



Prevent Protect Immunize

Seven Key Reasons Why immunization must remain a priority in the WHO European Region

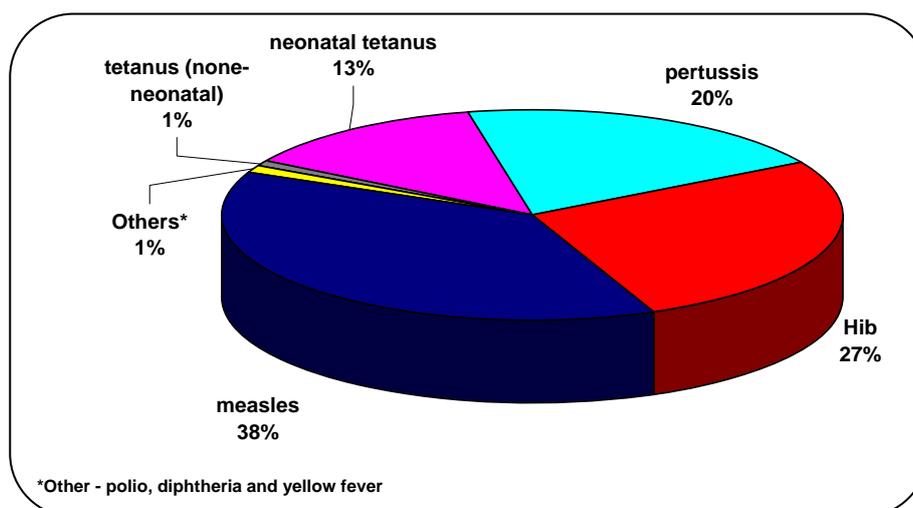
A dramatic decrease in cases of vaccine-preventable diseases has made many infectious diseases seen as a thing of the past in Europe. Nevertheless, nearly 650 000 children in the WHO European Region do not receive their first dose of measles vaccine to fulfil basic immunization requirements, and vaccine-preventable diseases continue to cause illness, disability and even death. Immunization must be prioritized – for seven key reasons:

1. Immunization saves lives

Immunization saves more than 3 million lives worldwide each year, and it saves millions more from suffering illness and lifelong disability (WHO estimate, 2009).

Before the introduction of routine childhood vaccination, infectious diseases were the leading cause of child death globally. Even today these diseases cause suffering and death, with measles, *Haemophilus influenzae type b (Hib)*, pertussis and neonatal tetanus being the prominent killers among vaccine-preventable diseases (Figure 1). Every year, 10.6 million children die before the age of five years; 1.4 million of these are due to diseases that could have been prevented by vaccines. Taking into account both children and adults, vaccine-preventable diseases kill 3 million people around the world every year (WHO estimates, 2009).

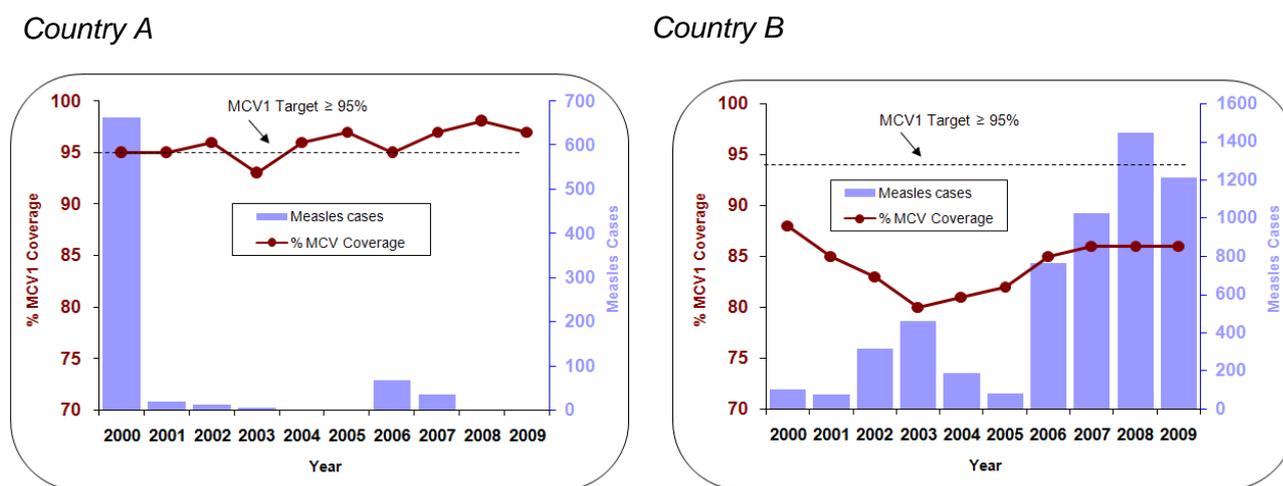
Figure 1: Global distribution of the 1.4 million annual deaths caused by vaccine-preventable diseases in children under 5 years of age (WHO).



