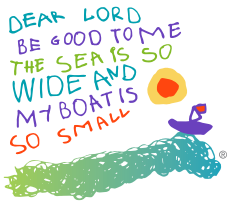

children's defense fund
Leave No Child Behind®

Vaccines, Preventable Diseases and Children's Health:
A CALL TO ACTION

Across the country, headlines like New U.S. measles cases break 25-year-old record are creating fear and worry, especially among parents. How can it be that we are seeing more and more outbreaks of a disease eliminated in the United States nearly two decades ago? The answer involves a web of linked factors: the spread of misinformation and falsehoods by a small but vocal number of vaccine opponents, gaps in vaccination coverage, and a national and global increase in outbreaks of vaccine preventable diseases (VPDs). By early June 2019, the U.S. had already recorded more than 1,000 cases of measles[1]—most of them occurring in children. That is more than the highest annual number of cases for the past 25 years, before measles was declared "eliminated" in this country in 2000.[2] This growing crisis is putting our children at risk and must be stopped.

The facts are simple: Vaccines are safe. They are highly effective. They are supported by every major American medical society and government agency and are a routine part of pediatric care. Yet the growing number of VPD outbreaks suggest more must be done to support immunization and halt the spread of serious—and potentially deadly—diseases.

This brief explains why gaps in vaccinations continue, current vaccine policies, the response to recent measles outbreaks, and steps that must be taken to eliminate VPDs. The bottom line is that to stop the spread of measles and other serious diseases, parents must have access to factual information from trusted sources to combat fraudulent information spread by the anti-vaccination movement in the U.S. and around the world. **To ensure that parents are equipped with the facts, health care providers, educators, children's groups, policymakers and faith leaders must be vocal advocates for vaccinations**, and policies must support vaccination and limit exemptions only to those with legitimate medical reasons. Along with this brief, the Children's Defense Fund has created a family-friendly guide for parents, families, educators and anyone else who wants to understand vaccines, how they work, why they are safe and effective and how they protect our children from preventable illness or even death.

Why are vaccines so important?

Vaccines save lives and protect against long-term health consequences. They are one of the greatest successes in public health and modern medicine. From 1994 to 2016, childhood immunizations prevented an estimated 281 million child illnesses, 855,000 child deaths, and nearly $1.65 trillion in health care costs.[3] Vaccines reduce disability and suffering, contribute to longer life expectancy, and help lower health disparities.[4] Every dollar invested in vaccination yields $3 in direct benefits and $10 in benefits when societal costs are included.[5] They also save money for states and localities, which shoulder the often high cost of tracking and treating those who are infected. For instance, measles costs an average of $32,000 per case.[6]

Communities need "herd immunity" to contain and prevent VPD outbreaks. Herd immunity exists when a sufficient proportion of individuals in a community are protected against a contagious disease, either by vaccines or previous infection.[7] The more infectious a disease, the higher the percentage of people needed to create herd immunity. Herd immunity helps protect those who cannot get vaccinated because they are too young, have weakened immune systems, or are part of the small portion of the population on whom vaccines are ineffective. Because some VPDs, such as whooping cough, pneumonia or flu, are more likely to be spread between younger and older people in families, it is important that vaccination rates remain high across generations. But in some developed countries like the U.S., when a VPD like measles is no longer endemic, people have largely forgotten how bad it can be, leading to what some call the "complacency effect."[8]

Generations United, in partnership with the American Academy of Pediatrics and the Gerontological Society of America, has created a guide to Valuing Vaccinations Across the Generations to increase awareness of the importance of vaccinations through intergenerational conversations among families and children, seniors and others in the U.S. and around the world.[9]

Measles is a good case study in the benefits of vaccines. Before the vaccine was introduced in 1963, measles killed approximately 400-500 American people every year.[10] According to the World Health Organization (WHO), measles has been eliminated in all of the Americas, from Canada to Chile,[11] although both the U.S. and Venezuela are now currently experiencing outbreaks.[12] However, measles remains endemic elsewhere in the world,[13] including Europe, Asia, the Pacific, and Africa. About 10 million people are infected each year and almost 110,000 die.[14]

