The search methods were as follows:

- Efficacy and Vaccination.
- Efficacy and Vaccination and Small Pox.

- Efficacy and Vaccination and meta analysis.
- Efficacy and Vaccination and systematic review.

The criteria for exclusion was based on the lack of credibility of the source and whether it was not provided in a clinical study, preferably a meta – analysis or did not at least reference other studies for the support of vaccination efficacy. The exclusion criteria for evidence against vaccination efficacy was based on lack of credibility, overly biased, and the lack of evidence to support the claims.

Results

Accomplishments of Vaccination

Now with that said there has been much attributed to the effectiveness of vaccinations, according to Stern & Markel (2005) it was “a little more than a century ago, the U.S. infant mortality rate was a staggering 20 percent, and the childhood mortality rate before age five was another disconcerting 20 percent” (Abstract, para. 2). They went on to mention that this was inevitable considering that it was prior to the use of such preventive measures that are in existence in this time to curb the scourge of diseases like measles, diphtheria, smallpox, and pertussis which ranked the highest amongst childhood deaths(Stern & Markel, 2005). According to Stern & Markel “Fortunately, many of these devastating diseases have been contained, especially in industrialized nations, because of the development and widespread distribution of safe, effective, and affordable vaccines” (Abstract, para. 2).

Even the World Health Organization has given the credit of the eradication of such diseases to the powerful efficacy and effectiveness of vaccinations (Andre et. al., n.d.). Also according to Muller et. al (as cited in Andre et. al., n.d.) “In four of six WHO regions, substantial progress has been made in measles elimination; transmission no longer occurs indigenously and

importation does not result in sustained spread of the virus” (Elimination, para. 1). This was attributed to a total population immunity of 95% through the use of a double dose vaccine program Muller et. al (as cited in Andre et. al., n.d.).

Vaccinations have been touted to have been a powerful addition in the arsenal in the subjugation of disease since their inception and rise to national acceptance during the time of Edward Jenner. Jenner has been given the highest honor in the halls of medicine for his work in shedding light on the greatness of vaccination. However, even before the time of Jenner was the practice of variolation and according to Alexander & Markel (2005) it was “the controlled transfer of pus from one person's active smallpox lesion to another person's arm, usually subcutaneously with a lancet, which had been practiced in Asia since the 1600s and in Europe and colonial America since the early 1700s (Abstract, para. 5). This practice of variolation has its roots in India with the worship of the goddess Mattah (Hadwen, 1923). It was known that at that time that her worshipers were inclined in order to appease her and have protection from this disease, to inflict themselves with Small Pox through the process of variolation (Hadwen, 1923).

Hailing all the way from the Ottoman Court, Lady Mary Wortley Monntagu, also the wife of the ambassador during that time, got word of this and spread the news abroad that everyone in Turkey was getting vaccinated (Hadwen, 1923). Due to her great stature in the societal higher echelons this practice took England and the whole of Europe by storm (Hadwen 1923). Although according to Biggs (1912) it “ resulted in, the practice being almost universally adopted, until it became evident that, instead of moderating the prevalence of the disease, small-pox was more widely diffused by the operation, (Chapter 18, Vaccination and Small Pox, p. 1). After this event took place according to Hadwen (1923) a doctor in 1806 by the name of Lettsom had this to say about it”whereas small-pox deaths for 42 years before inoculation were only 72

per thousand, they were 89 per thousand in the 42 years after” (Vaccination Preferred to Inoculation, para. 1).

The reference made to inoculation by Dr Lettsom here is that of variolation as it was also known as. Jenner through hearsay of the cow - maids of Gloucestershire of the United Kingdom, who commonly believed that if they contracted cow pox through the infected utters of a milking cow through some laceration or open wound on their hand that they would inevitably be immune to the disfigurements of Small Pox. (Hadwen, 1923). Hadwen (1923) made mention of the fact that after Jenner inoculated a boy by the name of “James Phipps with lymph from a vesicle on the hand of a dairymaid suffering from cowpox in May, 1796. In July of the same year he inoculated the same boy with smallpox . . . [and this] afforded no evidence as to protection (The Birthplace of the Vaccination Fraud, para. 3).

Hadwen goes on to mention that Jenner would use this single experiment as the foundation to laud the success of vaccination and according to Hadwen (1923) “claiming that cowpox was a prophylactic against smallpox, while to give some sort of scientific colour to the claim he labeled cowpox with the name "Variolae Vaccinae" (smallpox of the cow)” (The Birthplace of the Vaccination Fraud, para. 3). Not long after this Jenner vaccinated a group of old men over the age of 60 with small pox who had cow pox and the small pox did not take, so he used this as further proof along with James Phipps that cow pox would prevent Small Pox just as the dairy maids had believed (Hadwen, 1923). Jenner would later submit a paper to the Royal Society of his research about this but would intentionally leave out reports of the many cases of people who had both cow pox and small pox at the same time (Hadwen, 1923).

Jenner received about 30,000 pounds from Parliament for his discovery and it was widely

accepted by the medical world at large (Hadwen, 1923). Amongst his early success one of Jenner's great obstacles was the fact that although the son of Earl Grosvenor was vaccinated by him in infancy he later suffered horribly from confluent small pox (Hadwen, 1923). In regards to this incident Hadwen (1923) tells us this about Jenner "He thereupon modified his claims for the protective powers of his cowpox vaccine, and he was content to assert that vaccination had modified the disease so that his patient's life was preserved" (The Birthplace of the Vaccination Fraud, para. 3)

In a meta analysis study that was conducted on the efficacy and effectiveness of the seasonal flu vaccine while the results were mixed between efficacy and the overall effectiveness the end conclusion tended to be that it was of great benefit (Campbell et. al., 2013). These results according to Campbell et. al. (2013) "showed a high efficacy of influenza vaccines against influenza infection, but a considerably lower effectiveness. There was a slight difference in favor of live vaccines in efficacy, but hardly any in effectiveness" (Discussion, para. 1). The study demonstrated that "live and inactivated vaccines were more efficacious against infection with strains of influenza virus that were antigenically similar to strains contained in the vaccine . . ." Campbell et. al., 2013, Discussion, para. 1). The main emphasis of this study was on the efficacy of the influenza vaccination being directly linked to the current strain in circulation (Campbell et. al., 2013).

The results of a study done in England a few years after the fatal influenza epidemic that took place between 1989 – 1990 demonstrated vaccination having positive results on mortality in a reduction of 41% (Ahmed, Nicholson & Nguyen-Van-Tam, 1995). According to Ahmed, Nicholson & Nguyen-Van Tam (1995) "This estimate accords with observational studies,(13,14) as well as two North American case-control and cohort studies, which considered pneumonia and

influenza mortality among patients admitted to hospital(22) and deaths from all causes(22,23) as outcomes” (Discussion, para. 1). They also went on to conclude that mortality rate showed a greater reduction after continued yearly vaccinations which resulted in a 75% total decrease (Ahmed, Nicholson & Nguyen-Van-Tam, 1995). According to Ahmed, Nicholson & Nguyen-Van Tam (1995) “For subjects who received the vaccine for the first time in 1989, vaccine efficacy was 9%. However, the 95% CI for this estimate was wide, possibly because of the smaller number of first-time vaccinees (67 vaccinated in 1989 for the first time, and 168 in 1989 and previously)” (Discussion, para. 1).

A randomized, double-blind, placebo-controlled trial conducted by Nichol et. al. used a vaccine containing trivalent subvirion influenza along with a placebo of a vaccine diluent in order to determine the effectiveness of vaccination against days missed from work and was conducted on a total of 849 people(1995). The basis for the effectiveness of the vaccination of this study was the lack of upper respiratory illness demonstrated by the participants. During the study it was stated that “69 percent of the placebo recipients and 61 percent of the vaccine recipients had at least one upper respiratory illness” Nichol et al., 1995, Results, para. 6). The study also correlated vaccination with a reduction in the decrease of work days lost and the lower visits to the doctor’s office (Nichol et. al. 1995). This study resulted in attributing a 25% decrease in the amount of respiratory issues along with a 43% decrease in work absenteeism due to such (Nichol et. al. 1995). The greatest thing to note about this study is that the data collected was based on the reporting of the individuals by monthly follow up interviews leading to a lack of bias by the researchers (Nichol et. al. 1995). Something that was of particular interest during this study was that “there were no significant differences between vaccine and placebo recipients

with regard to specific systemic symptoms, although vaccine recipients were more likely to report local” (Nichol et. al., 1995, Results, para. 3).

