

*Updated
Edition*

Vaccine-Preventable Disease

The Forgotten Story

By Rachel M. Cunningham, M.P.H. and Julie A. Boom, M.D.

Texas Children's Hospital

*Updated
Edition*

Vaccine-Preventable Disease

The Forgotten Story

By Rachel M. Cunningham, M.P.H. and Julie A. Boom, M.D.

Vaccine-Preventable Disease: The Forgotten Story

Copyright © 2024. Texas Children's Hospital. All Rights Reserved.

Designed by Kesha Tran

Edited by Laura Garrett

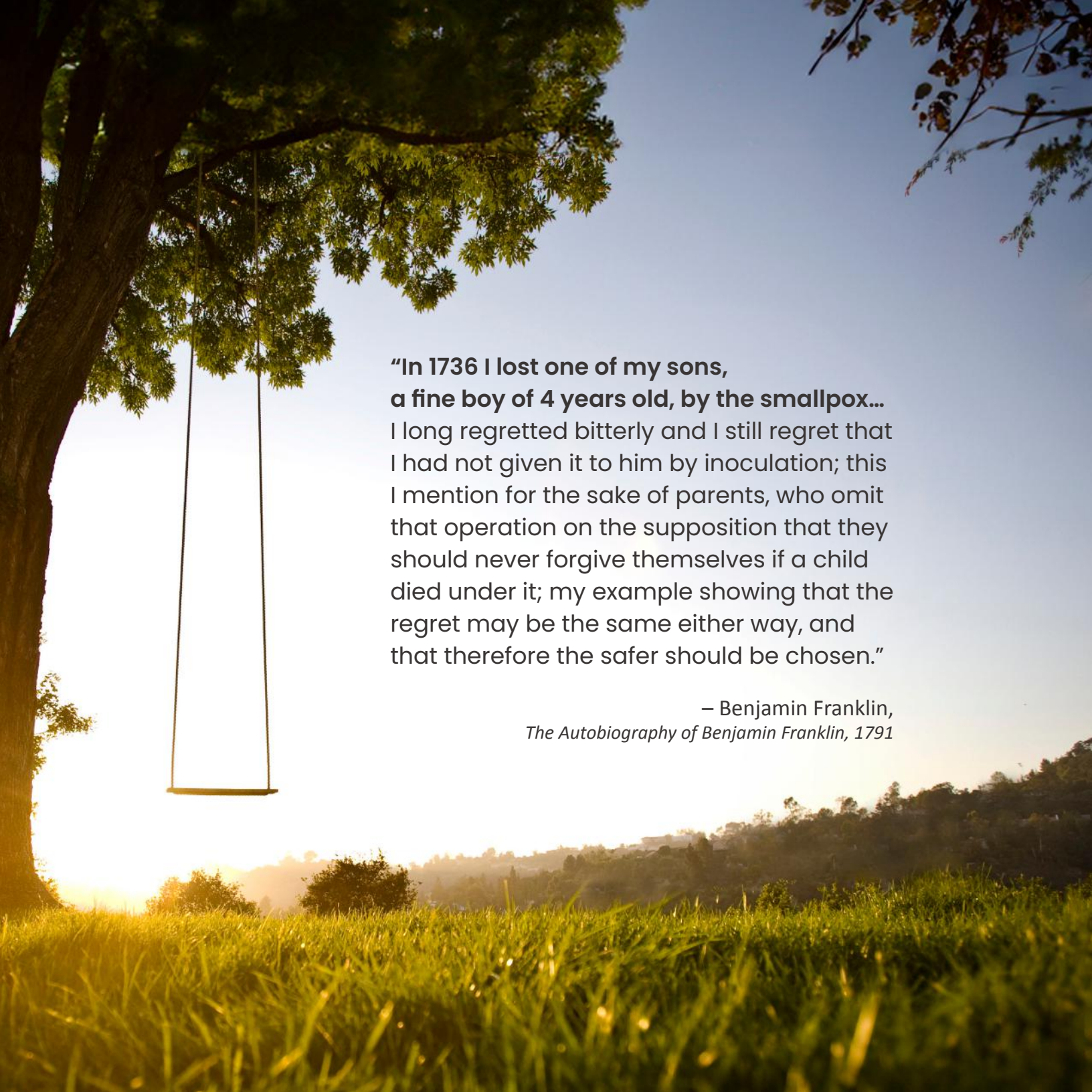
Printed by DiscPro Printing & Graphics

Special Edition

Materials sold by the Immunization Project at Texas Children's Hospital are copyrighted and protected by various intellectual property laws. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission from the publisher. Printing or reproducing copyright-protected materials or content, whether the reproductions are sold or furnished free for use, is strictly prohibited. With each purchase, you receive a single, non-transferable, non-assignable license for the use of the purchased material. The material is not to be re-sold at any time without prior written permission.

Contents

5	Foreword
	<i>Profiles:</i>
7	Jacob Boyar
11	Mallory Martinez
13	Julieanna Metcalf
15	Brian Scott Jr.
17	Jenny and Andrew Wise
19	Haleigh Throgmorton
21	Blaine Hashmi
23	Fatmata Conteh
25	Meghan Watt
27	Emily Lastinger
29	Breanne Palmer
33	Nikolai Ingles
37	Mobius Loop
39	Michael Moore
41	Melissa Papa
43	Jim Pyle
47	Callie diFrancesco
49	Linda Ryan
51	Abby Wold
53	Nico Williams
55	Britanny Wochese
57	Lydia Castro
59	Vanessa Alfermann
60	Epilogue
62	Acknowledgments
63	References

A large, leafy tree on the left side of the frame has a simple wooden swing hanging from its branches. The swing is empty and hangs straight down. The background is a clear sky with a warm, golden glow from the setting or rising sun, which is visible as a bright area on the horizon. In the foreground, there is a field of tall, green grass. In the distance, a line of trees and some buildings are visible on a hillside.

**"In 1736 I lost one of my sons,
a fine boy of 4 years old, by the smallpox...**
I long regretted bitterly and I still regret that
I had not given it to him by inoculation; this
I mention for the sake of parents, who omit
that operation on the supposition that they
should never forgive themselves if a child
died under it; my example showing that the
regret may be the same either way, and
that therefore the safer should be chosen."

– Benjamin Franklin,
The Autobiography of Benjamin Franklin, 1791

Foreword

Since the beginning of time, disease has shaped the world and altered history. Infectious diseases such as polio and smallpox blazed through populations, leaving a wake of devastation and forever changing the legacies of entire cultures. Most recently, the COVID-19 pandemic profoundly impacted our lives with more than 1 million lives lost in the U.S. alone.

Undoubtedly, vaccines to prevent infectious diseases are among medicine's most significant achievements. Because of vaccines, many dangerous illnesses have been either eliminated or drastically reduced, saving lives and sparing families. We witnessed the remarkable global effort to develop COVID-19 vaccines and the hope vaccines represented in bringing about an end to the pandemic. And yet, on the heels of the COVID-19 pandemic, vaccination rates are declining in many parts of the world, in large part due to parental vaccine hesitancy. Recent resurgences of pertussis (whooping cough) and measles are evidence of the harmful consequences of this decline. And in today's society, as people easily travel from place to place, the potential to spread these diseases travels with them. The immeasurable importance of vaccines has never been clearer, but vaccine hesitancy persists. Well-intentioned parents who want to make informed decisions about their child's care are reluctant to give them the life-saving protection vaccines afford.

This book shares the stories of persons who contracted a vaccine-preventable disease and their families who were deeply impacted by their illness. Each profile in this book puts a face on the statistics and shows the true cost in human suffering of not vaccinating. Each person believed this would never happen to someone in their family. All would, in a heartbeat, grab the chance to rewrite history by immunizing themselves or their loved ones against disease. Their unwavering courage to share their stories and give meaning to the loss they've suffered is the inspiration for our work. As parents and vaccine advocates, we want to move towards a healthier future, not just for our children, but for all children across the U.S. and around the globe. The stories contained herein are cautionary tales with one simple truth uniting them – vaccines save lives.



Jacob Boyar

Respiratory syncytial virus (RSV)

As Ashley and Samuel Boyar prepared for the arrival of their second child, they wanted to protect their newborn son, Jacob, from RSV. They hoped either Ashley could receive the maternal vaccine or Jacob would receive the preventive antibody shot when he was born. Sadly, RSV preventive shots became available too late to protect their son.