Measles can result in severe and lifelong health consequences.[15] It is also highly contagious—so much so that an unvaccinated person walking through a room up to two hours after someone with measles has left has about a 90 percent chance of getting sick.[16] The very young face heightened risk: most infants do not get their first measles vaccine until they are about one year old, and the consequences of infection can be particularly severe in babies and young children. Even with the best care, 1 to 3 out of 1,000 people with measles will die.[17] A third of all measles cases in the current U.S. outbreaks occurred in children younger than five, and most were children under age 18 who had not been fully vaccinated.[18]

It is therefore unsurprising that a highly contagious disease that infects millions of people around the globe has resulted in a growing number of outbreaks in susceptible communities in the U.S. The current outbreaks have occurred in 30 states[19] The Centers for Disease Control and Prevention (CDC) has identified the source of this year's outbreak as 126 individuals who acquired measles overseas since early 2018, with the majority of cases in Americans who were infected while traveling.[20] Because of the pattern and direction of recent measles cases, the CDC has warned that the longer these outbreaks continue, the greater the chance measles will regain a foothold in the U.S with deadly consequences.[21]

Despite the availability of a safe and effective vaccine to prevent it, measles continues to be one of the leading causes of death among young children around the world.[22] In 2001, the United Nations (U.N.) declared war on measles in an effort to eradicate it. With help from the U.S. government, non-governmental organizations and private donors, the U.N.'s campaign helped reduce the number of cases worldwide by nearly 80 percent between 2000 and 2016.[23] Despite this progress, measles cases started to rise again two years ago, growing by 30 percent in a single year, even in countries where it had been defeated,[24] resulting in three times as many measles cases around

the world this year as there were in the first three months of 2018.[25] The World Health Organization (WHO) has found the primary reason for this resurgence was poverty. The surge in cases is worrying for many reasons, and the consequences are even worse in poor countries: when malnourished children cannot get care for complications, measles can kill one in 10 affected children.[26] An outbreak of measles in Madagascar earlier this year, for instance, resulted in the death of more than 1,200 children.[27]

In response to the increasing outbreaks around the world, the CDC has issued a Global Measles Outbreak Notice as well as outbreak alerts for multiple countries frequently visited by U.S. tourists.[28] In Europe, for instance, WHO reports three times as many cases this year compared to last year at the same time.[29] WHO has stated that outbreaks are not limited to specific regions of the world, and experts attribute these outbreaks to several causes from limited access to the vaccine in poor countries to unvaccinated communities in wealthier countries.[30]

What are the requirements for vaccinations in the U.S.? Are there exemptions?

Today, all 50 states and the District of Columbia have laws requiring school-age children and those in child care facilities to be vaccinated; however state rules vary widely in allowable exemptions and enforcement. All states allow medical exemptions for children who are too sick to receive vaccines, have weakened immune systems or are allergic to vaccine ingredients. Most states also allow exemptions based on religious beliefs, and some allow exemptions based on personal or philosophical beliefs.

Vaccine exemptions were established by states in an effort to try to strike a balance between religious freedom, personal choice, and public health. There is a direct correlation between exemption rates and vaccination rates for the MMR vaccine, so access may be less of a factor influencing vaccination rates than other issues.[31]

Medical exemptions: Although exemptions vary state to state, all states and the District of Columbia allow children with serious medical conditions to receive medical exemptions from state-mandated vaccines. This could be an exemption from a single dose of a vaccine, one or more specific vaccine series, or all vaccines. The CDC has a list of contraindications and precautions for vaccines that should guide decisions about when medical exemptions are appropriate.[32] However, many of the medical exemptions issued today go way beyond these recommendations to exclude children for conditions that should not be disqualifying or are improperly granted to healthy children by complicit physicians. Federal guidelines say less than one percent of children should avoid vaccinations if they have a severe allergic reaction or impaired immunity such as from a liver problem, the HIV virus or chemotherapy.[33]

Religious exemptions: As of June 2019, forty five states and the District of Columbia allow religious exemptions to mandatory school vaccines, under which parents may exempt their children from vaccination if it contradicts their sincere religious beliefs. This year, both Maine and New York states eliminated religious exemptions for vaccines, joining Mississippi, West Virginia, and California.