In further support of the efficacy of vaccination are the results of a review done by Griffin et. al in the reduction of pneumonia hospitalizations in regards to the institution of the 7-valent pneumococcal conjugate vaccine schedule in 2000 (2013). This study examined the yearly percentages of people going into the hospital for pneumonia with the assistance of the Nationwide Inpatient Sample database (Griffin et. al., 2013).

The reason for hospitalization was classified as pneumonia if pneumonia was the first listed diagnosis or if it was listed after a first diagnosis of sepsis, meningitis, or empyema. Average annual rates of pneumonia-related hospitalizations from 1997 through 1999 (before the introduction of PCV7) and from 2007 through 2009 (well after its introduction) were used to estimate annual declines in hospitalizations due to pneumonia. (Griffin et. al., 2013, Methods, para. 1).

This study credits the reduction of hospitalization of children younger under 2 years of age at a rate of 47,000 hospitalizations yearly in comparison to the rates before PCV7 was instituted (Griffin et. al., 2013). Conflicts of interest for this study lie in the fact that it was funded by grants from the CDC along with Dr. Grijalva receiving consulting fees from GlaxoSmithKline and grant support from Pfizer and Dr. Griffin also reflected grant support from Pfizer according to the study conclusions (Griffin, 2013).

Also vaccinations are considered to assist the individual much more than defending against a specific disease (Andre et. al., n.d.). In this respect it would seem that the choice of vaccination is the most sensible way to move forward in dealing with disease over any other method (Andre et. al., n.d.). According to Andre et. al. (n.d.) “Reducing global child mortality

by facilitating universal access to safe vaccines of proven efficacy is a moral obligation for the international community as it is a human right for every individual to have the opportunity to live a healthier and fuller life” (Conclusions, para. 1).

The UK and Compulsory Vaccination

In 1867 the Penal Act was passed and “It compelled the vaccination of a baby within the first 90 days of its life. Those who objected would be continually badgered by magistrates and fined until the child turned 14,” (relfe, n.d.). In 1869 the Leicester Anti-Vaccination league was formed amounting to no less than about 20 members but after the Small Pox epidemic of 1871-73 and the death toll of the vaccinated was absorbed that twenty encompassed the majority of the city in opposition to the proposed protection from disease offered by vaccination (Biggs, 1912). The greatest reason of why the town of Leicester would go from a small anti-vacinist movement that composed of a fraction of the town of over 94 % of its population is best explained by Biggs “The experience of the terrible smallpox epidemic of 1871-73, when many thousands of vaccinated persons contracted the disease, and several hundreds died as the result of the alleged "protection" . . . (1912, Chapter 20 From Darkness To Light, para. 3).

This chart below encompasses a graphic representation of this event.

Years	Population (approx)	Small-Pox cases	Smallpox deaths	Death rate per Million living	Percentage of Vaccinations to births	Vaccinations per 100,000 population
1871-73	98,000	*	360	3,673	90.4	3,853
1892-4	182,000	366	21	115	3.3	93
1902-4	220,000	731	30	136	27.8	769

(Biggs, 1912)

The most significant aspect about the information presented above is that during the years of between 1871 – 73 nearly all of the population of the 98, 000 or inhabitants had received vaccinations yet in return they had a staggering death rate of 3,673 per million living, (Biggs, 1912). This became the seeds that would bud into a growing opposition to vaccination that included all but a small percentage of the entire population. In preceding years during the time that nearly all of the Leicester population was unvaccinated, not only did the population grow to about 182,000 and later in 1902 – 04 it was at a grand 220,000 there was a significant reduction in the deaths from Small Pox (Biggs, 1912). Also from the preceding chart you will take note that during the years that there were greater increases in persons vaccinated per 100, 000 in the population there was a significant increase in Small Pox cases. It is of significant importance to point out that as the vaccinations to births decreased so did death rate per million living as we see in the years of 1892 – 4. In addition to the chart it is important to make certain the fact that during the Small Pox epidemic that happened upon Leicester during the years of 1871 – 73 a great majority of the population was vaccinated which takes into the inclusion both adults and infants (Biggs, 1912). During the outbreaks of the following years of 1892 – 94 and 1902 – 04 nearly the entire populace of Leicester was unvaccinated (Biggs, 1912). Now during the years of 1892 – 94 there was around 50,000 unvaccinated children while in the years of 1902 – 04 there was about 70,000 unvaccinated children to whom the vast majority survived these epidemics with a very small number of children contracting the disease (Biggs, 1912).

Two attempts were made before the Royal Commission to repeal the compulsory vaccination laws and the first failed miserably by the Leicester Board of Guardians. During the second attempt evidence was demanded of the Leicester Board of Guardians to prove their claims of the problems caused by vaccinations. Part of their evidence is encompassed in the table

below. It is a statistical representation for the Borough of Leicester that covers the periods 1874-77, 1878-81, 1882-85, 1886-89, 1890-93, 1894-97, 1898-1901, 1902-05, and 1906-09 (Biggs, 1912). Also it displays the averages of deaths that ensued from erysipelas, for various groups of children in comparison to population and Vaccinations to births (Biggs, 1912).

Period	Average Annual Death-Rate from Erysipelas for Infants under One Year, per 10,000 Births.	Average Annual Death -Rate from Erysipelas for children under Five Years, per 100,000 Children living at that age.	Average Annual Death Rate from Erysipelas at all ages, per 100,000 Total Population.	Average Annual Percentage of Registered Vaccinations to the Total Births.*
1874-77	19.3	64.0	21.0	79.4
1878-81	7.9	24.8	9.2	67.4
1882-85	9.4	29.4	6.2	45.1
1886-89	4.7	12.6	5.2	10.8
1890-93	2.0	5.8	5.1	2.8
1894-97	1.2	4.3	3.5	1.5
1898-1901	1.6	6.0	3.9	5.0
1902-05	2.5	5.5	2.7	2.5
1906-09	0.9	2.5	1.1	15.5

(Biggs, 1912)

As we examine the information presented on the table above it is important to take note of the fact that for various children ages and population totals that there seems to be a very strong correlation between amount of deaths and vaccinations. This is especially the case during the years of 1874 – 77, 1878 – 81, and 1882 – 81 which so happen to be the times of a much higher percentage of registered vaccinations to the Total Births.

In the time period after the rise of Small Pox in 1871 -73 Leicester adopted a method of greater emphasis on sanitation and the isolation of those infected along with those who had come in contact with those individuals and this method of sanitation became known to all of the United Kingdom as the Leicester Method, (Biggs, 1912). The implementation as radical as the abandoning of the practice of vaccination in place of sanitation was considered ludicrous by

those who strongly agreed with the need of vaccination to protect against ravaging outbreaks of Small Pox. Also according to Biggs (1912) “Pro-vaccinists regarded it as a thing impossible and incredible that unvaccinated Leicester could, for even one year, much less for so long a period of years, successfully resist repeated and numerous attacks of small-pox. But such is now a stubborn, unimpeachable, and accomplished fact.” This remark by Biggs is in regards to the 21 year span in which involved a mere 1,111 cases and only 51 deaths while Leicester experienced the greatest number of importations of Small Pox as seen in the table below. As you can see from the table below that while the cases of Small Pox increased over the 21 year span between 1890 – 1910 that due to the lower amount of vaccinations the overall percentage of fatality was drastically lower than it was during the 16 year period from 1874 - 89.