(Source: WHO/World Bank, Global Disease Burden Estimates, 2005)

When a vaccine is introduced against an infectious disease and immunization coverage rates increase, the number of persons with the disease will dramatically decrease (Figure 2, *Country A*). Conversely, when immunization coverage drops, diseases will re-appear (Figure 2, *Country B*). Failing to prioritize immunization could lead to the resurgence and spread in the European Region of highly contagious diseases, such as polio, measles, or diphtheria.

Figure 2. Reported measles cases and measles containing vaccine (MCV1) coverage by year of rash onset, 2000-2009



(Source: Monthly Measles and Rubella Surveillance and Coverage reported through WHO/UNICEF Joint Reporting Form)

Immunization can also protect those not immunized by preventing the spread of certain infectious diseases: when enough people are immunized within a given community, diseases cannot spread. For measles, a large percentage of the population (>95%) must be immunized to provide this benefit, due to the disease's highly infectious nature. The more people immunized, the more lives saved.

2. Immunization is a basic right and a strategic component of poverty-reduction programs

In recent decades, the world has seen immense improvements in health, but the benefits are spread unevenly across the world and the European Region. For example, the estimated infant mortality per 1000 live births is 17.68 in the central Asian republics, compared to 3.79 in the European Union (European *Health for All* database, most recent available data, 2010).

Vaccination coverage for measles is 94% and for 3 doses of DPT and 3 doses of polio vaccine is above 90% across the European Region; but these data disguise large disparities. Coverage rates vary widely, between and within countries. Studies show that lower socio-economic individuals are often disadvantaged in relation to health services. In 21 developing and transition countries, the wealthiest 20% of the populations benefited from 26% of the government health expenditure, while the poorest 20% benefited from only 16%. Country-specific data from the Demographic Health Survey (DHS¹) show that vaccination coverage and rural-urban inequities differ. For instance, 80% of urban children in Turkey in 2008 were vaccinated against seven diseases (TB, diphtheria, pertussis, tetanus, poliomyelitis, hepatitis B and measles) compared to only 67% of rural children. In Azerbaijan in 2006, 55% of children living in urban areas received BCG, 3 doses of DPT, 3 doses of polio vaccine, MMR and

¹ Data in this paragraph come from the following sources: Hacettepe University Institute of Population Studies (2009); State Statistical Committee [Azerbaijan] & Macro International Inc. (2008); National Statistical Service [Armenia], Ministry of Health [Armenia] & ORC Macro (2006).

hepatitis B vaccine,² compared to 29% of children living in rural areas. In Armenia in 2005, however, only 51% of urban children received BCG, 3 doses of DPT, 3 doses of polio vaccine, MMR and hepatitis B vaccine, in comparison with 62% of rural children.

Immunization is not only an effective intervention to reduce disease and death; it can be used as a strategy to help reduce inequalities in the delivery of primary health care. Efforts to reduce measles incidence contribute to Millennium Development Goal 4 to reduce child mortality, and the proportion of 1 year-old children immunized against measles is one indicator for the reduction (by two-thirds) of the mortality rate among children under five years.

With regard to measles vaccination coverage among 1-year-olds, rural areas in some countries unexpectedly do better than urban areas. It is clear that many individuals in large, densely populated urban centres do not access immunization services on a regular basis. A factor that can contribute to this is migration (from abroad and from rural to urban areas), as migrants may not be registered at an urban health facility in the absence of active outreach. However, despite high levels of coverage in rural areas in some countries, there remain many children not being reached in rural areas, leaving them susceptible to preventable diseases. Factors such as lower education levels, lower income and living in a remote, disadvantaged rural area can synergize to exacerbate barriers to required services. Official numbers can exclude people who lack access to the health system, masking unimmunized pockets in remote rural areas. Ethnic minority groups, and other such marginalised populations, may also have lower immunization coverage rates in rural areas, linked to processes of social exclusion that span economic, cultural, social and political dimensions.³

In every country, there are populations who are not immunized and are susceptible to disease. For instance, in the 2008-2009 measles outbreaks in Austria, Bosnia and Herzegovina, Bulgaria, France, Germany, Italy, Poland and Spain, the vast majority of cases occurred among persons who did not get immunized based on philosophical reasons or who were of Roma ethnic and migrant population groups, which may lack access to immunization services. Other populations that may lack access include geographically remote or displaced populations or the socially and economically marginalized.