Philosophical/personal belief exemptions: As of June 2019, sixteen states allow for exemptions from vaccines based on philosophical or personal beliefs, which allows parents to exempt their children from the school vaccine requirement if it contradicts parental beliefs beyond those considered religious or spiritual.[34] Earlier this year, Washington became the first state since 2015 to tighten exemptions by eliminating the philosophical exemption for the MMR vaccine only, followed by Maine, which eliminated the philosophical exemption entirely.

The Children's Defense Fund, along with all major medical associations and health organizations, supports vaccine exemptions only for legitimate medical reasons, and for years has urged state lawmakers to eliminate religious and personal exemptions.
This year, Maine and New York joined Mississippi, West Virginia and California as states allowing only medical exemptions to mandatory vaccines for school. Mississippi, West Virginia and California have both the highest uptake for the combined measles-mumps-rubella (MMR) vaccine and the lowest incidence of VPDs. In contrast, states allowing both religious and philosophical exemptions are associated with a decrease in MMR vaccine rates and an increase in both total exemptions and non-medical exemptions.[35] Where vaccine exemptions are easier to obtain, the rates of exemptions tend to be higher.[36] This suggests that nearly all states could achieve higher vaccination rates with administrative measures to ensure all non-exempt children receive vaccines. Most under-vaccinated or unvaccinated kindergarteners do *not* have exemptions.[37]

More than half the measles cases in the U.S. since 2000 had no history of measles vaccination, and among people infected with measles who were eligible for the vaccine, more than 70 percent had a non-medical exemption from mandatory state vaccination.[38]

Who is unvaccinated in the U.S.?

Fewer than three quarters of young children were fully vaccinated by the CDC's guidelines in 2015, and less than one percent of children have had no vaccines of any kind.[39] However, the number of parents refusing at least one vaccine for their child continues to grow: in one study, pediatricians estimated that the rate of vaccine refusal doubled from 2006 to 2013,[40] and between 2009 and 2013, the use of non-medical exemptions for kindergarten increased by 19 percent nationwide.[41] According to the CDC, during the 2017-2018 school year about 2.2 percent of kindergarteners had obtained an exemption from state vaccination requirements, marking an increase for the third consecutive school year.[42]

Many parents who refuse one or more vaccines may not be outright vaccine deniers, but "vaccine hesitant" or "vaccine skeptical" parents. These parents may ignore the vaccine schedule set by the Advisory Committee for Immunization Practices (ACIP) at the CDC and create their own vaccine schedules, choosing which to give and when, and which to skip. Meanwhile, vaccine deniers' children may be entirely unvaccinated. In Texas alone, where the anti-vaccination movement is strong, there are 60,000 wholly unvaccinated children.[43]

While the use of philosophical exemptions and under-immunization in general both tend to cluster geographically, parents whose children are under-vaccinated and unvaccinated are a hugely diverse group geographically and politically, and the reasons for their behavior can vary widely. As a result, effective responses to encourage vaccination may differ by community. Under-vaccinated children are more likely to be in families with lower incomes and lower levels of parental education. In contrast, children who are completely unvaccinated are clustered at the higher end of the socioeconomic spectrum and are more likely to be White, have higher family incomes, attend private and alternative schools, and have parents who indicate that doctors have little influence over vaccination decisions for their children.[44]

Are vaccines accessible?

Vaccines are widely available, but access challenges remain. Vaccines recommended by ACIP are covered by all health insurance due to their importance and cost effectiveness. In 1993, the Children's Defense Fund helped establish the Vaccines for Children program to allow eligible children to get recommended vaccines free of charge as part of routine primary care from federally qualified health centers or rural health clinics. A strong federal health care safety net has been critical to achieving high vaccine coverage rates and reducing disparities in access to vaccines across the country.