Years	Number of importations	Cases	Deaths	Percentage of fatality	Average annual registered vaccinations to birth
1874-89 (16 years)	33	116	18	15.5	50.6
1890-1910 (21 years)	41	1,111	51	4.6	10.0
Totals	74	1,227	69	Average 5.6	Average 27.6

(Biggs, 1912)

The chart below gives a statistical representation of the comparison of zymotic disease outbreaks in Leicester in comparison to vaccinations administered. This provides us with a overview of how Leicester fared to these diseases along with Small Pox during their periods of heavy vaccination in comparison to their time of being nearly completely unvaccinated. The fevers that are being referenced in this table are Typhus, Typhoid, and Simple fevers. Take careful note at the great decline in both Small Pox and Fevers during the years of 1890 – 1910 in conjunction with the decrease in vaccinations to births.

Period	Small-Pox			Fevers			Average Annual Percentage of Vaccinations to Births
	No. of Deaths	Relative Percentage to the Seven Principal Zymotic Diseases.	Average Annual Death-Rate per Million Living.	No of deaths	Relative Percentage to the Seven Principal Zymotic Diseases	Average Annual Death Rate per million living	
1838 - 1889(inclusive, 52 years)	1,081	5.01	304	2,858	13.24	798	74
1890 - 1910(inclusive, 21 years)	51	0.5	12	451	4.6	109	30

(Biggs, 1912)

In conjunction with the table above the one below gives an overview of mortality from births to Syphilis along with nine inoculable diseases which also include Syphilis, from other causes while including a percent of vaccination to births in conjunction with the type of vaccination policy being administered at the time (Biggs, 1912).

Period	Average Annual Death-rate per Million Births.			Percentage of vaccinations to births	Prevailing Conditions
	Syphilis	Nine Inoculable Diseases including Syphilis	All other causes		
1847-53 (7 years)	564	58,997	97,469	62-3	Vaccination Optional
1854-67 (14 years)	1,207	67,912	84,734	73.4	Vaccination Obligatory
1868-98 (31 years)	1,705	79,336	68,783	78.3	Vaccination Compulsory and enforced by penalties.
1899-1908 (10 years)	1,269	73,563	64,082	71.5	Vaccination acts relaxed and 'Conscience Clause' started
1909-10 (2 years)	1,185	54,124	52,961	59.6	Vaccination Acts amended ; exemptions at work

(Biggs, 1912)

As pointed out by Biggs it is clear that aside from the 7 years between 1847 – 53 that the greatest decline in mortality from Syphilis was in the two year period of 1909 – 1910 which was the period of least vaccinations to births (Biggs, 1912). This is congruent with that of the table comparing a decrease in vaccination in Leicester and the decrease in the zymotic diseases which precedes this table. According to Biggs (1912) the combined mortality of these diseases along with Syphilis showed “an increase of nearly 26 . . . [%], to a maximum of . . . [nearly] 80,000 per million in the period of highest vaccination, . . . [plunged as vaccination decreased], and has reached the lowest recorded mortality since registration began in 1847” Also Biggs has this to say about the information provided in this table” No unbiased mind can examine these figures and resist the conclusion that the synchrony between enforced vaccination and the increased death-rate, and also that between the decline and less rigorous enforcement of vaccination and the lessened death-rate . . . “ (Biggs, 1912, Table 35, para. 3).

However, it was due to the implementation of the Leicester method that Leicester and its population seemed to be nearly untouched by Small Pox in comparison to many other places in the UK as well as the world at large. It is also for this very reason that they also pose such a formidable sample for the rest of humanity. An example of how Leicester stacked up to the rest of the United Kingdom during the late 1800’s can be seen in the chart below.

Towns	Small-Pox Cases.	Small-Pox Deaths.	Fatality per cent.
Aston Manor	113	6	5.3
Birmingham	1,203	96	8.0
Brighouse	134	15	11.2
Glasgow	279	23	8.2
Halifax	513	44	8.5
Leicester	366	21	5.7
Liverpool	194	15	7.7
Manchester	406	27	6.7
Salford	173	22	12.7
St. Albans	58	6	10.4

Warrington	598	60	10.0
	4,037	335	Average 8.6

(Biggs, 1912)

From this table of eleven towns, including Leicester, chosen by the "*British Medical Journal*," we find the average fatality-rate to be 8.6 per cent., while that of Leicester is only 5.7 per cent. These figures show a gain to Leicester of 2.9 per cent., but if we calculate the relative difference between the death-rate of 5.7 per cent, and that of 8.6, they mean a percentage gain to Leicester of nearly 32 per cent. We may ask the "*British Medical Journal*" wherein is the benefit of vaccination. (Biggs, Ch 50, 1912).

Before we take a look at other places in the world in comparison to our model let us see how nearly unvaccinated Leicester stacks up to both the heavily vaccinated Japan and the United Kingdom's military against Small Pox. See the chart below.

Name.	Period.	Small-Pox. Cases	Small-Pox. Deaths.	Fatality-rate per cent. of Cases
Japan	1886-1908	288,779	77,415	26.8
British Army (United Kingdom)	1860-1908	1,355	96	7.1
British Army (India)	1860-1908	2,753	307	11.1
British Army (Colonies)	1860-1908	934	82	8.8
Royal Navy	1860-1908	2,909	234	8.0
Grand Totals and case fatality rate per cent, over all		296,730	78,134	26.3
Leicester (since giving up vaccination)	1880-1908	1,206	61	5.1

(Biggs, 1912)

Comparison of Leicester to other Countries

Before continuance of recent comparisons is made it is important to take a brief retrospective look to the middle 1800's at Prussia. This would be at least 20 years before the use of a mandatory vaccination program as we have seen in England (Hadwen, 1923). They were known to have the best kept recordings of their vaccination proceedings in comparison to any other European country at this time (Hadwen, 1923). According to Hadwen (1923) "in addition to primary vaccination, every child had to be vaccinated over again when he started upon his school life; he had to be re-vaccinated on going from college to college; and re-vaccinated over again when he entered the Army" (The History of Small-Pox in Germany, para. 1). Hadwen also mentioned that if there was objection to the vaccination by any man "he was ordered to be held down and vaccinated by force; and so thoroughly was it done that he was vaccinated in ten places on each arm" (Hadwen, 1923, The History of Small-Pox in Germany, para. 1).

It was only a matter of 35 years later that this country would be devastated by a Small Pox epidemic that took the lives of 124,978 of those vaccinated and revaccinated people (Hadwen, 1923). It was after this that extreme measures were taken to prevent such an atrocity from recurring again. The measures taken were in the forms of clean water being directed into the cities, cleansing of the river Spree, inclusion of drainage systems in the whole nation, and a complete revamping of their barracks (Hadwen, 1923). According to Hadwen (1923) "Sanitation did for Prussia what 35 years of compulsory vaccination was unable to accomplish. At the present time in Prussia small-pox is almost extinct," (The History of Small-Pox in Germany, para. 1).

Although, as we take a look at the stats for Japan in the table above something that is of significant consideration is that Japan during this time was one of the most extensively vaccinated countries (Higgins, 1920). Not only were compulsory vaccination laws imposed

which were adopted from Germany but under them re-vaccination at different periods of infant and adult life was required (Higgins, 1920). The vaccination given during this time frame was an artificially developed form of small pox that involved human and cowpox being combined (Higgins, 1920).

U. S. Public Health Reports for September 2, 1910, which give this frightful record of smallpox epidemics in Japan for several years past. The population of Japan at that time, 1910, was about 48 millions, and the high waves in the epidemics in the preceding ten years were as follows: In 1898 there were 149,012 smallpox cases with 40,971 deaths, mortality 27 1/2 per cent.; in 1905 there were 10,704 cases with 3,388 deaths, mortality 31 1/2 per cent., and in 1908 there were 18,075 cases with 5,835 deaths, mortality 32 1/2 per cent.," (Higgins, p. 54, 1920).