When Jacob was six days old, he developed congestion and then tested positive for RSV at his pediatrician's office. After a few days of mild congestion, Samuel found Jacob barely breathing and alarmingly pale after a morning nap. He called 911; the paramedics rushed Jacob to Texas Children's Hospital. He was admitted to the pediatric intensive care unit (ICU) where he was diagnosed with pneumonia, a common yet serious complication of RSV. He was hospitalized for eighteen days, ten of which he spent in the ICU. A breathing tube was inserted, and he required a ventilator – a mechanical device for breathing – for seven days, followed by three days of an assistive breathing device before he could breathe on his own again. During this time, Jacob was placed on a feeding tube, a medical device used to provide nutrition, as he was unable to eat on



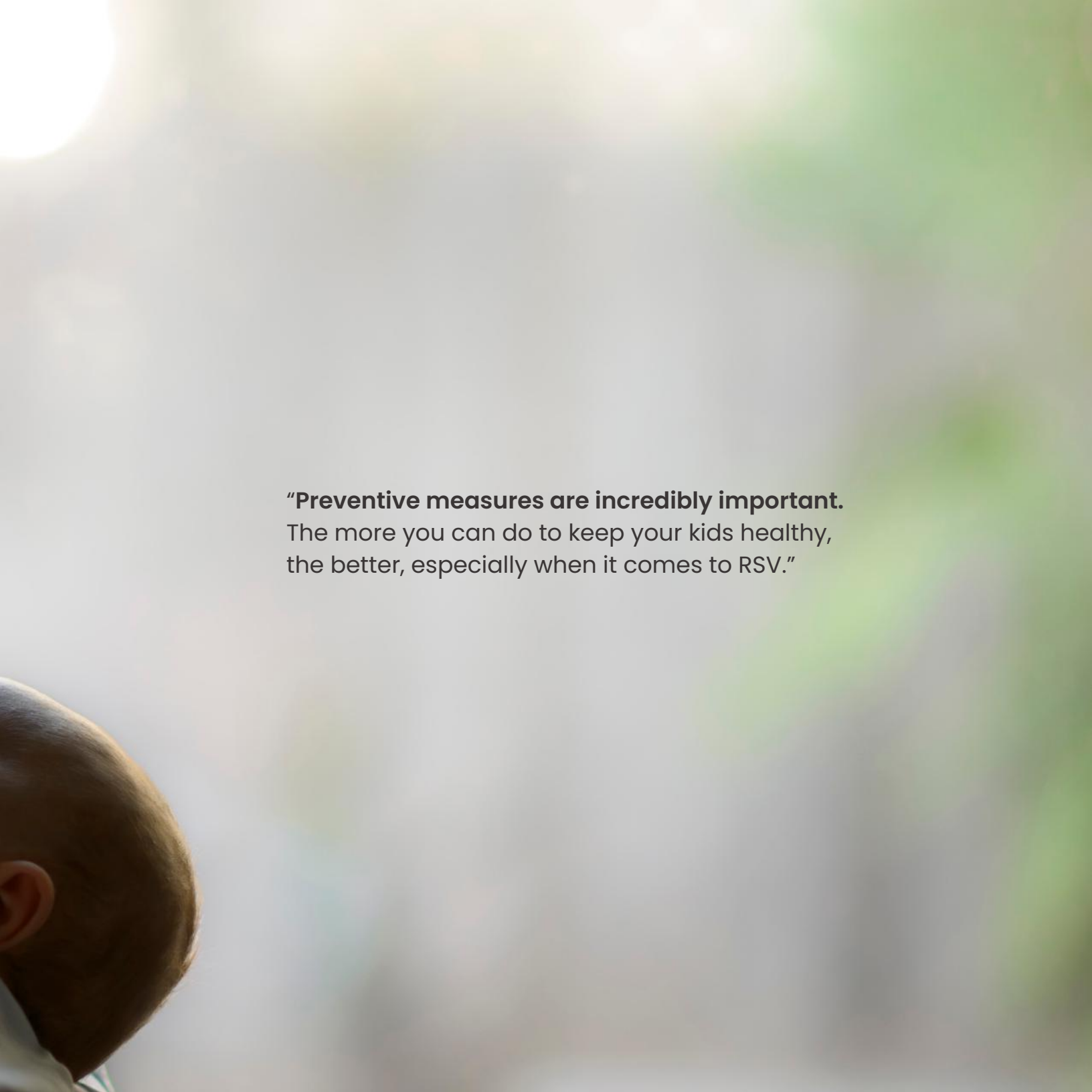
his own. "The experience is even more awful than it sounds," says Ashley. "He was hooked up to all these machines and had a tube down his throat. He then had to relearn how to take a bottle, which took eight days." The Boyars spent eighteen days apart from their family, including their 20-month-old daughter, Ellie. Ashley and Samuel are very

aware of how fortunate they are. "If we hadn't walked into his room when we did, Jacob would probably be dead," says Ashley. "That haunts us both."

An RSV preventive shot, a monoclonal antibody, is recommended for infants and some young children at highest risk of severe RSV. Pregnant women can also be vaccinated against RSV during weeks 32 through 36 weeks of pregnancy, providing protection to their infants after birth. Both are recommended before and during RSV season, which typically occurs from fall to the end of spring. "Preventive measures are incredibly important. The more you can do to keep your kids healthy, the better, especially when it comes to RSV," says Samuel. "Trust the science. Vaccines are safe and vaccinating your child is the best way to keep them, and those around you, safe and healthy," adds Ashley.

In the U.S., almost all infants and toddlers contract RSV within the first two years of life. An estimated 20-30% of infants with RSV infection will develop bronchiolitis or pneumonia which can be severe.



The background is a soft, out-of-focus scene. In the top left corner, there is a bright, circular light source, possibly the sun, creating a lens flare effect. The rest of the background is a mix of muted greens and greys, suggesting an outdoor setting with foliage. In the bottom left corner, the back of a person's head and their ear are visible, looking towards the right side of the frame.

"Preventive measures are incredibly important.
The more you can do to keep your kids healthy,
the better, especially when it comes to RSV."



Mallory Martinez

Respiratory syncytial virus (RSV)

Dan, Marissa, 2-year-old Daniel, and 5-month-old Mallory Martinez traveled from their home in Houston to northeast Texas for a weekend getaway when Marissa noticed Mallory developed congestion and a runny nose. Later that day, Mallory's breathing became labored so Marissa took her to a neighborhood emergency room where she tested positive for RSV and required oxygen. Marissa and Dan knew about RSV, but never imagined it could lead to serious complications for their infant daughter. "Our son had RSV when he was little and we managed his care at home, so I naively thought Mallory's experience would be similar. I thought she'd be better in a few days," Marissa shares.

Following the emergency room physician's advice, the family went to the local hospital, where Mallory was admitted. It soon became clear her health was deteriorating and the next day, she was flown to Texas Children's Hospital in Houston, Texas. She was admitted to the pediatric intensive care unit (ICU) and diagnosed with pneumonia, a common and potentially life-threatening complication of RSV. A breathing tube was inserted and she was placed on a ventilator, a mechanical device to help her breathe. She also required a feeding tube for nutrition, as she could no longer eat on her own. In total, Mallory

spent eleven days in the hospital.

As Dan and Marissa reflect on their family's experience, they are very aware of the risks of RSV and how differently things could have ended for them. "Our son was fine after getting RSV, but Mallory wasn't. All babies are at risk of complications from RSV and it's really the luck of

the draw if your child is the one who suffers or dies from it," says Dan. Marissa adds, "It's incredibly painful as a parent to watch your child suffer. When Mallory was in the hospital, all we could do was hope and pray."

Marissa and Dan were unaware that a RSV preventive shot, a monoclonal antibody, is recommended for infants Mallory's age as well as some young children at highest risk of severe RSV. Pregnant women can be vaccinated against RSV during weeks 32 through 36 of pregnancy thus protecting their infants after birth. Both are recommended before and during RSV season, which typically occurs from fall to the end of spring. "Vaccines and preventive therapies are undeniably effective at preventing disease. They give your child the best chance of not having serious illness from RSV," states Dan. "RSV is deadly and it's not a risk I'd be willing to take after seeing how seriously our daughter got sick."



RSV is the leading cause of hospitalization among healthy, full-term infants. An estimated 20-30% of infants with their first RSV infection will develop bronchiolitis or pneumonia which can be severe.



Julieanna Metcalf

Haemophilus influenzae type b or Hib meningitis

When vaccination rates in a community decline, outbreaks of vaccine-preventable disease can occur. This can be especially dangerous for children who are too young to be immunized or children with underlying medical conditions that make them more vulnerable. Julieanna Metcalf's story is an important reminder of what can happen when an unprotected child meets an unprotected community.

Julieanna was fifteen months old when she became ill with vomiting and fever. Her mother, Brendalee, gave her medicine for fever and watched her closely. When her fever reached 104°F and her behavior became erratic, Brendalee rushed her to the emergency room in their small Minnesota town. She was admitted for severe dehydration, and physicians ran several tests to figure out what was wrong as she became increasingly unresponsive.

A spinal tap suggested meningitis, so Julieanna was transferred to another hospital for treatment in an intensive care unit (ICU). She soon began to have seizures and doctors confirmed she had Hib meningitis. This severe infection in Julieanna's brain required her to undergo emergency brain surgery, and her family prepared themselves to say goodbye. Amazingly, she survived

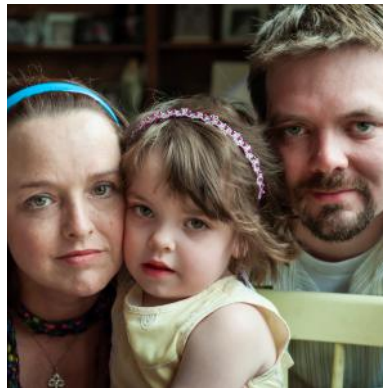
through the night and began her long recovery. She was released after one month in the hospital and required intensive therapy to relearn basic skills like walking, talking and eating. Julieanna fought her way back to health, but it required years of therapy and support.