However, research suggests poor children and uninsured children still face barriers to vaccination despite the availability of free or low-cost vaccines. Uninsured children have vaccination rates 15 to 30 percent lower than those who are insured,[45] and children living below the federal poverty level have lower immunization rates for nearly all vaccines than higher income children, sometimes substantially lower. Families with children living in deep poverty may be disconnected from health services, lack information about vaccines, not understand the complicated vaccination schedule, or know where to get vaccines. They may also experience barriers such as inconvenient clinic hours or locations and long wait times. However, information campaigns and supportive services can help overcome these barriers.[46] Widespread geographic variation in vaccination rates also exists, with lower vaccination rates for children in sparsely populated rural areas than urban.[47]

Why do some people question the safety and efficacy of vaccines?

The benefits of vaccines far outweigh any risks and effects they may have; each vaccine has been carefully evaluated by ACIP, which has determined these vaccinations to be safe and effective. Despite all the solid evidence of vaccines' safety, a small but vocal group of people refuse to believe the data, instead embracing a fraudulent study of 12 people from 1998 that purported to show a link between autism and a preservative used in vaccines. This study has since been retracted by its publisher, and its author stripped of his medical license. Nevertheless, his debunked work continues to fuel anti-vaccine views in the U.S. and around the globe. Extensive analysis and evidence-backed research show vaccines do not result in disease or other conditions, such as autism. The most recent evidence published earlier this year, a study of 657,461 children born over the course of a decade, shows unequivocally that there is no link between vaccines and autism.[48] However, the damage remains: people now in their early 20s who were infants when the spurious autism link was published are part of what is known as the "Wakefield generation"—a large number of unvaccinated young adults, some of whom may not even know they were never vaccinated. Some members of this generation are now in college, a prime breeding ground for contagious diseases,[49] so policies to target vaccination in this age group should be considered.

> **"We cannot state strongly enough – the overwhelming scientific evidence shows that vaccines are among the most effective and safest interventions to both prevent individual illness and protect public health."**
>
> – Peter Marks, Food and Drug Administration's Director of the Center for Biologics Evaluation and Research, April 22, 2019

If the science is clear, why aren't all children fully vaccinated?

Despite conclusive evidence that vaccinations are safe and protect against dangerous diseases, small groups of people in the U.S. and around the world choose to forgo some or all vaccines for themselves and their children, putting their children, families and communities at risk.

This trend towards vaccine hesitancy and refusal has grown globally in recent years as misinformation about the safety of vaccines and the severity of VPDs shared by members of the anti-vaccination or "anti-vax" movement on the internet and social media have sown seeds of doubt in parents around the globe. These platforms allow a small group of people who hold extreme beliefs to appear more mainstream or even in the majority. Moreover, the highly emotional, anecdotal content they share is very effective in such social networks, often more so than unsentimental scientific facts.[50] There are now hundreds of anti-vaccine websites, each amplified by social media, causing some to call the spread of extreme views a "cultural epidemic."[51] To combat this, Australia's government has invested the equivalent of $8.5 million in a "Get the Facts" initiative to fund national television ads and personal stories from families who have lost loved ones to VPDs.[52] The U.S. has not launched a coordinated public campaign to fight the movement thus far.

The CDC and others have conducted research to better understand the different reasons parents remain vaccine hesitant or refuse vaccines outright for themselves and their children. The most common are concerns and uncertainty about the safety of vaccines. Some still accept the mistaken and disproven belief that the composition of vaccines is linked to autism or other learning difficulties. Some question the necessity of immunizations, believing that the discomfort of the shot outweighs the benefit, or that too many shots in one visit could overwhelm young immune systems. Others mistakenly believe VPDs are not serious, or are easily treatable, or that their children's immune systems will be stronger if they experience a VPD. Some mistrust the government, scientific community or pharmaceutical industry. Others see mandating vaccinations as a violation of their personal liberty. Some claim their religion prohibits vaccination, although no major religious group advocates against vaccinations on the basis of official doctrine. In fact, vaccination is endorsed by top Jewish and Islamic scholars, and by the Vatican.[53]

> **"Since it is proven that vaccines are effective to prevent the spread of disease, it is an obligation upon every father to vaccinate his children."**
>
> – Rabbi Moshe Sternbuch, vice president of the Rabbinical Court in Jerusalem.