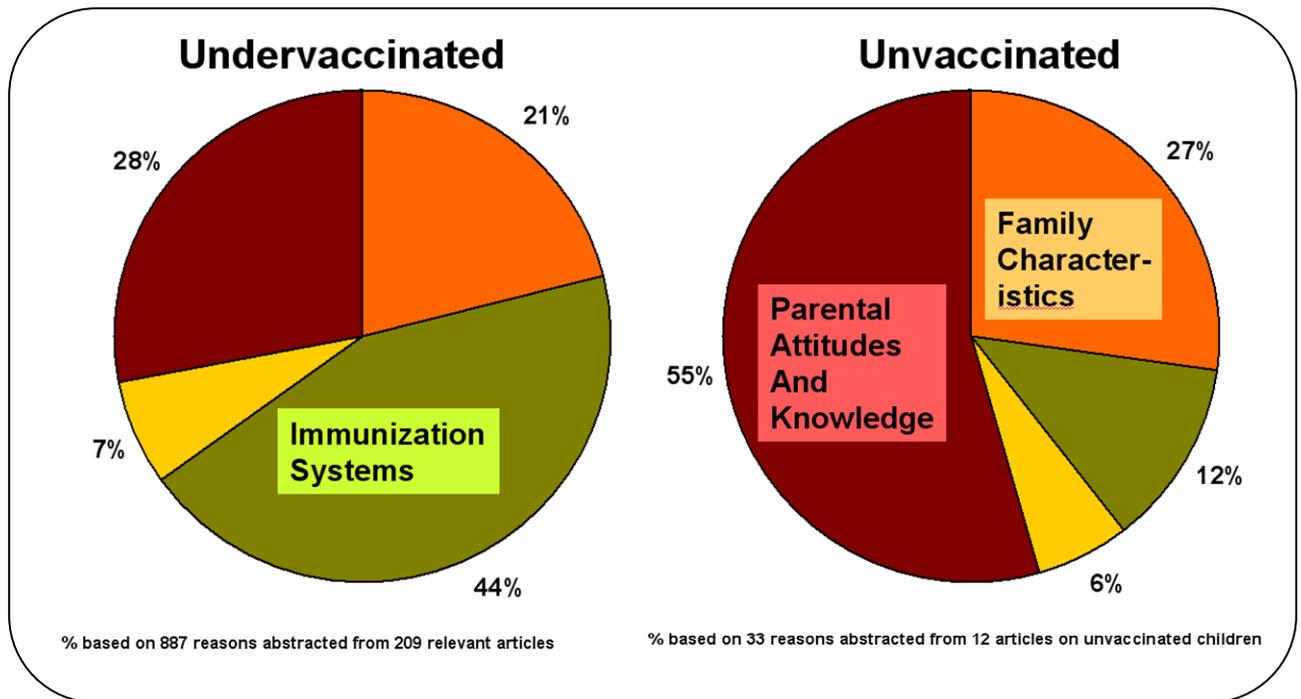
In addition, some people lack awareness about vaccination or are not motivated to seek it, as they have not seen the diseases which are prevented, while others refuse it on ethical or religious grounds. All these groups remain vulnerable to vaccine-preventable disease. The reasons for being un-vaccinated differ significantly from the reasons for being under-vaccinated. (Figure 3.)

Inequalities in access to immunization also exist due to the socioeconomic status of countries. The health gap is widening between the eastern and western parts of the Region. Vaccines routinely used in industrialized countries are unaffordable to others. For example, pneumococcal conjugate vaccine is used in only 15 countries of the Region and HPV vaccination of adolescent girls has been introduced in 17 countries. The majority of these countries have high income economies. However, very few countries in the eastern part of Europe and no country in the Newly Independent States (NIS) has introduced these vaccines as a part of its routine immunization Programme.