Julieanna's experience was surprising, not only because Hib meningitis is now rare but also

because she received all of the recommended vaccines, including Hib vaccines. It turns out she had an undiagnosed rare immune deficiency disorder which prevented her from receiving protection through vaccines and made her dependent on the protection of those around her. Unfortunately for Julieanna, Minnesota experienced an increase in Hib cases due to decreased vaccination rates.

Hib vaccines are highly effective in preventing disease and are recommended for all children starting at 2 months of age.

"Julieanna is living proof of the dangers of vaccine-preventable diseases," says her father, Jeff. The Metcalfs hope their story will serve as a reminder of how our decisions can impact each other. "We immunize to protect ourselves as well as to protect others – especially those like Julieanna who can't protect themselves through vaccination," says Brendalee.



Hib meningitis is considered a rare disease.

However, outbreaks have occurred in communities with low vaccination rates.



Brian Scott Jr.

Pneumococcal meningitis

Like most people their age, Brian and Michelle Scott grew up protected from many of the world's most serious diseases, thanks to vaccines. By the time they became parents, they had heard more about the possible risks of vaccines than they had about their tremendous benefits or the dangerous diseases they prevent. Committed to raising their two young children, Brianna and Brian Jr., in a holistic lifestyle, Brian and Michelle chose to delay all immunizations until 2 years of age.

When Brian Jr. was nine-months-old, he developed a high fever. Michelle administered fever-reducing medicine, but it didn't help. Because her son wasn't immunized, she knew she had to be especially vigilant about his health. She took him to the pediatrician, who advised Michelle to go to the emergency room so that he could be tested for serious infection. At Texas Children's Hospital, doctors performed tests, prescribed an antibiotic and sent him home until his test results came back. The next day, a doctor called Michelle and told her to return to the hospital as quickly as possible because one of the tests indicated serious infection. Further testing indicated that Brian Jr. had pneumococcal meningitis – a potentially

life-threatening infection of the lining of the brain and spinal cord. He was hospitalized for five days, experiencing fever and requiring several days of antibiotics. "As I sat in the hospital, images from meningitis awareness commercials kept replaying over and over again in my head, and I felt incredibly guilty for not having him vaccinated," recalls Michelle. Fortunately, she listened to her instincts when he first became sick and reacted quickly. "They were able to treat him with antibiotics early, which probably saved his life."

Today, Brian Jr., as well as big sister Brianna, are healthy, happy and completely up-to-date on all their vaccines. While Brian and Michelle continue to practice a holistic lifestyle, they realize vaccines are necessary to protect their children. "We underestimated the value of vaccines," says Michelle. "But watching Brian

Jr. experience what he did – knowing he could die and that we could have prevented it – gave us a completely different perspective. I hope other parents don't have to go through the same wake-up call." Pneumococcal vaccines are safe, effective and recommended for infants in a series of four shots starting at 2 months of age.



Some pneumococcal infections are invasive, meaning parts of the body that are normally germ-free, such as the blood, are infected. This can result in serious and sometimes deadly illness.



Jenny and Andrew Wise

Hepatitis B

Jenny and Andrew Wise were as close as two siblings could be. Born in Seoul, South Korea, they survived an abusive home and lived in a Korean orphanage for six months. When Jenny and Andrew were six and seven years old, they were adopted by the Wise family in the U.S. Upon adoption, both children were tested for hepatitis B and the tests came back negative. It wasn't until seventeen years later that the Wise family discovered the doctors had misinterpreted the test results; Andrew did have hepatitis B. However, by the time he learned this, it was too late.

Andrew was a healthy and athletic twenty-four-year-old when he awoke with severe abdominal pain. Tests conducted while he was hospitalized revealed he had a tumor in his liver due to stage IV liver cancer that had metastasized to his lungs. The cancer was caused by a hepatitis B infection he contracted from his mother at birth. Shortly after Andrew's diagnosis, Jenny learned she too is a hepatitis B carrier – she has hepatitis B infection and can transmit the disease but shows no symptoms.

Andrew died three months after he was

diagnosed. If his condition had been properly identified as a child, he could have received hepatitis B treatment. Even if he developed liver cancer, earlier detection could have been treated with a liver transplant. Following her brother's death, Jenny suffered from depression and suicidal thoughts. Today, she channels her grief into

motivation to live her life to the fullest. "I still think about Andrew every day," she says. "His death had a huge impact on me." While she is in good health, Jenny is considered high risk for liver disease and cancer because of Andrew's death. As a wife and mother, she often thinks about how this may affect her future health and her family. "I worry about my daughters and dying from cancer," she says. "I don't want to transmit this disease to

them or worry about them ever getting it."

Hepatitis B vaccine is recommended for infants starting at birth and is extremely safe and effective. Jenny urges parents to protect their children from this entirely preventable disease. "You don't want to harbor the guilt of not immunizing," she states. "To be sure your child has a chance at a healthy, long life, you need to vaccinate."



An estimated 25% of individuals infected with hepatitis B as children will die prematurely due to cirrhosis (scarring of the liver), liver failure or liver cancer later in life.



Haleigh Throgmorton

Pertussis or whooping cough

Rodney Throgmorton loves to share the story of his daughter Haleigh's birth. He delivered her at home because she arrived too quickly for the family to make it to the nearest hospital which was forty-five minutes away.

However, a few weeks after Haleigh's birth, Rodney became sick with what he thought was a cold and cough he caught from his parents. Soon after, Haleigh also began to cough. Haleigh's coughing episodes then became more severe. Rodney and his wife Jerri-Lynn remember her coughing so hard she turned blue. She was admitted to the hospital and given respiratory support. When she didn't improve after four days, she was moved to the intensive care unit (ICU) and placed on a ventilator, a mechanical device for breathing. Further testing revealed that Haleigh had pertussis, a vaccine-preventable disease for which young infants are at the highest risk of severe complications and death.

After four days in the ICU with no signs of recovery, Rodney asked permission for the family to visit Haleigh to say their goodbyes. After the

visit, her condition worsened and, around midnight, Haleigh died. A few days after her death, Rodney, his mother and his father were diagnosed with pertussis. "Haleigh was too young to receive the vaccine," Rodney said. "It could have saved her life."

The pertussis vaccine is given in conjunction with vaccines against diphtheria and tetanus

and is known as DTaP. It is recommended for children in a five dose series at ages 2, 4 and 6 months, followed by booster doses at the age of 15 through 18 months and 4 through 6 years. Tdap, a booster vaccine for older children and adults, is recommended for pregnant women during each pregnancy, as well as for adults if they have never received one. Rodney and Jerri-Lynn understand that it can be difficult to watch a

child receive shots, but they know the alternative is much worse. They advise all parents to ensure they and their children are vaccinated. "It's tough as a parent to see your child in pain," Rodney said. "But to see them on a respirator, that's what's tough. To have to plan a funeral for your child, that's the worst thing in the world."



Approximately 1 in 10 U.S. pertussis cases occur among infants who are at greatest risk for severe disease and death from the illness. Vaccination with Tdap during pregnancy is 90% effective at preventing infant hospitalization from pertussis.



Blaine Hashmi

Rotavirus

Kirsten and Fawaz Hashmi had never heard of rotavirus until one frightening weekend when their three-year-old son, Blaine, began vomiting severely. The Hashmis knew something was wrong, and contacted their pediatrician, who suggested Blaine might have rotavirus. Rotavirus causes vomiting and diarrhea and can lead to dehydration. Before the introduction of a vaccine, rotavirus was the most common cause of severe gastroenteritis in infants and children in the U.S.

The Hashmis rushed Blaine to the emergency room where he was admitted and given fluids. When they took him home the next morning, his parents thought the frightening saga was over. However, Blaine continued to vomit, developed a fever and started to breathe shallowly. The Hashmis took him to Texas Children's Hospital where he was admitted and diagnosed with severe rotavirus gastroenteritis. He was severely dehydrated and received rehydration therapy, a type of fluid replacement used to treat dehydration. After four nights in the hospital and significant weight loss, Blaine was finally able to return home.



The Hashmi family's experience demonstrates the heavy burden rotavirus can have on patients and their families. They remember how incredibly stressful the experience was for their family. Fawaz recalls driving to the hospital and watching Blaine in the rearview mirror, constantly checking to make sure he was still breathing since he seemed to be going in and out of consciousness. Additionally, both parents missed a week of work, and the medical bills totaled almost \$10,000.

Fawaz and Kirsten don't want parents to underestimate the severity of rotavirus and recommend getting the vaccine. Rotavirus vaccines are recommended starting at two months of age and are given in a series of 2 or 3 doses. Although the vaccine was not available when Blaine got sick, it was by the time his younger brother, Bailey, was born. "When our younger son was an infant, we wanted to make sure he was protected from rotavirus," says Fawaz and Kirsten. "We made sure to have him vaccinated as soon as possible. We did not want to go through the same experience ever again."

Rotavirus, a highly contagious infection in infants and young children, can lead to severe diarrhea and dehydration.