Leaders of the anti-vaccine movement use increasingly sophisticated tactics to broaden their influence. About a dozen political action groups seek weakened state vaccine laws, and parents with anti-vaccination beliefs are learning to leverage their strength in the public arena and appeal to different local political climates.[54] They engage in frontal attacks against politicians who propose to tighten vaccine laws,[55] pediatricians who promote vaccines and parents who have lost children to VPDs. They harass providers by spamming provider websites or posting false low ratings for them on Yelp and Google and try to intimidate pediatricians into not speaking out on vaccines.[56] At the same time, some parents who have lost a child to a VPD refrain from speaking about their loss due to fear of backlash from the anti-vaccine community. The cumulative effect of the controversy and confusion generated by the anti-vaccination movement can make it difficult for parents to understand the facts and to make well-informed decisions for their children.

How are states responding to the current VPD crisis?

In 2019, the growing number of VPD outbreaks prompted state lawmakers in at least eight states to consider eliminating philosophical and religious exemptions,[57] as outbreaks have generally occurred in places that permit them. In May 2019, Washington state eliminated philosophical exemptions for the

MMR vaccine, marking the first time in four years a state has removed personal exemptions (Vermont and California did so in 2015). Subsequently, Maine eliminated both religious and philosophical exemptions, and New York eliminated its religious exemption, leaving only medical exemptions in both states. Other states have tightened requirements but have not acted to remove exemptions.[58] Some states are considering expanding who may give consent for vaccines. In New York, the epicenter of the current measles outbreak, legislation was proposed to allow minors aged 14 and up to consent to vaccination without parental approval.[59] Currently, states generally require minors to have parental consent for most health care decisions, including vaccinations.[60]

At the same time, however, anti-vaccination activists are ramping up legislative activity across the U.S.[61] In 2017, just over half of the vaccine bills introduced in state houses were anti-vaccination bills proposing to make exemptions easier to obtain,[62] and the number of states where such bills have been introduced is growing.[63] No bills loosening exemptions and other new requirements proposed by the anti-vaccine movement have passed since 2003.

The recent measles outbreak has also prompted a positive public health response in some states and localities. There is a strong public health case and legal precedent for keeping unvaccinated children out of school when needed to protect individuals and communities from very contagious diseases, regardless of any exemptions they may have. During a chickenpox outbreak in Kentucky earlier this year, health officials first banned unvaccinated students from participating in extracurricular activities, then banished them from school grounds altogether.[64] Similarly, in New York, home to the majority of the nation's measles cases in the recent outbreak, localities,[65] localities have taken emergency steps to stem the tide, such as barring exposed unvaccinated individuals from public places, ordering mandatory vaccinations and levying fines for those who refuse.[66] There is strong public support for such strong steps: a recent poll found that more than three out of four Americans believe children should be vaccinated against measles even if their parents object.[67]

What actions can be taken to increase vaccination rates for children now?

To achieve, maintain or exceed vaccination levels that will create herd immunity, parents must have confidence in the safety and efficacy of vaccines, exemptions must be restricted, and exemptions in place must be monitored. Our nation's policymakers, public health leaders, health care providers, health care advocates, religious leaders and parents must continue to speak out and take action to protect our children from preventable—and potentially deadly-diseases.

Take federal action

The federal government can take steps to improve vaccination rates both domestically and abroad. National leaders must explain clearly that vaccines are safe and effective, and hesitancy or refusal to vaccinate is a growing public health crisis that threatens all children.

Congress should:

- Increase federal funding to make the recommendations in the U.S. National Vaccine Plan a reality,[68] including supporting communications to enhance informed vaccine decision-making. This could help health care providers, public health officials and parents learn how to talk about vaccines and the diseases they prevent in ways that vaccine-hesitant individuals find more acceptable, recognizing that adults' views on vaccines can develop even before their babies are born.[69]
- Pass legislation to make it easier for eligible children to stay continuously enrolled in Medicaid and the Children's Health Insurance Program without gaps in coverage that affect families' ability to access health care for their children. Improving access, affordability, and continuity of health coverage for all family members could help ensure family members across the age spectrum receive timely vaccinations.
- Direct the Centers for Medicare and Medicaid Services (CMS) to identify potential barriers to vaccination and issue guidance to states as appropriate to help address them, particularly those that could help reduce disparities in vaccination rates across communities including rural and underserved areas, and among racial and ethnic minority populations.