² BCG stands for Bacillus of Calmette and Guerin, the tuberculosis vaccine trademark of Pasteur Institute; DPT stands for diphtheria, tetanus and pertussis; POLIO stands for poliomyelitis; MMR stands for measles, mumps and rubella; HepB stands for hepatitis B.

³ *Rural poverty and health systems in the WHO European Region*. Copenhagen, WHO Regional Office for Europe, 2010.

Figure 3. Review of published literature: Reasons for being un-/under-vaccinated



Nevertheless, inequalities are not only related to socioeconomic status. An analysis of child well-being in 21 economically advanced countries showed that the majority of the countries had weaknesses regarding child health and safety that needed to be addressed (UNICEF 2007). Countries with high Gross National Products (GNP) and high investment in health sometimes, for various complex reasons, experience large disease outbreaks and have higher incidence of vaccine-preventable diseases than countries with lower GNP. In 2009, for the first time, 95% of the reported measles cases were from Member States of the European Union (65% from Western Europe).

3. Vaccine-preventable diseases still pose a risk

Due to effective vaccination programmes, most people in industrialized countries have never experienced the devastation of vaccine-preventable diseases. Many people believe that these diseases no longer pose a threat, as they are not as visible as they once were. In fact, some consider the vaccine to be more dangerous than the disease.

In some countries these misperceptions have led to a decline in coverage and a resurgence of contagious diseases, including measles, pertussis, diphtheria and rubella.

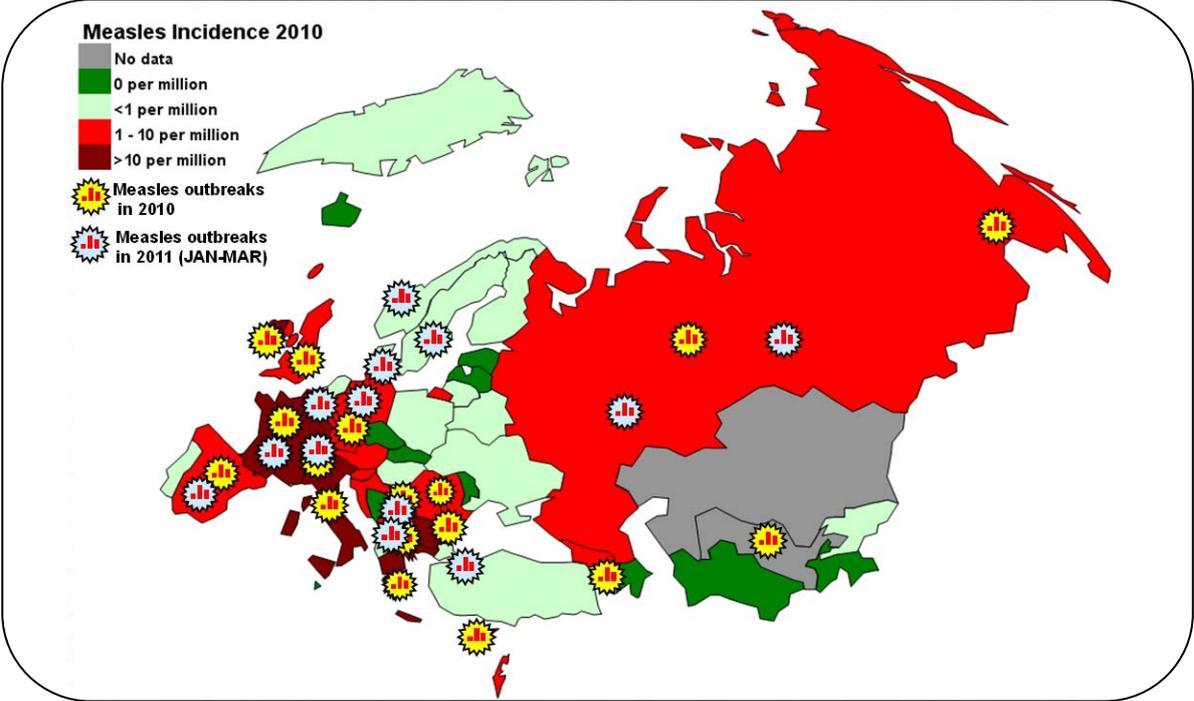
A diphtheria epidemic in the Newly Independent States (NIS) in the 1990s peaked at over 50,000 cases (in 1995) owing to low vaccination coverage.