Fatmata Conteh

Polio

Polio has been eradicated in the U.S., and most Americans today have never seen how dangerous the disease can be. However, the story of Baby and Fatmata Conteh, who immigrated to the U.S. from Sierra Leone, is a reminder that diseases such as polio are really only a plane flight away.

In 1997, Fatmata Conteh was a healthy, happy four-year-old living in Freetown, Sierra Leone when she woke up one morning suddenly unable to walk. Her mother, Baby, took her to the local hospital where she was diagnosed with polio. However, it was almost impossible for Baby to find adequate follow-up care for her daughter. In Sierra Leone, only the very wealthy can afford treatment. Baby and Fatmata visited a village medicine man who used leaves and natural ointments to try to treat her.

For a brief period of time, Fatmata was able to walk with the assistance of crutches. However, after a few years, a civil war forced Baby and Fatmata out of their home. While hiding in the countryside, Fatmata's health deteriorated and she lost the use of her legs. To make matters worse, she had no access to a wheelchair, forcing her to crawl instead.



In 2004, Baby came to the U.S. through a refugee resettlement program. She worked and saved for two years for Fatmata and the rest of her family to come to the U.S. Upon her arrival, Fatmata was finally able to receive medical assistance and the wheelchair she desperately needed. She never regained the use of her legs, but is otherwise healthy.

Baby and Fatmata's experience left them with a deep appreciation for vaccines, especially given that they are not as readily available in countries such as Sierra Leone. "There was no opportunity for Fatmata to be vaccinated when we lived in Sierra Leone," says Baby. "If she had been vaccinated, she wouldn't be in a wheelchair today." The U.S. is fortunate to have a strong national immunization program and vaccines available for all children. The polio vaccine is

recommended for children in a four dose series at ages 2, 4, and 6 months, followed by a booster dose at 4 through 6 years. "We can't understand why anyone would decide not to get vaccinated. In Sierra Leone, parents would walk for miles to get a vaccine," Baby says. "We are so happy and thankful to get them when they are available because we know how good they are for us and our children."

***As long as a single child remains infected, children in all countries are at risk of contracting polio.
There is no cure for polio – it can only be prevented through vaccination.***



Meghan Watt

Haemophilus influenza type b or Hib meningitis

When Meghan Watt was two-years-old, her mother, Kim, took her to a clinic for the Hib, or *Haemophilus Influenzae* type b, vaccine. Unfortunately, the staff was busy and told them to come back another time. In a tragic twist of fate, a few days later, Meghan contracted the disease.

Meghan developed flu-like symptoms, and her pediatrician said she probably had the flu. However, she continued to worsen and began showing unusual behaviors, such as pulling her hair and biting her father's shoulder. Eventually, she couldn't walk or hold up her head. When her pediatrician saw Meghan a second time, he sent her straight to the emergency room.

After multiple medical tests, Meghan was diagnosed with Hib meningitis and admitted to the pediatric intensive care unit (ICU). When she left the hospital three weeks later, she still was unable to walk or hold up her head. Doctors were unsure if she had brain damage. More than a month would pass before Meghan was able to walk again – on Christmas day. Then Kim noticed she was talking much less

and couldn't keep her balance. Doctors discovered that she had suffered profound hearing loss from Hib meningitis. She attended a school for the deaf until sixth grade, then graduated from a public school with the help of an interpreter.

Today, Meghan has cochlear implants in both ears – electronic devices that reduce hearing loss – which greatly improve her hearing. While she never perceived herself as disabled, she realizes the significance of her experience and the impact it had on her life. For Meghan, it is reason enough to get vaccinated. “I just don't want other people to go through what I went through – kids or parents,” she says. Hib vaccines are recommended for all children starting at 2

months of age. Even today, decades later, the memory of the experience is very clear to Kim. She knows how close she came to losing her daughter. “The experience changed all of us,” Kim says. “As a parent, you only have to watch your kid go through that one time, and then you never want it to happen again. You can be sure she had all her vaccinations on time after that.”



Today, fewer than 50 cases of Hib disease occur each year in young children in the U.S., most often in children who did not receive any or all recommended doses of Hib vaccine.



Emily Lastinger

Influenza

By the time the Lastinger family learned a heartbreaking lesson about the danger of influenza, more commonly known as the flu, it was too late to save their daughter, Emily.

One Thursday afternoon, three-year-old Emily came home from preschool not feeling well. Her mother took her to the pediatrician, who diagnosed her with the flu. Throughout the weekend, Jen and Joe, Emily's parents, gave her plenty of fluids, tried to control her high fever and administered the antiviral medication the doctor prescribed. Despite all this, she continued to get worse. On Monday morning, Jen checked on Emily and discovered she wasn't breathing. She and Joe immediately called 911 and began CPR. Emily was rushed to the hospital where her heart eventually restarted. Sadly, however, doctors were unable to revive her and later that evening, she died. The Lastingers later learned she had developed complications from the flu, including pneumonia and empyema, a buildup of pus in the lungs.

Emily's death had an immeasurable impact on the Lastinger family. Only 13 days later, Jen gave birth to their youngest daughter, Anna, but the excitement of a new baby was overshadowed by

the heavy loss the family had suffered. For months, Jen and Joe could barely function, and Emily's two older brothers couldn't grasp the reality of what had happened to their sister.

Since Emily's death, the Lastingers, as well as Jen's father, John, have made influenza vaccine education and promotion their life's work. They are members of Families Fighting Flu, an organization of families and pediatricians who provide support to families affected by influenza-related deaths. Because recommendations at the time did not include children in her age group, Emily was not vaccinated against the flu. Today, however, annual influenza vaccination is recommended for everyone 6 months and older.

"As parents, we want to distance ourselves from things that harm our kids," Joe says. "The great thing about the flu shot is that it goes where your children go; it is always protecting them. Vaccines are simple and inexpensive tools to protect kids. It's the right thing to do, like putting them in car seats." Jen adds, "Parents always think things like this can never happen to them. But they can. We are just like every other family. The only difference is that I've had to bury one of my children."



On average, more than 100 children die from the flu and its complications each year in the U.S. Most children who die from the flu are not vaccinated and half had no prior medical conditions.



BREANNE SUSAN JUNE
PALMER
~~~~~  
September 06, 2002  
~~~~~  
December 23, 2003

Breanne Palmer

Influenza

When Gary and Denise Palmer took their fifteen-month-old daughter, Breanne, to the pediatrician to get vaccinated against influenza, her doctor would not immunize her because of an ear infection. Shortly thereafter, while the family was traveling to Maryland for Christmas vacation, Breanne caught influenza, more commonly known as the flu.

When Breanne's fever rose to 101°F, her parents became concerned. They took her to her pediatrician, who prescribed antibiotics. Gradually, her temperature returned to normal. But later that evening, Breanne began vomiting. Her temperature rose to 105.5°F and she began to have difficulty breathing. Her parents called 911 and Breanne was admitted to the hospital where her temperature rose to 107°F. Her condition continued to deteriorate and she was transferred to another hospital for more specialized care. Once there, she was placed on life support. Tragically, the virus had attacked her heart and brain stem, resulting in brain damage. Breanne

was then transferred to yet another hospital where her parents were told the damage was too extensive and nothing more could be done to save her. Two days before Christmas, Breanne died.

Following Breanne's death, Gary and Denise learned that ear infections are not contraindications to receiving the influenza


vaccine. If she had received a flu shot, they strongly believe she would still be alive today. Annual influenza vaccination is recommended for all persons age 6 months and older.

The Palmers wanted to increase awareness of the dangers of influenza, so they became members of Families Fighting Flu, an organization of parents personally affected by influenza and dedicated to educating people about

the importance of getting vaccinated for the flu. "People don't realize the flu virus can be deadly. I don't want any parent to have to go through what we went through," says Denise. "Getting vaccinated is the best way to help protect your child and your family from the flu."



Each year, an estimated 20,000 children under the age of 5 are hospitalized due to complications from the flu. The flu vaccine is safe, effective and the single, most effective way to prevent the flu.

A photograph of a wooden fence in a park. The fence is made of vertical wooden planks and runs diagonally from the bottom left towards the middle right. In the background, there is a wooden bench, green trees, and a clear sky. The lighting suggests it's daytime.

**"People don't realize the
flu virus can be deadly."**





Nikolai Ingles

Measles

Like most families, the Ingles are always busy. As an active duty member in the U.S. Army, Robert is frequently deployed while Nazira stays busy homeschooling and caring for their three boys – seven-year-old Robert Jr., three-year-old Nikolai and eight-month-old Aurelius. A move from Los Angeles to El Paso caused additional stress, and as a result, Robert and Nazira lost track of their boys' vaccine records. They didn't think much of it until Nikolai suddenly developed red spots and an unrelenting fever.

Unable to lower his fever, his parents took him to the emergency room. By then, he also had a rash all over his body, white spots in his mouth and lethargy. It was then that Robert and Nazira were told their son might have measles, a highly contagious, vaccine-preventable disease. The hospital was able to reduce Nikolai's fever and sent him home; however, by the next morning, his condition had worsened. He had developed conjunctivitis, was increasingly lethargic and needed to return to the hospital. Nazira describes his condition as frightening. She says, "My son did not look like himself and I was so scared."