Now you compare the 149,012 Small Pox cases of heavily vaccinated Japan with 40,971 deaths along with the 10,704 cases and 3,388 deaths in 1905 and the 18,075 cases with 5,835 deaths with that of 1,206 Small Pox Cases and 61 deaths during the total period of Leicester since abandoning vaccination from 1880 – 1908. The contrast is so strong that it clearly speaks for itself. Also something of worthy mention is the fact that the usual mortality expressed by authorities in old times preceding the days of vaccination was only about 15 to 20 percent (Higgins, 1920).

Like Japan during the late 1800's Italy too was very pro-vaccination. It was considered a prime obligation of the majority of the parents to have their children vaccinated (Ruata, 1901). However Ruata (1901) gives the following account:

During the epidemic of 1887-88, Badolato in Calabria counted 1,200 small-pox cases in a population of 3,500; and of the 2,500 inhabitants in Majerato, about two-thirds, that is

more than 1,600, were struck down by the disease. At Lei in Sardinia, with a population of 416, 51 died of small-pox; in Laerru, with a population of 800, 79; and Porfugas, in the space of only one month, had 641 cases in a population of 1,400. At Randazzo, Regalbuto, Aderno, Leonforte, Bolognetta, Palmi di Montechiaro, Montedoro, Lucca Sicula, etc., etc., the populations were almost decimated by small-pox ; while the town of Vittoria, in the province of Syracuse, lost no fewer than 2,100 in a population of 26,000.

But in the neighbouring town of Terranova, with 20,000 inhabitants, thanks to the exertions of the late lamented Dr. Rainalo, who established a committee of scrutiny, with power to isolate any case that might be imported, although the enemy made nineteen appearance within its walls all contagion was avoided. Terranova, like a besieged city, bravely and successfully withstood these repeated attacks ; thus emulating, but on a larger scale, the example of Leicester — for the terrible epidemic had spread throughout Sicily, costing no fewer than 12,611 lives. (Ruata, 1901, *Recent Experiences in Italy*, para. 3).

Also Leicester during the same time of 1887 -88 with a population size between 98,000 – 182,000 only fares 1,206 cases of Small Pox. Once again this is during the nearly unvaccinated period of Leicester compared to that of the heavily vaccinated and much smaller population of these towns in Italy. Second as noted by Ruata, Terranova who implemented the methods used in Leicester came through the scourge of the Small Pox epidemic with remarkably the same results that have been seen with Leicester.

The next comparison we will make will be the Philippines during the year of 1918. However, this comparison will be that of the Philippines prior to U.S. occupation and that after. Prior to US occupation in 1905 there existed a case mortality from smallpox at 10 percent (whale.to, n.d.). It was during this time of occupation that the population of this island was

subjugated to a rigorous vaccination program which was enforced by the US Government that later resulted in an outbreak that yielded a case mortality between 25% to 50% over various portions of the island (whale.to, n.d). Also it was during the years of 1918-1919 that the Philippines would experience likely the greatest epidemic of Small Pox recording in their history which in the nearly 95% vaccinated population it resulted in a case mortality of 65% (whale.to, n.d.).

It was recorded that the greatest percentage of death was in the capital Manila which happened to be the most heavily vaccinated while in Midanao the place that had the lowest amount of vaccinations which was greatly due to religious beliefs there was a lower death toll (whale.to, n.d). According to whale.to (n.d.) “Dr V de Jesus, Director of Health, stated that the 1918-1919 smallpox epidemic resulted in 60,855 deaths.” Also something of note is that in 1918 there was no epidemic, there was only a few sporadic incidents of the usual mild nature but the US Army made 3,285,376 natives get vaccinated (whale.to, n.d.) This resulted in 47,369 who were vaccinated getting small pox and 16477 deaths, while in 1919 when 7,670,252 natives were vaccinated 65,180 got small pox and 44,408 died (whale.to, n.d.).

Recurring Vaccination Trends

In regards to the efficacy of vaccination in lieu of much of the seemingly recurring trend of higher vaccinations equalling a higher occurrence of disease vaccinated against, the following time line is presented.

1940 – during this time in Germany there was a compulsory drive pushed on the people for diphtheria which ended with diphtheria cases rising In Germany from 40,000 to 250,000 in 1945 Allen (as cited in vaclib, 2007).

1967 – It was during this year that the World Health Organization would claim that Ghana had been purged of measles after about 96 % of the population was vaccinated, but in the year of 1972 they would suffer from the greatest outbreak of measles with a historical mortality rate Albonico (as cited in vaclib, 2007).

1977 – In this year the man known for making the first Polio vaccine, Dr Jonas Salk would add his voice along with other scientists to attest to the fact that the vaccination of the masses was what yielded to the large rise of Polio cases throughout the USA since the year 1961 according to Science (as cited in vaclib, 2007).

1978 – Results of a survey of 30 different states in the U.S.A. noted that a little over half of the children during this time who contracted measles had been well vaccinated Mendelshon (as cited in vaclib, 2007).

1979 - During this year the nation of Sweden would stop using its whooping cough vaccine due to 5,140 cases demonstrating that 84% of the cases for whooping cough came from those who were vaccinated for it British Medical Journal (as cited in vaclib, 2007).

1988 – From this period in the following year there was a large polio incident in Oman which experienced a higher attack rate amongst those regions with a higher vaccination rate and a lower occurrence in the lower vaccinated regions Lancet (as cited in vaclib, 2007).

1990 – According to the Journal of the American Medical Association "Although more than 95% of school-aged children in the US are vaccinated against measles, large measles outbreaks continue to occur in schools and most cases in this setting occur among previously vaccinated children" (as cited in vaclib, 2007).

1994 – In an issue of the New England Journal of Medicine a published study would state that out of about 80% of children younger than the age of 5 inspite of the fact that they were

vaccinated against whooping cough they would still communicate the disease (as cited in vaclib, 2007).

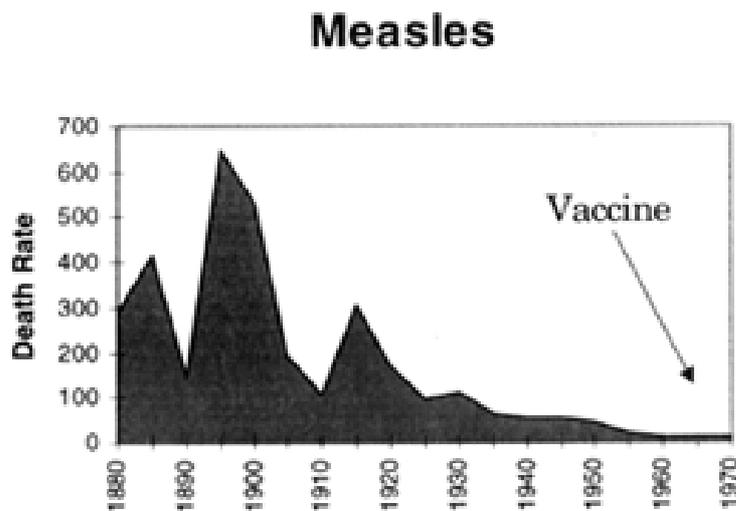
2013 – In the end of 2012 Pakistan would be hit with an seemingly endless wave of measles cases that plague them up until the present (Wasif, 2013). According to Wasif (2013) Dr Tabish Hazir who is the Head of the paediatrics department at the Pakistan Institute of Medical Sciences, would state “more than 50 percent of the children brought to the hospital were those who had already been vaccinated against measles” (para. 7).

In regards to the information presented above the Child Health Safety (2009) ask the question “Can “vaccinatable” diseases “return” despite vaccination?” this was answered with a resounding yes, stating that “If you are too poorly nourished your body is likely to lack essential nutrients needed to maintain its immune system sufficiently to withstand disease. This will happen regardless of how many vaccinations you have had” (ChildHealthSafety, 2009). An example of this was in what ensued after the collapse of the Soviet portion of Eastern Europe amidst the poverty that followed the economic upheaval (ChildHealthSafety, 2009). This sheds new light on the instances of these recurring situations in which we have seen many outbreaks occurring after vaccination and revaccination. It would be safe to assume that not all those vaccinated and revaccinated communicated the disease they were vaccinated against, the most likely reason being the strength of their own natural immunity being higher in regards to better nutrition amongst other things.