With adequate funding, federal agencies can continue to monitor vaccinations rates, research how to effectively communicate accurate vaccine information and encourage consistent requirements for vaccinations in child care programs and schools. Additionally, they must partner with states, research entities, private companies, social media and e-commerce platforms to reduce the spread of misinformation and increase vaccination rates in the U.S. and around the globe.

Finally, if states are not willing or able to take action to raise vaccination rates to curtail VPD outbreaks, Congress might consider whether the threat of re-emerging VPDs merits federal action to tighten restrictions around how much flexibility states can give families that want to skip or avoid vaccination.

Promote state action

As the primary source of vaccine mandate laws and implementation, it is critically important for states to take action to improve vaccination rates. First and foremost, states can and should take steps to restrict exemptions to vaccination requirements by eliminating religious and personal exemptions for public and private schools and child care enrollment, and by providing strong guardrails for medical exemptions. Given that only a very small percentage of parents who opt out of vaccinating their children do so for religious reasons,[70] eliminating both religious *and* philosophical exemptions is essential to reduce the number of children who are unvaccinated.

States can also take action steps to help encourage vaccinations. For instance, states can:

- Require annual renewal of exemptions and limit the personnel authorized to sign them to ensure exemptions granted are appropriate.
- Create a more uniform standard for determining whether a child's health status makes them medically ineligible for vaccines.[71]
- Mandate parents requesting exemptions undergo physician counseling to ensure they understand the benefits of vaccines and the risks of VPDs and require documentation of parental exemption requests.
- Track vaccine rates and exemptions by school and community closely and make this information publicly available so parents, school districts, and counties can identify where interventions are needed and take action accordingly.
- Impose penalties on schools that do not take timely action for students who remain unvaccinated. State Immunization Information Systems, which exist in all 50 states and the District of Columbia, can be useful in helping families in challenging living situations who lack vaccine documentation for their school-age children.[72]
- Ensure strong state public health laws exist allowing health officials to take action to prevent the introduction or spread of infectious diseases as necessary when VPD outbreaks occur.
- Ensure access to vaccination services, particularly in rural areas and areas of concentrated poverty by:
    - Encouraging communities to promote proximity and transportation to vaccine providers, improve convenience of clinic hours and co-locate vaccination sites with other service sites;[73] and
    - Improving outreach, enrollment and retention for eligible children in Medicaid and CHIP to reduce breaks in coverage that affect families' ability to access health care.

In contrast, denying low-income families access to public assistance if their under school-age children have not been immunized, as 25 states did as of 2017, is ineffective and should be avoided.[74] These penalties alone do not affect vaccination rates but rather constitute a poverty tax that will likely drive families deeper into poverty and create additional barriers to getting children immunized. [75]

Case Study: California

In 2014, large measles outbreak swept through Disneyland California, prompting state legislators to re-examine and change state immunization laws, eliminating both philosophical and religious exemptions to vaccines, leaving only medical exemptions. At that time, more than two thirds of California children lived in counties where measles vaccination rates were below 95 percent, which is required for herd immunity to measles, and more than a third lived in counties with vaccination rates below 90 percent,[76] and the number of vaccine exemptions among California students was growing. Within two years of the policy change, many schools with the lowest vaccination rates showed an increase of 20 to 30 percentage points in the share of kindergartners vaccinated. In fact, by 2016, 97 percent of California children lived in counties with a kindergarten vaccination rate above 95 percent, and 99.5 percent lived in places where the rate exceeded 90 percent.[77] This is a clear indicator that changing the law actually changed behavior.

The California law, SB 277, mandated that all children who enter public or private schools for the first time (or transfer) present a written immunization record with the month and year of each dose of required vaccines unless they present a medical exemption. The policy applied to students, including those in child care centers or nurseries with the exception of those drop-in child care or home-based private schools; homeless children and children in foster care. It did not apply to home schooled students. Grade span "checkpoints" for proof of vaccination were established: birth to preschool, kindergarten through 6th grade, and 7th through 12th grades. California makes vaccination rates publicly available by school so parents and administrators are informed and can act accordingly.