To avoid exposing other families, Nikolai and

Robert were escorted by ambulance to the hospital and placed in a negative pressure isolation room. Because Nikolai's baby brother, Aurelius, was too young to be vaccinated, Nazira remained home with him and Robert Jr. to minimize their exposure risk. Nikolai spent six days in the hospital. He had a fever, refused to eat, was very weak and received oral rehydration therapy. After a week, he began to recover and was finally released from the hospital.

Over the last several decades, measles outbreaks have increased at an alarming rate due to lagging vaccination rates, creating a growing public health crisis. The majority of cases occur among unvaccinated individuals. The measles-mumps-rubella (MMR) vaccine is recommended for infants 12 through 15 months with a booster dose at 4 through 6 years.

"We know vaccines are important. I heard about measles outbreaks but never thought it would hit my home. You don't know how bad it is until you go through it," says Nazira. "It's your child, someone you love, going through something dangerous and awful that he didn't have to go through. We're lucky he made it through."



Measles is a highly contagious virus that can remain airborne for up to two hours after an infected person occupies an area. It causes fever, rash, cough, runny nose, conjunctivitis and white spots in the mouth. Complications from measles include diarrhea, ear infections pneumonia, encephalitis and death.



"We know vaccines are important. I heard about measles outbreaks but never thought it would hit my home.
You don't know how bad it is until you go through it."





Mobius Loop

Measles

Like many new parents, the Loops were careful about taking their infant son, Mobius, out in public. After he received his first two rounds of vaccines, Chris and Ariel were excited to introduce him to one of their favorite places, Disneyland. They never expected it to be the source of a serious health concern for their young son.

Shortly after their trip to Disneyland, four-month-old Mobius woke up with a 102°F fever and red spots on his chest and the back of his head. Aware of the measles outbreaks stemming from Disneyland at that time, Ariel, a nurse, immediately became concerned. She called his pediatrician who directed them to go to the emergency room. In an effort to limit exposure to others, the Loops warned the emergency room that their son may have measles and a negative pressure isolation room was ready for them when they arrived.

A blood test confirmed that Mobius had measles. He was discharged from the hospital and placed in quarantine at home for four additional days. He experienced conjunctivitis, severe coughing, fever and rash for nearly a month before he fully recovered.

The Loops learned that measles has long-term implications, particularly for infants, and can cause

a rare, but serious complication called subacute sclerosing panencephalitis (SSPE), a progressive and usually fatal brain disorder occurring months to years after a measles infection. “Even as a nurse, I didn’t know measles could kill you,” Ariel states as she describes her persistent fear that Mobius could develop SSPE.

The Loops turned their experience into action, becoming advocates for the importance of vaccines. “Vaccinating is not just a decision for your child. It’s for the community you live in – not just children but everyone who can’t get vaccinated because of cancer or other diseases that make you immunocompromised. They’re relying on everyone else to be vaccinated,” states Chris. The MMR (measles-mumps-rubella) vaccine is recommended for infants 12 through 15 months

with a booster dose at 4 through 6 years.

The Loops strongly urge parents to not underestimate the seriousness of measles. “It’s easy to not be as scared by measles as you should be because we don’t see it much anymore,” urges Ariel. However, with the recent increases in measles cases across the U.S. and the globe, it is more important than ever to ensure your child is vaccinated – on time, every time.



Recent outbreaks of measles have occurred in the U.S. after unimmunized persons contracted the disease while out of the country. Communities with low immunization rates are at risk for such outbreaks.



Michael Moore

Rubella or German measles

In 1964, Michelle Moore caught a mild case of rubella, also known as the German measles. A few weeks later, she discovered she was pregnant, but she didn't think about her experience with rubella until her son, Michael, was born.

Michael Moore was born prematurely and immediately diagnosed with congenital rubella syndrome. When he was two months old, he had open-heart surgery, and one month later, he developed pneumonia in both lungs and was hospitalized for three weeks. Michelle and her husband, Bruce, were told that Michael probably would not live past the age of 10. Doctors recommended institutionalizing him. However, Michelle and Bruce knew that if they were only going to have ten years with him, they wanted to spend every day loving him and taking care of him.

Michael has lived far beyond those early expectations. He weighs 85 pounds and is about five feet tall. He is unable to talk or walk, leaving him wheelchair dependent. Overall, he's in good health, although he is prone to bronchitis because his lungs never recovered from the pneumonia he had as an infant.



Michelle's message to parents about childhood immunizations is clear and simple – prevent what's preventable. "Too many people don't realize what can happen if their children are not vaccinated," she says. "But they need to be sure to consider all the possible consequences and do what they can do to prevent them." Michael was part of a rubella

epidemic in the U.S. between 1964 and 1965 during which 20,000 infants were born with congenital rubella syndrome. A vaccine to protect against rubella was not available until 1969; since then, the incidence of rubella and congenital rubella syndrome has decreased dramatically. Rubella vaccine is included in the measles, mumps and rubella vaccine (MMR). The MMR vaccine is recommended for infants 12 to 15 months, and

a booster dose is advised at 4 through 6 years of age.

Michelle warns that the danger of rubella extends beyond children. The disease can have a devastating effect on pregnant women, especially during early pregnancy, and for their unborn babies. "You're taking the risk that you're exposing an adult and possibly an unborn child," Michelle says. "It's so much easier and smarter to get the shot."

Congenital rubella syndrome can result in deafness, cataracts, heart defects and intellectual disability, while rubella infection during pregnancy can lead to death of the mother, premature labor or pregnancy loss.



Melissa Papa

Varicella or chickenpox

To some, chickenpox is considered a harmless childhood illness. But the Papa family knows the potential danger of this vaccine-preventable disease.

Melissa Papa was six years old when she caught varicella, more commonly called chickenpox. At first, she was just happy to stay home from school and play for a few days. However, when she started having pain in her knee, her mother, Theresa, took her to the emergency room. A nurse, Theresa recognized a warning sign and was rightfully concerned. Melissa had developed osteomyelitis, an infection in the bone caused by bacteria entering an open chickenpox lesion – a rare but serious complication. At the hospital, doctors packed Melissa's knee in ice, but her blood pressure plummeted. She went into shock and required respiratory support. Doctors told Theresa that Melissa had about a 50 percent chance of surviving the severe infection ravaging her body.

Thankfully, Melissa survived, and after a week she was able to breathe on her own again. Unfortunately, the problems caused by

chickenpox were not over yet. The bone infection impacted her bone growth, resulting in a half inch difference between her two legs. She experienced additional hospitalizations, chronic pain and wore a leg brace for several years. When she was 18, she developed sciatica and chronic pain due to the difference in leg length. The pain was so excruciating she had to drop out of school for a semester.

While a vaccine was not available at the time of Melissa's illness, today, chickenpox is preventable. The CDC recommends infants receive the varicella, or chickenpox, vaccine, at 12 through 15 months of age with a booster dose at 4 through 6 years of age.

Despite the light-hearted stories many people share about getting chickenpox, Melissa knows the disease can be deadly and urges parents to learn about and understand the life-saving potential of vaccines. "While I understand it is a personal choice, I believe if you do the research, you'll realize how important vaccines are," she says. "No child should have to endure what I went through."



Complications from varicella include bacterial infection of skin lesions, pneumonia, aseptic meningitis, encephalitis, Reye's syndrome and even death.



Jim Pyle

Human papillomavirus (HPV)

Jim Pyle was a healthy sixty-five-year-old grandfather when he discovered a lump in his neck. He was diagnosed with throat cancer caused by HPV, a disease he didn't know he had. Jim underwent eight weeks of chemotherapy and nearly seven weeks of radiation at MD Anderson Cancer Center in Houston, Texas. "The treatment is tough to get through – it really beats you up," he recalls.

Less than a week after his last treatment, an infection spread in Jim's mouth and the side effects from the treatments began. He suffered from severe facial swelling, thick choking mucous, painful ulcers on the inside of his mouth, skin burning and peeling, and dehydration. He was placed on a feeding tube due to his inability to swallow. Soon after, another mouth infection occurred – this one worse than the first. Jim developed a large lump in his throat that became inflamed, painful and swollen. Doctors diagnosed Jim with MRSA, a serious bacterial infection, and he was hospitalized in isolation for three days.