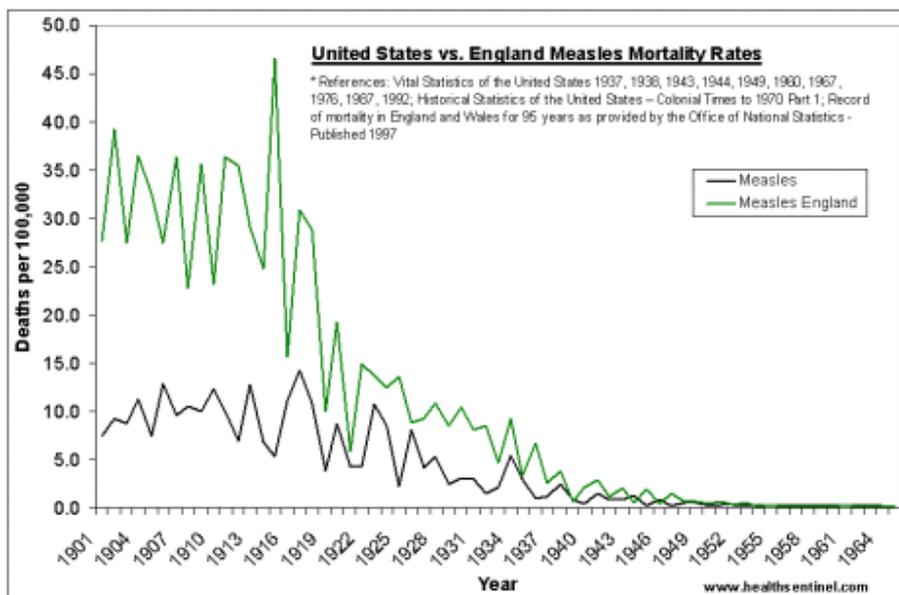
Vaccination and the Reduction of Diseases

It is here that the notion of disease eradication by vaccination shall be reviewed. The CDC as well as the World Health Organization has already laid claims to the fact that vaccination has done so. Through the use of the charts below these claims will be evaluated as

to the worth of credibility attributed to them. The first chart below is a graphical depiction of the natural decline in measles outbreaks in Australia well before the institution of a vaccination regimen for it (ChildHealthSafety, 2009). This same natural decline also is shown in the chart following this one comparing the mortality rates of the United States and England.



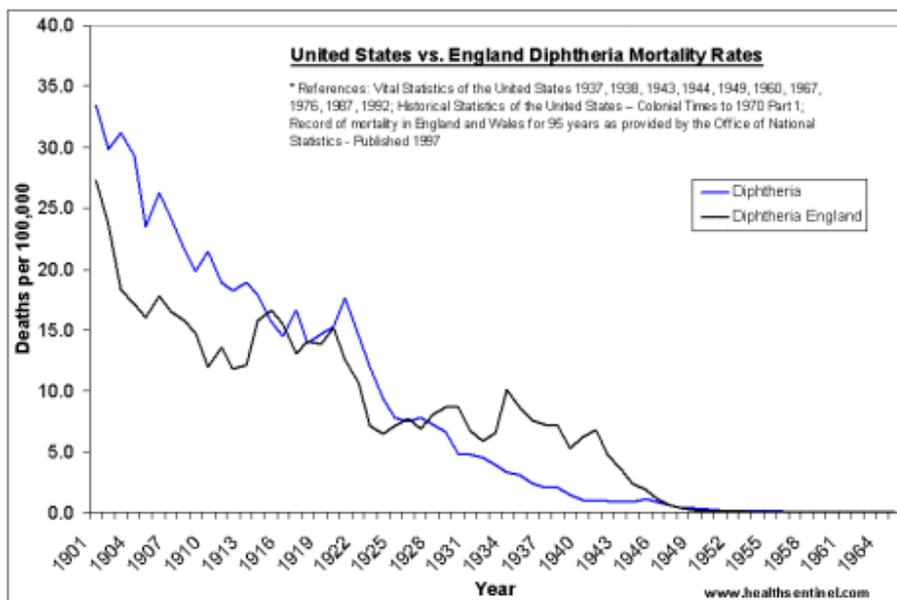
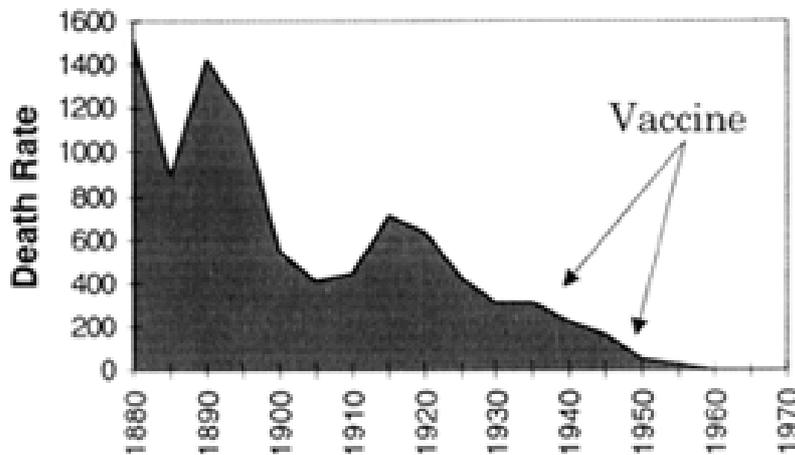
(ChildHealthSafety, 2009)



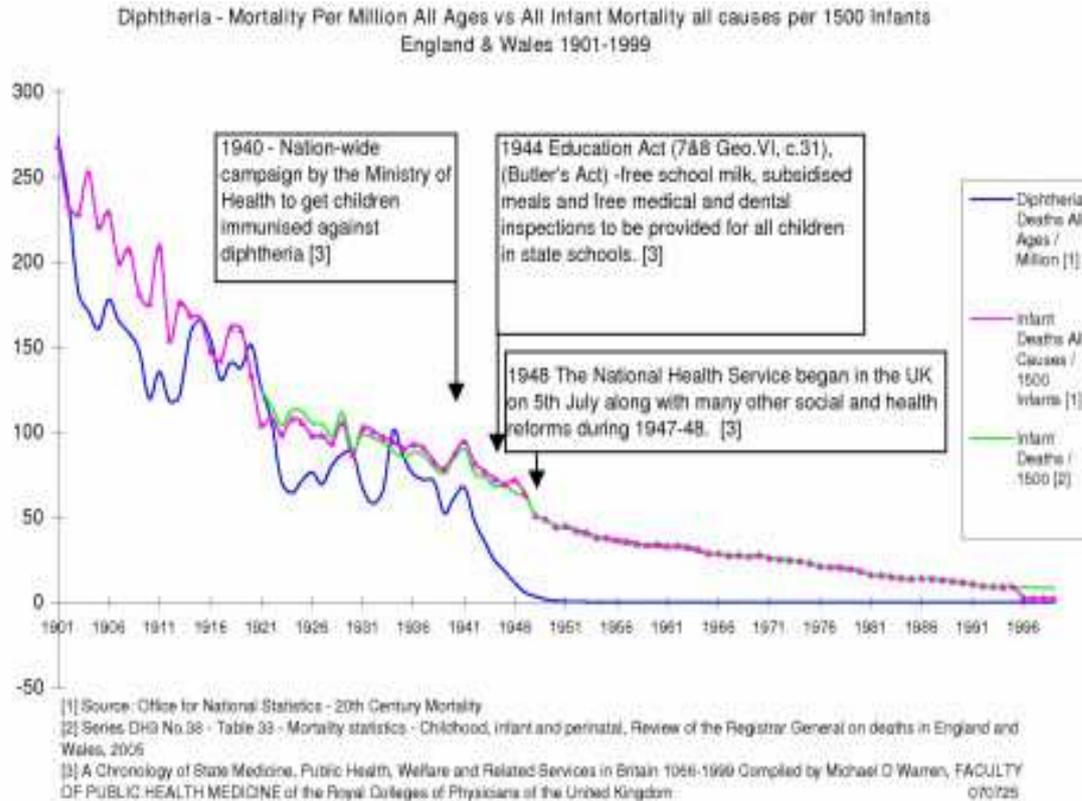
(ChildHealthSafety, 2009)

In the following charts on Diphtheria such as the first that reflects the natural decline of the disease prior to the institution of a vaccine in Australia the trend remains consistent with the fact that these scourges to humanity were already in a state of decline before the adjuvant of prevention was instituted by world governments (ChildHealthSafety, 2009).