While the legislation resulted in an increase in immunization rates state-wide, the rate of kindergartners with permanent medical exemptions quadrupled after it was enacted, and more than 100 schools continue to have medical exemption rates above 10 percent.[78] Some providers issued exemptions for conditions not contraindicated for vaccines, such as family history of asthma.[79] In some places, a small number of providers improperly signed a large number of medical exemptions,[80] often charging steep fees for their visits, at times without even examining the child directly.[81] Additionally, many of the schools that had the highest rates of unvaccinated students before the law took effect continue to do so.[82]

These concerns led California State Senator Richard Pan, the author of SB 277 and a pediatrician, to introduce SB 276 in 2019 to strengthen oversight of the medical exemption process. Physicians signing medical exemptions would have to provide the California Department of Public Health the reason for the exemption, their name and license number, and certify they have examined the patient. Health officials would have the authority to revoke exemptions at schools with immunization rates of less than 95 percent or for doctors who grant five or more medical exemptions in a year. Medical exemptions must "fall under the standard of care" and parents and providers would have to agree to turn over medical records for review. This common sense step supported by the Children's Defense Fund should go a long way to helping reduce or eliminate clusters of unvaccinated children in schools and communities.

In addition to limiting exemptions to just those issued for legitimate medical reasons, California has also taken steps to try to raise immunization rates through administrative action. The "Conditional Entrant Intervention Project" initiated in 2015 helped local health departments identify schools granting high rates of entry to unvaccinated or under-vaccinated students on the condition that they get the missing vaccines, working with them to bring down those rates by having the status of conditional entrants reviewed every 30 days.[83] This resulted in a 23 percent decline in conditional vaccine entry to school.

In addition, to address the problem of young adults who were never vaccinated as children, the University of California (U.C.) system approved a regulation in 2015 requiring that students be fully vaccinated before enrolling in any U.C. campus by 2017 (with exceptions allowed only for medical or religious reasons).[84] By increasing immunity among potentially unvaccinated young adults, this step will undoubtedly reduce the extent of exposure, such as occurred recently in Los Angeles when more than 1,000 people interacting with two U.C. campuses were quarantined after exposure to measles, although many were quickly cleared as their vaccination status had already been provided.[85]

Lessons learned in California:

- ✔ Making vaccines more convenient to obtain reduces exemptions.
- ✔ Ensuring adequate access to vaccines and enforcing mandatory vaccines for schools and child care facilities is critically important to achieving high vaccination rates.
- ✔ Eliminating personal and religious exemptions to mandatory vaccines is necessary but not sufficient.
- ✔ Medical exemptions must be monitored and limited when necessary to ensure they are being granted appropriately.
- ✔ Monitoring of exemptions and vaccination rates at the school and county level can help identify areas with low levels of immunity.
- ✔ Understanding the causes of low vaccination rates within schools and counties at highest risk can help inform targeted responses appropriate to those communities.
- ✔ Continual monitoring of vaccination and exemption rates can and should guide policy makers to adjust state law when indicated.
- ✔ Strong vaccine policies in other venues such as universities are an effective way to achieve and maintain herd immunity among other at-risk age groups.

Engage Pediatricians and Other Health Care Providers

Pediatricians are traditionally the most trusted sources of health information for parents. The American Academy of Pediatrics (AAP) has developed recommendations for providers on how to communicate effectively with parents about vaccines. These include: providing information first and making sure the parent understands it; reaffirming correct beliefs and—importantly—addressing any misconceptions about vaccines and VPDs; discussing the benefits of vaccines and the possibility of adverse events; stressing the number of lives saved by vaccines (rather than the deaths from not immunizing); discussing state laws for school entry and the rationale behind them and explaining the importance of herd immunity. It is also critically important for pediatricians and other health providers to adopt "presumptive communication" with parents in which vaccinating children is the expectation and is not framed as an option.

Change Social Media Behavior

Because so many people are turning to social media as a source of information and the anti-vaccination movement is becoming increasingly savvy in using it, these platforms should be charged with stopping the spread of misinformation, falsehoods and distortions of facts that pose a risk to public health. Without any guidance from lawmakers to date, each social media provider is addressing the problems differently—some removing search results and others treating medically inaccurate content as a violation of their terms of use. More consistent attention is needed in this area.