Today, Jim is in remission but continues to suffer from the long term impact of his cancer treatment. He developed painful ulcers on the

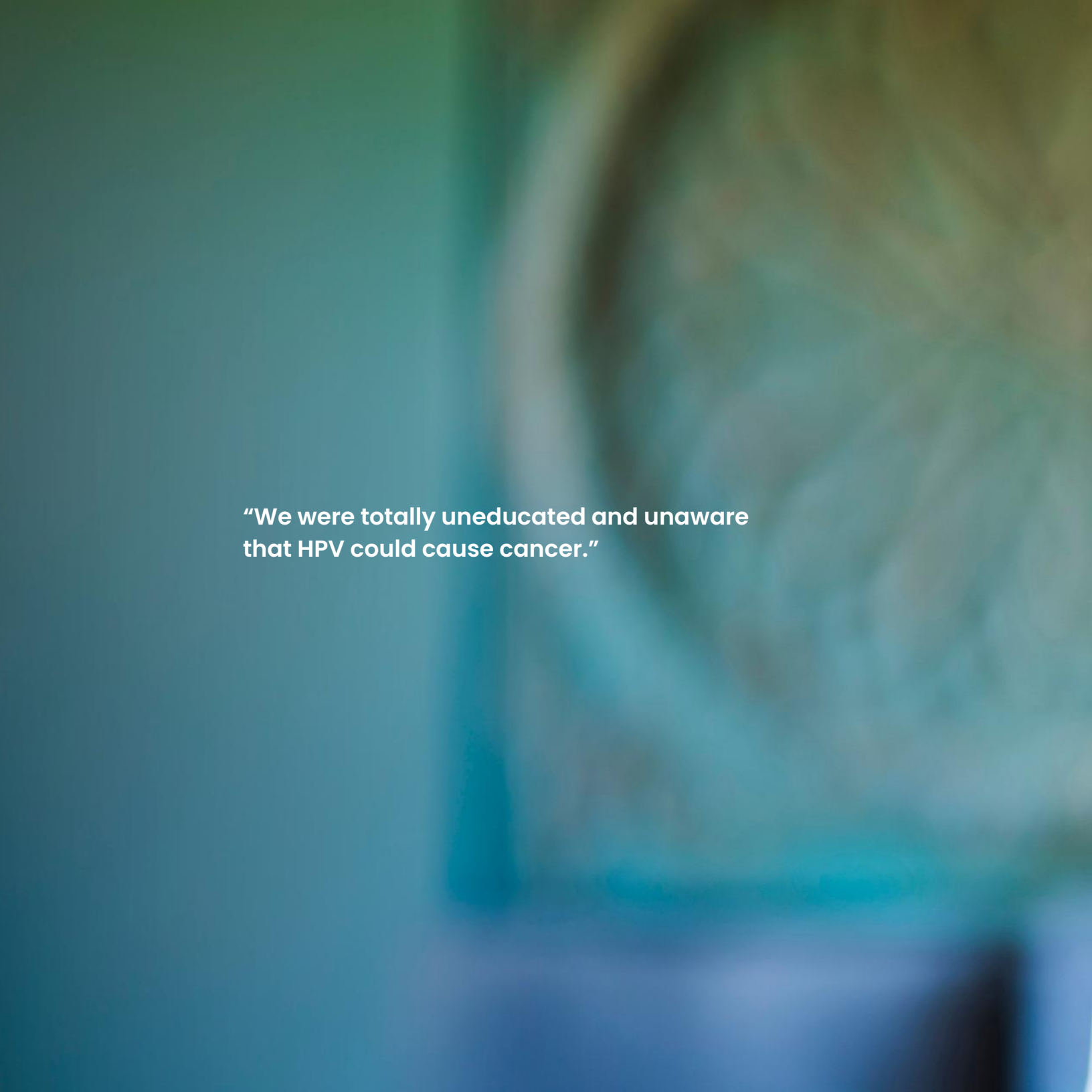
inside of his mouth and swelling in his mouth and face for months following his treatment. Jim's treatment also resulted in reduced taste function, long-term lung damage and a loss of salivary gland function. He will continue to be closely monitored for years to come. Thankfully, his taste and salivary gland functions have substantially improved in the years since his treatment ended.

Until he was diagnosed with HPV-related throat cancer, Jim and his wife, Peggy, were unaware HPV could have such a profound impact. "I thought to myself – is this it? Is this going to end my life? It's scary. Very scary," Jim shares. "And we were totally uneducated and unaware that HPV could cause cancer."

Jim and Peggy now embrace the opportunity to use this experience as a lesson for their four adult children and four grandchildren. Furthermore, they hope to persuade other parents to vaccinate and protect their children from HPV-related diseases. "After you see people like me and many others go through this terrible experience, why would you risk it for your child? HPV will impact me for the rest of my life," Jim says. "Please vaccinate your children – protect them from cancer."



HPV is the number one cause of head and neck cancers. There is no screening for these types of cancer. By the time most individuals feel a lump in their neck, it has already metastasized.



**“We were totally uneducated and unaware
that HPV could cause cancer.”**





Callie diFrancesco

Human papillomavirus (HPV)

Callie diFrancesco was a twenty-two-year-old college student when she received her first Pap smear. She expected the procedure to be routine; however, sadly, it was not. Callie's Pap smear was abnormal so she underwent a biopsy, a medical test used to diagnose cancer and other diseases. The biopsy revealed the bright young college student had cervical dysplasia caused by human papillomavirus, or HPV. HPV is the most common sexually transmitted infection in the United States, affecting nearly 80 million men and women. HPV causes genital warts, cervical cancer and several other types of cancer.

Following her diagnosis, Callie underwent her first surgery, a loop electrosurgical excision procedure (LEEP), to remove abnormal cervical tissue.

For the next year, she received Pap smears every three to six months to monitor her cervical tissue. Unfortunately, one year later, Callie had another abnormal Pap which resulted in a second LEEP procedure. Following her second surgery, she continued to receive Pap smears every three to six months until she was deemed healthy and told to

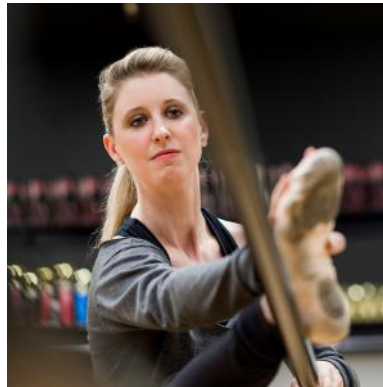
return in a year for her next Pap.

HPV created a significant amount of emotional stress and anxiety in Callie's life. In the midst of dealing with this potentially devastating disease, she met her husband, Blake. They both worry about what the future holds, whether Callie will remain healthy, and if HPV will affect their plans to start a family.

In an unfortunate ironic twist, when Callie was eighteen years old, she had the opportunity to receive the HPV vaccine and declined it. She looks back at her decision saying, "I made a completely uninformed decision about something that was life-changing." She urges young men, women and parents not to make the same mistake.

"HPV vaccination is cancer prevention – period. Why not take the opportunity to prevent disease, heartache and possibly death in your child's future?"

The HPV vaccine is recommended for males and females starting at 9 years of age. The vaccine is safe, effective and provides lasting protection against most cancers caused by HPV infection.



HPV vaccination can prevent most of the 37,000 cases of HPV-related cancer diagnosed in the U.S. each year.



Linda Ryan

Human papillomavirus (HPV)

In 2004, Linda Ryan was first diagnosed with cervical cancer caused by human papillomavirus (HPV). A healthy, active mother of two, she never even knew she had HPV. At the time of her diagnosis, her sons, Ethan and Matthew, were only two and five years old, respectively. Linda had no idea how life-changing the diagnosis would turn out to be.

Linda underwent a radical hysterectomy and was given a clean bill of health; however, in 2011, her cervical cancer returned. Just four weeks after running a marathon, she found lumps in her neck and pelvic area. She was diagnosed with recurrent cervical cancer and given a slim chance of surviving. She underwent eight rounds of chemotherapy over a period of six months. Linda recalls the cancer treatment as a “horrible period of time.” She endured fatigue, nausea and blisters and sores in her mouth. Less than a year later, Linda was told that she was cancer-free again but sadly, the cancer would continue to return. In total, she would

experience six recurrences of her cervical cancer.

Despite her repeated cancer diagnoses and agonizing treatments, she feels fortunate to be alive. One of the hardest things for Linda to accept was the hysterectomy and the fact that she was unable to have more children. “As a woman, it was

devastating to have that ability taken from me,” she says. She shares her story with the hope that other parents will protect their children from suffering as she has. “I easily could have died from cervical cancer, and my sons would have lost their mother forever. I don’t want other parents to risk that for their children.”

Today, Linda’s sons have been vaccinated against HPV, and she is thankful for the opportunity to protect them.

HPV vaccination is recommended for males and females starting at age 9. “HPV causes cancer, and now we have the tools to prevent it. I’m protecting my sons and want other parents to do the same. Why risk cancer when we don’t have to?”



***Every year in the U.S., 37,000 people develop cancer caused by HPV.
Vaccination could prevent more than 90% of HPV-related cancers from ever developing.***



Abby Wold

Meningococcal meningitis

At twenty-two years of age, Abby Wold followed in her father's footsteps and enlisted in the U.S. Army. However, just days before basic training, she contracted meningococcal meningitis. The struggle to survive this vaccine-preventable disease changed her life forever.