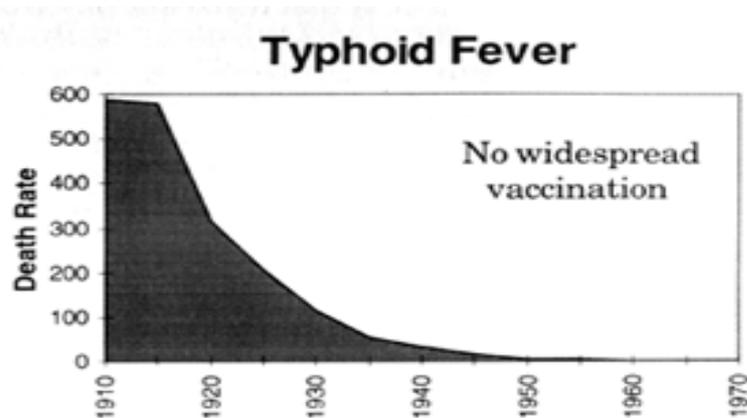
Diphtheria

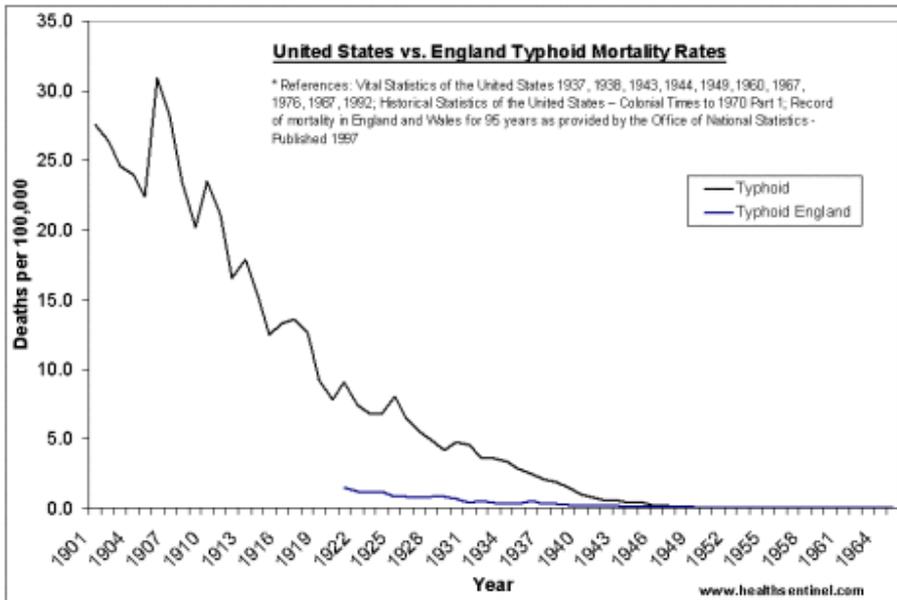


It is significant to point out in the chart below that it was around 1940 that the UK would introduce the vaccine for diphtheria and a majority of the children younger than 5 years of age would not receive it (ChildHealthSafety, 2009). It would not be until the year between 1946-7 that the government would institute a large campaign to vaccinate those in this age group which ended in 969,000 children receiving their shots (ChildHealthSafety, 2009). This would be a time frame in which diphtheria mortality was already on a very sharp decline and according to ChildHealthSafety (2009) “With an annual birth rate in the region of 200,000 that represented most of the children born during 1941 to 1946. . . . diphtheria vaccination could not have been responsible for the fall”(Diphtheria Mortality, para. 3). The decline in Diphtheria mortality had more to do with the different legislations that were passed for social health and welfare that took place during the years of 1944, 1947, and 1948 as you will be able to see in the chart below (ChildHealthSafety, 2009). ChildHealthSafety (2009) tells us that “Free school milk provided, among other nourishment, vitamin A to help children’s immune systems fight disease. . . . [which is why] . . . the World Health Organisation is keen to provide [Vitamin A] to third world children now for the same reason.”



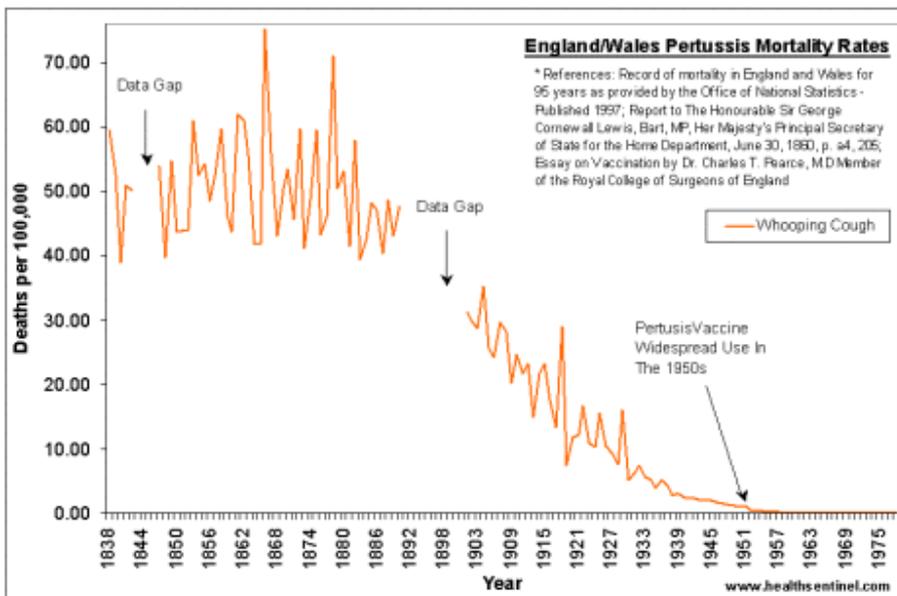
The chart below displays decreasing typhoid fever mortality rates in Australia and the following chart shows a similar decrease in the comparison of England and the United States in spite of any major vaccination programs (ChildHealthSafety, 2009).



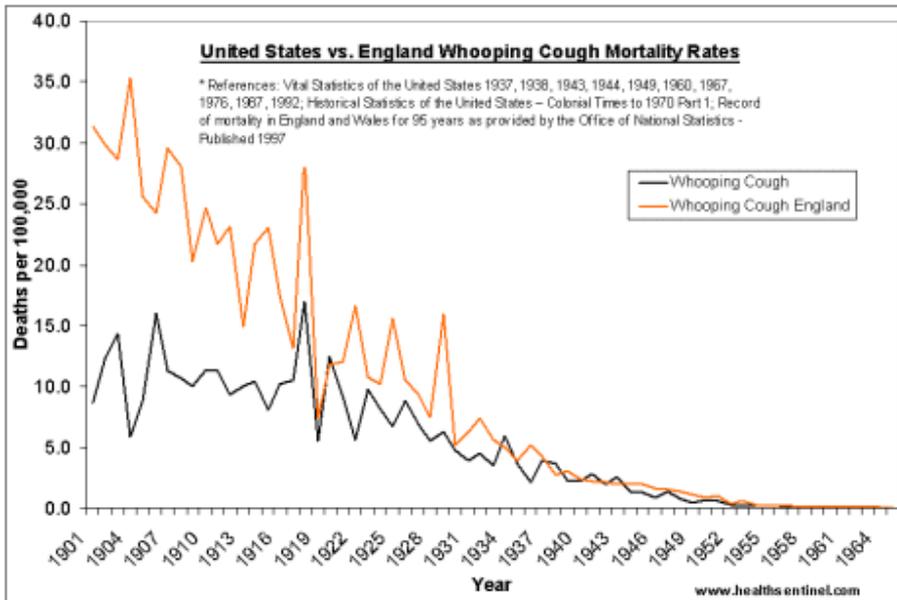


(ChildHealthSafety, 2009)

In the last of the three charts below the information is on Australia. As seen in the preceding charts the evidence clearly demonstrates a sharp decline in disease prior to the institution of a vaccination program.