Viruses do not respect borders and measles outbreaks in the Region have spread from one country to the next. In recent years, countries of the European Region have had to fight large and sporadic outbreaks, especially due to measles (Figure 4). In 2007-2010, measles outbreaks were reported in many countries in the western part of Europe, including Austria, Bulgaria, France, Germany, Ireland, Italy, the Netherlands, the United Kingdom, and Switzerland, due to pockets of susceptible people, which had accumulated over the previous few years – allowing wide and rapid spread when the virus was introduced. Measles virus continues to spread across Europe, leading to outbreaks in susceptible people not immunized

or not immunized on time (i.e. according to the routine immunization schedule). In 2009-2010 there was an explosive measles outbreak in Bulgaria, with over 24,000 cases and 24 deaths.

A study of 11 western European countries reported that the cost of measles treatment was €209-480 per case, while the cost of measles vaccination and control was €0.17-0.97 per person (Carabin, 2003). Health-care provider costs during a measles outbreak of 614 cases in Germany were reported to be €102 804 for measles with complications, while total services were a total of €229 122 (Wichmann, 2009).

Figure 4. Reported measles outbreaks and measles incidence per million total population in the WHO European Region – 2010-2011.



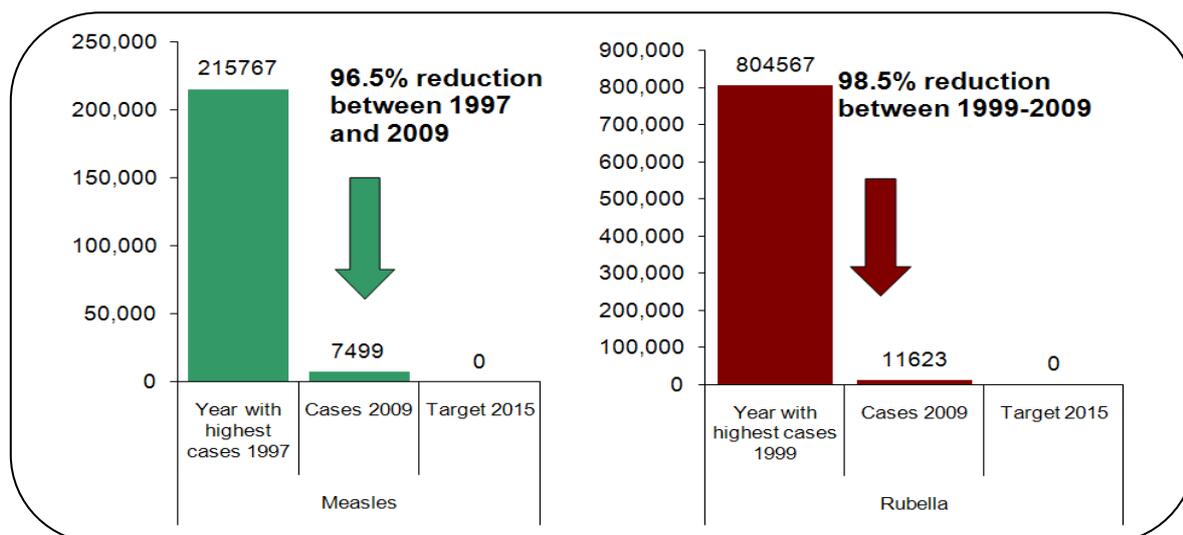
(Source: Measles and Rubella (MR) Outbreak Notification Report and Monthly MR surveillance reporting 2010 and 2011)

Prevention must be maintained and strengthened. Because of global spread of diseases, the re-emergence of diseases that are under control in the Region is a permanent concern. The WHO European Region was declared free of polio in 2002 and a great effort has been invested in maintaining this success. Still, the European Regional Commission for the Certification of Poliomyelitis Eradication, which determines the Region’s polio-free status, has recently expressed strong concerns that the risk of polio importation into Europe from other geographic areas is increasing, a concern that came to reality with the 2010 outbreak of imported wild poliovirus in Tajikistan – with spread to at least 3 other countries and a total of 475 paralytic polio cases and 29 deaths.

4. Diseases can be controlled and eliminated

With sustained high vaccination coverage, the incidence of vaccine-preventable diseases declines (Figure 5). High quality surveillance is required to monitor disease trends and progress towards control and elimination goals.