After a night out with friends, Abby began vomiting and developed excruciating pain, leaving her unable to walk. Upon arrival at the emergency room, she told the hospital staff she believed she had meningitis. She was quickly admitted, given antibiotics and pain medicine, and placed in isolation. Further testing soon confirmed that her hunch was correct – Abby had meningococcal, or bacterial, meningitis. Soon, she went into septic shock, a life-threatening condition caused by a widespread infection. In a coma, Abby was placed on life support and required a ventilator (a mechanical device for breathing) as her organs began to fail. Her family was told that she wouldn't make it through the night but thankfully, she survived. Abby remained in a coma for 12 days and faced a number of severe complications when she regained consciousness. She developed a life-threatening blood clotting disorder, suffered hallucinations and underwent

eight surgeries over the next two months, resulting in the removal of two fingertips and both of her legs below the knee. While her enormously positive attitude overshadows her ongoing medical issues, Abby has also developed chronic kidney problems, adrenal failure and severe headaches.

Abby is an outspoken advocate for the importance of vaccines to prevent meningococcal meningitis and draws on her personal experience when educating others about it. "It's hard to watch others contract meningitis because they were unvaccinated, so I strive to bring attention to this disease and the vaccine that prevents it," says Abby. Unfortunately, at the time of her illness the vaccine recommendation did not

include her age group; however, today, meningitis vaccines are recommended during adolescence to offer protection before potential exposure in young adulthood.

Abby is often surprised by the lack of awareness surrounding meningitis. "I meet so many parents who never knew about meningitis and are astonished there are vaccines to prevent it," Abby says. "The truth of the matter is that vaccines save lives."



Loss of limbs, severe skin scarring, hearing loss, neurological damage and kidney failure occur in nearly 20 percent of meningococcal meningitis survivors.



Nicolis Williams

Meningococcal meningitis

Greg and Arlene Williams had never heard of meningococcal meningitis until they received the alarming news that their twenty-year-old son was suspected of having contracted the potentially life-threatening vaccine-preventable disease. As Arlene recalls, “we had no clue what meningitis was or that there was a vaccine to prevent it.”

Nicolis Williams was a junior at Texas A&M University, living about an hour away from his parents, when he developed a severe headache, fever and dizziness. He sought medical care at the campus clinic and was given fever-reducing medicine and instructed to rest. Several hours later, he woke up incoherent, alarming his roommates who then called 911. Eight minutes after his arrival at the hospital, Nicolis, lovingly referred to as Nic, went into a coma and was placed on life support. Doctors performed a spinal tap as they suspected he could have meningococcal meningitis, a serious and often deadly bacterial infection that causes inflammation of the tissues around the brain and spinal cord. “We knew it would take a miracle for him to wake up so all we could do was hold his hand, kiss him



and pray that he would,” his parents describe. “But he never did.” The spinal tap confirmed that Nic had the rare but devastating disease. The doctors administered steroids and antibiotics in high doses, trying to reduce the infection. Despite their efforts, within hours Nic showed no signs of brain activity. The Williams family gathered around Nic to say their goodbyes before he quietly passed away.

Nic’s death had an immeasurable impact on the Williams family, including his older sister, Tiffany. Upon learning there is a vaccine to prevent meningitis, the family soon became strong advocates for awareness of the disease and the importance of being vaccinated, especially for college students. Meningitis vaccines are recommended during adolescence to offer protection before potential exposure in young adulthood. “Nobody thinks it will happen to them or their family. But when meningitis strikes, it is devastating,” states Greg. “In my brother’s case, not getting vaccinated meant death,” adds Tiffany. “Please, get vaccinated.”

Even with treatment, an estimated one out of seven people with meningococcal disease die.



Brittany Wochese

COVID-19

In December 2020, Peggy Ngemoh contracted COVID-19 while pregnant. She isolated herself from her husband, Emmanuel, and their two children, and the family thought they were in the clear when no one else became ill. Just one month later, however, their energetic and healthy two-year-old daughter, Brittany, became very sick.

What began as a high fever progressed to severe abdominal pain, vomiting, diarrhea and lethargy, along with facial and abdominal swelling. As Peggy recalls, her daughter changed in front of her eyes. “It was scary watching her get so sick so fast,” she said. Brittany was admitted to Texas Children’s Hospital, where she was diagnosed with multisystem inflammatory syndrome in children (MIS-C), a serious and sometimes deadly condition in which organs and body systems such as the heart, lungs, kidneys, digestive system and skin become severely inflamed. The condition can occur weeks after a child is infected with COVID-19, even in children who have no symptoms.

Brittany spent ten days in the pediatric intensive care unit (ICU) where she suffered acute respiratory failure and septic shock. “It was a

traumatizing experience,” Peggy said. “We could barely sleep and just watched the monitors all night, praying like we’ve never prayed before in our lives.” By the time she returned home, Brittany had lost several pounds and required several months of follow-up by various specialties, including cardiology to ensure no long-term

impact on her health. While Brittany is too young to understand how sick she was, her parents vividly recall the experience, their fear of losing her, and their relief that she fully recovered. “It was a very difficult experience for us as a family, but I remember when Brittany began to recover and that was a beautiful moment,” Emmanuel said.

Fortunately, safe and effective COVID-19 vaccines are now available for children ages 6 months and older. “I couldn’t protect my child, but you can prevent serious illness by vaccinating yourself or your children,” Peggy urges. “We saw firsthand what it’s like when a child experiences complications from COVID-19 and you feel like you might lose that child. We don’t want anyone else to go through that.”



Approximately 20-25% of children hospitalized due to COVID-19 require ICU admission.



Lydia Castro

COVID-19

Rosalinda, her sixteen-year-old daughter, Lydia, and nine-year-old son, Nathan, are a tight knit family. So when Lydia became severely ill from COVID-19, the experience profoundly impacted them all.

Initially, Lydia developed a fever, persistent headache, fatigue and weakness; however, her symptoms soon became more serious. Her temperature spiked to 105°F and she had difficulty breathing. “When her fever rose, I went to check on her but she was gasping for air,” Rosalinda described. She rushed Lydia to the emergency center at Texas Children’s Hospital. By then, she was critically ill and admitted to pediatric intensive care unit (ICU). She was diagnosed with severe COVID pneumonia, a potentially life-threatening complication of COVID-19. The next day, Lydia’s medical team told Rosalinda they needed to sedate Lydia so that her body could heal. She spent ten days under sedation. “She looked like she was sleeping. I would wash her face and touch her hands just to feel her,” Rosalinda said. “She was fighting for her life.” On day ten, they began weaning Lydia off the medication. Upon



waking up, she could barely move. “I couldn’t walk or sit up. I couldn’t even put my hair in a ponytail,” Lydia said. She was hospitalized for twenty-two days after which she spent two months undergoing physical therapy to regain her strength so she could talk, walk and perform basic movements on her own. In total, she missed six weeks of school.

COVID-19 was devastating for the Castro family, and they spent several months fully recovering. “Lydia was between life and death. It was a nightmare and an indescribable experience,” said Rosalinda. While COVID-19 vaccines were available at the time Lydia became ill, she was unvaccinated. “I was vaccinated but I hesitated to get Lydia vaccinated and I deeply regret it,” Rosalinda said. “If I could go back in time, I would vaccinate her right away.” Lydia was vaccinated soon after she was released from the hospital. COVID-19 vaccination is recommended for everyone ages 6 months and older. Rosalinda encourages parents to not miss the opportunity to vaccinate their children. “There is a reason why it’s so important. I wish I’d understood that sooner.”

An estimated 30% of children hospitalized due to COVID-19 have no underlying medical conditions.



AC-8508 MI 0.7 Mercy Women's Health-Clayton Rd
11 Sep 14 / 801z TB <0.1 KERRIE SI 09/14/2020 9:29:00 AM
NT
Har Age 37
Gn 0
C7/M4
P3/E3
SRI H.3

Vanessa Alfermann

COVID-19

Ryan and Vanessa Alfermann were elated when they learned they were expecting another baby. They named their unborn son Axel and were eager for him to join their family along with their five-year-old son, Cruze, and twelve-year-old daughter, Kylie. Sadly, the Alfermann family was impacted by COVID-19 in a way they never could have imagined – the devastating loss of their son.

In November 2020, Ryan and Vanessa, twenty-two weeks pregnant, tested positive for COVID-19. She experienced fatigue, body aches, nausea, congestion and loss of taste and smell. Vanessa recalled, “I was exhausted and couldn’t move. I felt terrible.” As a nurse, Vanessa understood the risk the virus posed to her and Axel; however, after ten days, she was optimistic as her symptoms subsided. Then, just as she thought she was in the clear, she suddenly developed persistent back spasms. Labor contractions soon followed. Alarmed, Vanessa went to the hospital. The doctors checked Axel, confirmed he was fine and gave her medication for the back spasms. Within an hour of returning home, however, Vanessa began bleeding and the back spasms and contractions worsened. By the time she arrived at the hospital again, she was in



labor. Less than half an hour after she arrived at the hospital, Axel was born. A blood clot in her placenta caused a placental abruption and premature birth. Vanessa watched Axel take a single breath before quietly passing away.

Heartbroken, Vanessa and Ryan held their son as waves of anger, shock, sadness and disbelief washed over them. “It was overwhelming and didn’t feel real,” Vanessa says. “One moment I was pregnant and getting his room ready. The next moment he was gone. As a nurse, I knew COVID-19 was serious and how vulnerable pregnant women are, but I still never could have fathomed that I would lose a son to this virus.”