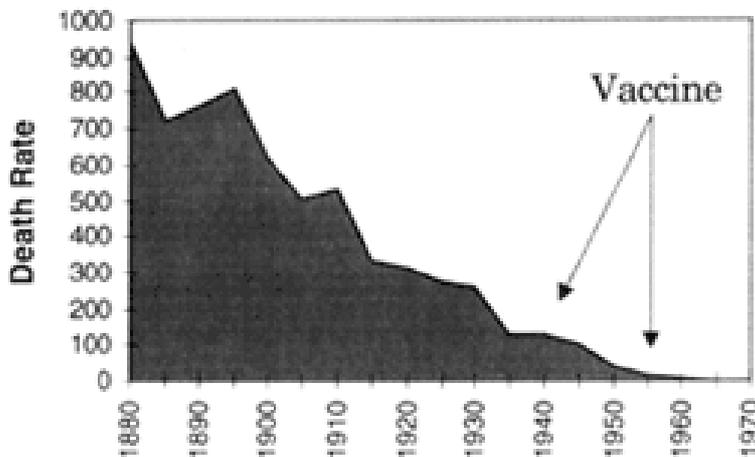


(ChildHealthSafety, 2009)



(ChildHealthSafety, 2009)

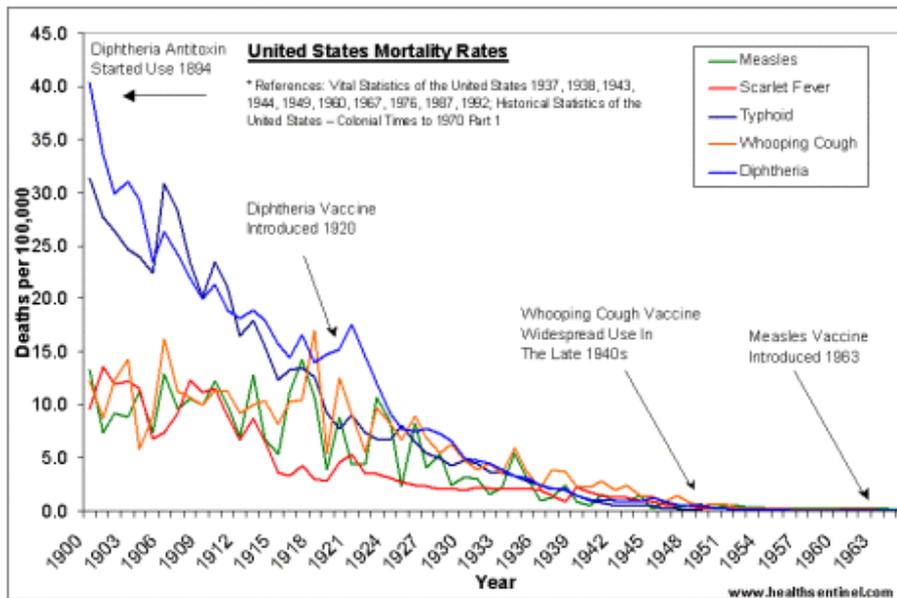
Whooping Cough



(ChildHealthSafety, 2009)

A significant point of reference of this chart is the sharp spike in Diphtheria mortality shortly after the institution of vaccination before it returned to its natural decline. Also

whooping cough and Measles was already on a steady decline prior to the institution of vaccination (ChildHealthSafety, 2009).



(ChildHealthSafety, 2009)

Vaccination Safety

As mentioned earlier one of the issues faced with vaccination is the notion that those who are vaccinated are much better off than the unvaccinated. This concept is usually perpetuated in tandem with the reassurance that vaccinations are safe by organizations such as the CDC. According to the results of a report made available to the public conducted by the National Research Council asked by the U.S. Army Medical Research and Development Command it was stated “The efficacy of a vaccine requires careful evaluation, so that efficacy can be weighed against safety with respect to immediate and delayed reactions. Assessment of the importance of early febrile, toxic, and local reactions and of anaphylactic potential is essential” (Committee on the effects of multiple immunization National Research Council, 1980, Introduction, para. 1). The Committee on the effects of multiple immunization National Research Council in this same reported specified abnormal interaction between antigen and antibody may give rise to allergic

encephalitis, orchitis, thyroiditis, or other abnormal conditions such as Arthus's reaction or a hypersensitivity reaction. Disorders that are ordinarily nonmalignant may be abnormal immunologic reactions; after an immunization procedure, other disorders, such as the Guillain-Barre syndrome, may occur by a mechanism not yet clarified. The administration of vaccines containing viable agents can result in excessive proliferation of the inoculated organisms in the host or a reversion to virulence or to neurovirulent or oncogenic factors; such vaccines have the potential for spread to others. Immunization may pose special risks to patients with inherited or acquired immunodeficiency states. (Committee on the effects of multiple immunization National Research Council, 1980, Introduction, para. 1).

The focus of this report was on possible risk factors associated with multiple immunizations. Due to the small sample of 99 participants and lack of any issues associated with them it was admitted that the data was not enough to rule out the potential risks presented by multiple vaccinations while not necessarily attributing it to be enough to state that any high level of caution should be made known without further study into this subject area (Committee on the effects of multiple immunization National Research Council, 1980).

In support of the claims by these government organizations' above, in the 1920's two Professors Turnbull and McIntosh brought to the attention of two different British Committees the evidence of a possible casual relationship of vaccination to an acute form of encephalitis (Bayly, 1936). During this time it was presented before the Congress of the Royal Sanitary Institute that disease of days gone by were being replaced by a new epidemic of rapidly increasing nervous disease by Dr. McNalty (Bayly, 1936). In the year of 1924 "6,296 cases of such diseases, including 5,039 cases of encephalitis lethargica (sleepy sickness). This represents over three times the recorded average for the previous nine years. In 1923, nearly double the

previous four years' average number of vaccination tubes had been issued, an extra 288,000” (Baylay, 1936, *The Danagers of Vaccination*, para. 7).

Also during the month of July in 1990 through November of 1993 “the US Food and Drug Administration counted a total of 54,072 adverse reactions following vaccination. The FDA admitted . . . this number represented . . . 10% of the real total, . . . most doctors were refusing to report vaccine injuries” National Vaccine Information Centre (as cited in vaclib, 2007).

Fox News in 2008 reported children suffering from fevers that were accompanied by convulsions who had received a Merck & Co. ProQuad Vaccination which contained measles, mumps, rubella and chicken pox (Associated Press, 2008). According to the Associated Press (2008) “Merck officials said their own research, though preliminary, also showed a doubling of the risk in children within five to 12 days of vaccination. However, the occurrence was low — about 5 cases in 10,000, Merck officials said” (para. 10). The Co-director of the Vaccine study Center located in California compared 43,000 children who received the ProQuad shot versus 315 who got separate shots and his analysis “found fever-related seizures occurred at a rate of 9 per 10,000 children vaccinated with ProQuad, compared with 4 per 10,000 for those who got separate shots”(Associated Press, 2009, para. 13).

Also it is reported that one of the issues that are taking place with the Bill Gates’ and WHO sponsored Polio eradication campaign is as stated by Dr Puliyeel “non polio paralysis cases were 61,000 in India and are associated with polio vaccination campaigns” (ChildHealthSafety, 2013, para. 3).