Figure 5. Reported cases of measles and rubella in the WHO European Region



(Source: WHO/UNICEF Joint Reporting Form)

With concerted effort, some diseases can be eliminated or eradicated:

- Smallpox, which used to kill 5 million people worldwide every year, was eradicated in 1978 and today is all but forgotten.
- The WHO Region of the Americas eliminated measles in 2002 – only 12 years after a large measles outbreak in 1990, resulting in more than 250 000 cases and over 10 000 deaths.
- In the WHO European Region, all Member States have agreed upon the target of measles and rubella elimination by 2015. There is still a large burden of measles disease in the Region, but over the past 10 years, reported measles cases have decreased more than 96%: from 215 767 cases in 1997 to 7499 cases in 2010.
- The WHO European Region was declared free from polio (no endemic polio transmission) in 2002 and reported no polio cases for seven years. While in 2010, the Region experienced an outbreak of imported wild poliovirus, it has been interrupted, and the goal of global polio eradication lies within reach by 2012. Four countries remain endemic for poliovirus (Afghanistan, India, Nigeria and Pakistan). So far, the global fight against polio has saved 5 million people from paralysis (WHO 2005).

5. Immunization is cost-effective

Immunization is undoubtedly one of the most cost-effective public health achievements of modern times. It costs very little, but offers huge benefits for the health and well-being of populations.

WHO estimates that, since the beginning of the Global Polio Eradication Initiative (GPEI) in 1988, five million people are walking today who would have otherwise been paralyzed by the poliovirus. Failure to completely eradicate polio would result in at least 10.6 million new cases of polio worldwide in the next 40 years, representing in total the loss of 60 million human life years (including all consequences of the disease).(GPEI, 2009)

Immunization has significant, broader economic impact in addition to savings on cost of treatment. It protects against the long-term effects of a disease on a person's physical and mental well-being and thereby his or her ability to complete education or training and to carry out work. In this way, the protection provided by immunization offers immeasurable individual and societal benefits in terms of earning capacity, productivity and growth.

In other words, immunization prevents death and disability at a fraction of the cost of treatment, to the benefit of both the individual and society as a whole. Effective health policies and related expenditure must be seen as an investment, not a cost. Good health boosts economies while illness drains them.

6. Children depend on health systems to provide safe, effective and inexpensive immunization

Successful immunization interventions over time have resulted in formidable achievements and a significant decline in suffering and death. Still, across the Region, 10.6 million babies are born each year and need to be immunized in order to sustain the success of immunization. For example, while measles vaccine coverage in the Region is high ($\geq 94\%$), the pool of susceptible children accumulates over time and these children must be reached and vaccinated (Figure 6).

Strong and sustainable immunization programmes can ensure that every child receives the “right vaccine in the right place and at the right time” (Project Optimize, 2010). Countries must maintain high quality surveillance and response systems and be able to identify and reach their vulnerable populations. In addition, they must be ready for the challenges of introducing new vaccines.

A well-functioning immunization system is one of the key elements of a strong health system, and prepares a country for future health challenges. In fact, immunization coverage is used as an indicator to assess health system capacity and primary health care access. Investing human, technical, and financial resources in immunization builds up capacity to deliver primary health care services and ensure that no child’s life is jeopardized by a vaccine-preventable disease.

European Immunization Week is an opportunity to use the power of advocacy and targeted communication to raise awareness and increase the success of immunization programmes across the WHO European Region.

A special focus is placed on activities to reach vulnerable and susceptible groups - promoting the core message that immunization of *every* child is vital to prevent diseases and protect life.

Prevent. Protect. Immunize.

7. Every child needs to be vaccinated

Think that you do not have to vaccinate your child because every other child is vaccinated? Think again.

It is believed that community immunity can only occur if about 95 percent of people are vaccinated – and every person who is not vaccinated increases the chance that they and others will come down with the disease in question.

Tetanus, a vaccine-preventable disease, cannot be protected through community immunity as it is not a contagious disease. If your child is not vaccinated against tetanus it does not matter if everyone else is – he or she still will not be protected against it.

The concept of community immunity can lull parents into a false sense of security – which can lead them to skip vaccinations. Not only does that pattern decrease the effectiveness of any community immunity, but each non-immunized child increases the risk that these contagious diseases can spread. After all, it takes just one non-immunized person to get a disease and then spread it to others who are not immunized.