A month after the Alfermanns lost Axel, COVID-19 vaccines became available in the U.S. and Vanessa was vaccinated. “I was eager to be vaccinated but it was bittersweet. I couldn’t help but wonder if Axel would still be here if I’d been vaccinated earlier,” Vanessa said. “I encourage pregnant women to get vaccinated because I don’t want anyone else to lose their baby to COVID-19. I don’t want anyone to wonder what they could have done differently for their child.” COVID-19 vaccination is recommended for everyone ages 6 months and older, including pregnant women.

Pregnant women are at increased risk of severe COVID-19 disease, ICU admission and death, as well as complications that include pregnancy loss.

Epilogue

I became a pediatrician-scientist to dedicate my life to the development of new vaccines for global health. My role models were those who contributed not only to science but also humanity by inventing new vaccines for polio (Jonas Salk and Albert Sabin), measles (Sam Katz and John Enders), *Haemophilus influenzae* type b or Hib (John Robbins, Rachel Schneerson, David Smith, Porter Anderson), rotavirus (Paul Offit), rubella (Stanley Plotkin), and others. At our Texas Children's Hospital Center for Vaccine Development, co-headed by Dr. Maria Elena Bottazzi and me, we developed a low-cost COVID-19 vaccine technology that reached millions of people globally.

My reason for choosing this path was straightforward - there is no greater humanitarian pursuit in science than developing vaccines or ensuring their access. Most of my vaccine colleagues, including the authors of this extraordinary new edition of *Vaccine-Preventable Disease: The Forgotten Story*, feel the same. Today, our passion for vaccines remains strong, but increasingly across globe, a rising tide of antivaccine activism is quickly becoming a tsunami.

Antivaccine activism, present since the first vaccines were available hundreds of years ago, accelerated in the 2000s around false claims that vaccines cause autism. This misrepresentation is particularly galling to me because I have a daughter with autism and intellectual disabilities and even



wrote a book entitled, *Vaccines Did Not Cause Rachel's Autism*. The time and resources directed to dispelling this myth distract from developing treatments and scientific advancement. My colleagues and I work diligently to dispel the myths about vaccines and autism, but antivaccine groups frequently shapeshift to assert new unfounded claims and mistruths. Each time, we would respond with science and evidence, with little to no success.

During the COVID-19 pandemic, antivaccine activism further evolved into a well-financed, organized health disinformation machine. These groups falsely alleged that mRNA COVID-19 vaccines are unsafe and don't work. As a result, thousands of Americans died unnecessarily because they refused safe and highly effective

vaccines. Now, an energized antivaccine movement is perpetuating declines in childhood vaccinations for measles and other serious childhood illnesses. Between 2022 and 2023 there was a thirty- to forty-fold rise in the number of measles cases in Europe, and in 2024 we are beginning to see measles cases increase across the U.S. I am excited for this new and timely edition of *Vaccine-Preventable Disease: The Forgotten Story*. It provides readers with compelling images and stories to remind us about the fragility of our vaccination ecosystem and why vaccines are truly life-saving technologies.

Peter Hotez, MD, PhD, DSc (hon), FAAP

Baylor College of Medicine
Texas Children's Hospital



Acknowledgments

Vaccine: Preventable Disease: The Forgotten Story was created to serve as a valuable tool in our efforts to educate families about the importance of protecting children through vaccines. This publication would not be possible without the tremendous support and assistance of the following people:

Most importantly, we are thankful to the individuals and families portrayed within these pages. Your courage, vulnerability and willingness to share your stories is what made this book possible. We are your ambassadors, committed to sharing your stories and spreading your message so that other parents understand the importance of vaccines.

To Allen Kramer, Paul Kuntz, Mark Umstot and Cody Duty for their extraordinary photography, we offer our deepest thanks. They captured the spirit and message of the individuals and families portrayed here which guided the overall tone of the book.

We extend our gratitude Frank Stowell, Katie Cooper and the Texas Children's Hospital Philanthropy team for their hard work in securing the financial support that led to the successful completion of this project. We would also like to extend our deepest gratitude to the generous donors who supported our efforts and without which we could not have developed this book.

We owe a huge debt of thanks to the people who helped us identify individuals and families to participate in this project. Thanks to all for returning our phone calls and emails, setting aside the time to contact patients and families and brainstorming ideas with us for this project.

Many thanks to Jaimie Grams, Teresa Lin, Dr. Leila Sahni and the Texas Children's Hospital Immunization Project staff who provided important feedback throughout the development and writing process.

Lastly, thank you to Stephanie Zamora, Kim Frawner and Laura Hardy for their invaluable support, as well as the Texas Children's Hospital Marketing team for their creative vision and guidance for this book. We also extend our deepest gratitude to Mark A. Wallace, Chief Executive Officer and Debra Sukin, President for their inspiring leadership at Texas Children's Hospital.

References

1. Immunization Action Coalition. Ask the Experts. Available at <https://www.immunize.org/ask-experts/how-serious-is-rsv-in-children/>. Accessed February 26, 2024.
2. American Academy of Pediatrics. In: Kimberlin, DW, Barnett ED, Lynfield R, Sawyer MH, eds. Red Book: 2021-2024 Report of the Committee on Infectious Diseases. 32nd ed. Elk Grove Village, IL: 2021.
3. Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Hall E., Wodi A.P., Hamborsky J., et al., eds. 14th ed. Washington, D.C. Public Health Foundation, 2021.
4. Centers for Disease Control and Prevention. Pneumococcal Vaccination: What Everyone Should Know. Available at <https://www.cdc.gov/vaccines/vpd/pneumo/public/index.html>. Accessed February 26, 2024
5. Immunization Action Coalition. Available at <https://www.immunize.org/wp-content/uploads/catg.d/p4205.pdf>. Accessed February 26, 2024.
6. Immunization Action Coalition. Ask the Experts. Available at <https://www.immunize.org/ask-experts/is-pertussis-in-children-still-a-problem-which-age-groups-are-affected/>. Accessed February 26, 2024.
7. Immunization Action Coalition. Ask the Experts. Available at <https://www.immunize.org/ask-experts/how-effective-is-giving-tdap-during-pregnancy-at-preventing-pertussis-in-early-infancy/>. Accessed February 26, 2024.
8. Immunization Action Coalition. Available at <https://www.immunize.org/wp-content/uploads/catg.d/p4217.pdf>. Accessed February 26, 2024.
9. World Health Organization. Poliomyelitis. Available at <https://www.who.int/news-room/fact-sheets/detail/poliomyelitis>. Accessed February 26, 2024.
10. Centers for Disease Control and Prevention. Hib Vaccination: What Everyone Should Know. Available at <https://www.cdc.gov/vaccines/vpd/hib/public/index.html>. Accessed February 26, 2024.
11. National Foundation for Infectious Diseases. Influenza (Flu). Available at <https://www.nfid.org/infectious-diseases/flu-and-children/>. Accessed February 26, 2024.
12. Families Fighting Flu. Flu Mortality. Available at <https://www.familiesfightingflu.org/flu-mortality/>. Accessed February 26, 2024.
13. Centers for Disease Control and Prevention. Head and Neck Cancers. Available at <https://www.cdc.gov/cancer/headneck/index.htm>. Accessed February 26, 2024.
14. Personal communication with Dr. Erich Sturgis, MD Anderson Cancer Center Department of Head & Neck Surgery. February 5th, 2015.
15. Centers for Disease Control and Prevention. HPV and Cancer. Available at [https://www.cdc.gov/cancer/hpv/statistics/cases.htm#:~:text=How%20Many%20Cancers%20Are%20Linked%20with%20HPV%20Each%20Year%3F,-Español%20\(Spanish\)&text=Each%20year%20in%20the%20United,about%2037%2C000%20of%20these%20cancers](https://www.cdc.gov/cancer/hpv/statistics/cases.htm#:~:text=How%20Many%20Cancers%20Are%20Linked%20with%20HPV%20Each%20Year%3F,-Español%20(Spanish)&text=Each%20year%20in%20the%20United,about%2037%2C000%20of%20these%20cancers). Accessed February 26, 2024.
16. Centers for Disease Control and Prevention. Cancers caused by HPV are preventable. Available at <https://www.cdc.gov/hpv/hcp/protecting-patients.html>. Accessed February 26, 2024.
17. Immunization Action Coalition. Available at <https://www.immunize.org/wp-content/uploads/catg.d/p4210.pdf>. Accessed March 5, 2024.
18. Shi DS, Whitaker M, Marks KJ, et al. Hospitalizations of Children Aged 5-11 Years with Laboratory-Confirmed COVID-19 – COVID-NET, 14 States, March 2020-February 2022. MMWR Morb Mortal Wkly Rep 2022; 71: 574-581.
19. Fleming-Dutra K. COVID-19 epidemiology in children ages 6 months – 4 years. June 17th, 2022 Advisory Council for Immunization Practices (ACIP) meeting. PowerPoint Presentation (cdc.gov). Accessed July 21, 2022.
20. Centers for Disease Control and Prevention. COVID-19 During Pregnancy. <https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/special-populations/pregnancy-data-on-covid-19/what-cdc-is-doing.html>. Accessed July 22, 2022.