In response to the current measles public health crisis, some social media companies have begun to police themselves to try to limit the misinformation about vaccines and availability of publicity and cash to anti-vax users.[86] As of July 2019:

- Twitter has launched a new tool that directs searches for vaccine-related tweets to the United States Department of Health and Human Services vaccine information page.[87]
- YouTube has pledged to stop anti-vaccine videos from running online advertisements, effectively demonetizing them. They are also taking steps to modify suggested videos to include authoritative sources.[87]
- Instagram is blocking hashtags connected to verifiable false vaccine misinformation and showing a limited number of posts associated with hashtags that promote a lower percentage of health-related misinformation. They are also developing a "pop-up" that would appear on content containing vaccine-related misinformation.[89]
- Facebook has said it has taken steps to reduce the distribution of health-related misinformation and advertisements, and it is considering additional changes such as reducing or removing this type of content from recommendations and demoting it in search results.[90]
- While almost all of Amazon's best-selling vaccine books are by anti-vaccine authors, they have pulled some touting false information about autism "cures" and vaccines as well as anti-vaccine documentaries.[91]
- Pinterest is now attempting to block "polluted" search terms, memes and pins.[92]
- GoFundMe has banned campaigns from anti-vax user.[93]

Promote Parent Engagement

Research has shown parents are trusted, non-threatening and influential members of the community,[94] and can therefore be effective messengers to vaccine-hesitant parents in a way that changes behavior through in-person dialogue in community spaces where people are comfortable, such as libraries, mothers' groups and birthing classes.[95] Parents should ask their state agencies to gather and publish vaccination rates by county and school so they can take local action where merited. They can join or start groups such as Voices for Vaccines (VFV), an organization driven by parents and supported by scientists, doctors and public health officials. VFV aims to provide parents and prospective parents with "clear, science-based information about vaccines and vaccine-preventable disease, as well as an opportunity to join the national discussion about the importance of on-time vaccination."[96] Additionally, before becoming parents themselves, young people should make sure they know their own vaccination status and ensure they are fully vaccinated.

Engage Faith Leaders

Leaders of Christianity, Judaism and Islam and all other major religions support vaccinations.[97] The Pew Research Center reports that large majorities from all major religious groups also say healthy children should be required to receive vaccinations to attend school. Religious leaders can and should be powerful advocates for vaccination in their communities. For instance, they can speak out publicly to refute any religious reasons cited in opposition to vaccines to ensure their communities do not believe refusing vaccines is supported by religion and faith leaders.

We Can and Must Take Action to Eliminate PDs

> *"Our failure to protect children against preventable disease is a disgrace not only because of the needless suffering it creates, but because of its shortsightedness. Every dollar we invest in immunizing a child saves at least $10 in later health care costs by preventing disease. Failing to invest in childhood immunizations worsens both our nation's social and fiscal deficits. In order to lay the groundwork for a solid economic future, we must make investments in proven, cost-effective programs like immunizations. It is these cost-effective, preventive health measures that must be the foundation of reforming our health care system."*

Although it took place 26 years ago, Children's Defense Fund founder Marian Wright Edelman's 1993 testimony before the Senate Labor and Human Resources Committee and the House Subcommittee on Health and Environment of the Committee on Energy and Commerce is every bit as relevant today.

Over the last four decades, the Children's Defense Fund is proud to have worked alongside many others to champion policies and programs that work to ensure every child in America gets vaccinated against preventable diseases. There has been tremendous progress in improving the accessibility of vaccines and increasing vaccination rates across the country, but the growing strength of the anti-vaccination movement and related resurgence of vaccine preventable disease including measles in susceptible communities means we are in danger of moving backward, not forward. The science is clear: vaccines work. Vaccine preventable diseases are dangerous and can be deadly. Clusters of unvaccinated children put entire communities at increased risk and quick action must be taken on multiple fronts to achieve and maintain sufficiently high levels of vaccination to slow, halt or eliminate disease outbreaks in the U.S. and abroad. Our children's lives depend on it.

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