Discussion

As mentioned earlier in this paper at the heart of the debate of vaccinations lie some of the following issues:

1. The evidence in support of the notion of vaccine efficacy to the extent that it actually does protect from the disease vaccinated against is questionable.
2. The evidence in support of the notion that vaccinations are rightly dubbed the champion of riding the world of diseases such as measles, diphtheria, smallpox is questionable.
3. The evidence in support of the notion of vaccination being necessary to protect against disease is questionable?
4. The notion of those vaccinated being better off or at less risk than those unvaccinated is questionable.

It is in addressing these issues that the truth will come to light as to whether vaccination is really effective or has the efficacy that it has been credited throughout the centuries. In consideration that the Influenza virus is to the world today as Small Pox was in previous eras we will first look over the evidence presented in the meta – analysis done by Campbell et. al. It is stated by Cambell et. al. (2013) “Expectedly, both live and inactivated vaccines were more efficacious against infection with strains of influenza virus that were antigenically similar to strains contained in the vaccine” (Discussion, para. 1). It was also noted in this study that efficacy was much greater with infection for the flu but the effectiveness was lower (Campbell et. al, 2013). Then there are the results from the England study done by Ahmed, Nicholson & Nguyen-Van-Tam. In this study the first thing I will bring attention to is that they noted with a yearly rate of continual vaccination the death percentage was reduced by about 75% (Ahmed, Nicholson & Nguyen-Van-Tam, 1995). Also it was noted that” For subjects who received the

vaccine for the first time in 1989, vaccine efficacy was 9%. However, the 95% CI for this estimate was wide, possibly because of the smaller number of first-time vaccines” (Ahmed, Nicholson & Nguyen-Van-Tam, 1995, Discussion, para. 1).

Therefore based on these studies it can be assumed that flu vaccination efficacy is not a guarantee considering the difficulty of strain matching in regards to the evidence provided above by Campbell et. al. Also in conjunction with the evidence provided by Ahmed, Nicholson & Nguyen-Van-Tam even multiple repeated vaccinations for influenza are not a 100% guarantee against the disease vaccinated against. This goes against the notion that being vaccinated protects a person from receiving the disease vaccinated against. Vaccinations have been touted to shield people from the penetration of the disease being vaccinated against. It is to this that the efficacy and effectiveness of the vaccination is tied to. A similar conclusion can be drawn with a closer look at the early success of Edward Jenner and his Cow Pox vaccine. The first recorded success of Jenner’s early vaccination experiments was the boy James Phipps. Along with Phipps was as mentioned earlier the inoculation of several older gentlemen who had cow pox before and like Phipps they did not contract Small Pox. Most conventional literature covering medical history stops at the fact that this boy was vaccinated with Cow Pox and it was a success. However, you must remember the incident of the many cases which people had Small Pox and Cow Pox that Jenner knew well of but failed or chose not to include into his official report before the medical board at that time. This disproves the efficacy of his early vaccination claims of Cow Pox vaccination preventing Small Pox contraction.

Even varoliation proved to do nothing more than just spread the disease of Small Pox although it was hailed to be a great breakthrough in controlling Small Pox. This makes the notion of vaccination efficacy to be very questionable from past to present. It also further leads

to the questioning of the belief of direct causal relationship of an individual being vaccinated and not contracting the disease and then giving full credit to the vaccine for the lack of occurrence. It leaves a lack of understanding of the many cases where the unvaccinated are exposed to the same disease and do not contract it. Also it fails to explain the reasoning behind the many instances in which the vaccinated contract the very disease vaccinated against. All of these instances make the notion of vaccination efficacy extremely questionable and likely displaced.

It is also evident due to the results of current events such as what is taking place in Pakistan with the heavy outbreak of measles that the credibility of protection offered by vaccination is highly questionable. Remember that according to Wasif (2013) “Dr Tabish Hazir Head of Pediatrics, PIMS, Pakistan said more than 50 percent of the children brought to the hospital were those who had already been vaccinated against measles” I will also bring to your memory the current issues taking place in India with Bill Gates & the WHO’s polio eradication program. According to Child Health Safety (2013) one of Dr Puliyel’s main concerns was “non polio paralysis cases were 61,000 in India and are associated with polio vaccination campaigns.” This information along with the data from the charts showing the drastic decline in childhood disease such as measles and diphtheria along with mortality from such prior to the institution of vaccination is a mortal blow to the claims of efficacy by vaccination and their elimination of such.

Furthermore in regards to the evidence presented there is no clear reasoning behind the idea that those who are vaccinated are better off than those who are not. Even the government organizations such as National Research Council in their study conducted for the Army concluded the many possible adverse risks that coincide with being vaccinated. It is also clear as it has been proven that there have been many cases of secondary issues that have ensued in

conjunction with being vaccinated although the disease vaccinated for was not contracted. This evidence clearly displays that a greater deal of precaution should be taken into the vaccination of the population to the extent that more measures to negate these potential threats are instituted by the government to protect people. Therefore, it is clear that being vaccinated does not offer a greater level of protection from disease or decrease risks that would normally be avoided if the vaccination were not administered. In other words, it has been proven that the vaccinated are at much higher risks of secondary complications and possible disease contraction than the unvaccinated.

In conclusion of the information presented throughout this paper it is evident that the people of Leicester in the late 1800's have proven themselves to be a formidable model for humanity against the efficacy of the proposed protection of vaccination from the disease it is immunized for. It has also proven that the model of Leicester is a credible one that can be replicated by the world population at large and is very effective against preventing the large scale spread of disease and maintaining it at manageable levels. Also the examination of Leicester and similar populations has proven the lack of efficacy offered by vaccination.

The use of sanitation and isolation as instituted in Leicester after their heavy losses to Small Pox during a time of heavy vaccination shows us the lack of efficacy of vaccination (Biggs, 1923). This is seen clearly in the comparison of their heavy losses in sole dependence of vaccination to protect their people as opposed to their heavy implementation of sanitization and isolation which yielded a large decrease in deaths and total Small Pox cases. Also as further evidence is the similar lack of cases and deaths in Italy in the town of Terranova. In comparison to the other small populated towns that were heavily vaccinated to that of Terranova's much larger population we see a much smaller impact of this disease due to their implementation of a

Leicester type of method (Ruata, 1901). We also see this continuing trend in Prussia after the heavy losses taken during the Small Pox epidemic as a result of their harsh vaccination and revaccination program (Hadwen, 1923). Prussia instituted a heavy sanitation program that involved cleaning up their drinking water, drainage systems and redeveloping the barracks of their soldiers which resulted in nearly wiping out the disease of Small Pox, which 35 years of vaccination and revaccination failed to accomplish (Hadwen 1923).

It is admitted that enough evidence is not presented to utterly refute the efficacy provided by vaccination. Although, there is a credible evidence in support of vaccine efficacy being displaced. This displacement is possibly due to the strength or weakness of the immune system as a neglected factor in the assessment of vaccination efficacy. It is important to reiterate here the question of the ability of a disease vaccinated against being able to return. “If you are too poorly nourished your body is likely to lack essential nutrients needed to maintain its immune system sufficiently to withstand disease. This will happen regardless of how many vaccinations you have had” (ChildHealthSafety, 2009). On this premise is very likely that the reason why some vaccinated people still contract the disease vaccinated against and those unvaccinated contract the same disease has much to do with a weakened immune state. Also it would be a safe assumption that the reason that those who are vaccinated don’t contract the disease vaccinated against as well as those who are unvaccinated is that their immune system was strong enough to prevent it. More research into this specific area is needed to give full credit to this idea, however if this in fact is so it would further tarnish the credibility of the efficacy offered by vaccination. Credibility would now shift to elements that would propagate a strong immune defence which it would be an impossibility to do such through medication or vaccination. This in conjunction with creating an external environment to negate the creation and spread of disease

such as through proper cleanliness and sanitary methods, would be the utmost necessity, not the establishment of compulsory or any vaccination programs.

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