WORCESTER
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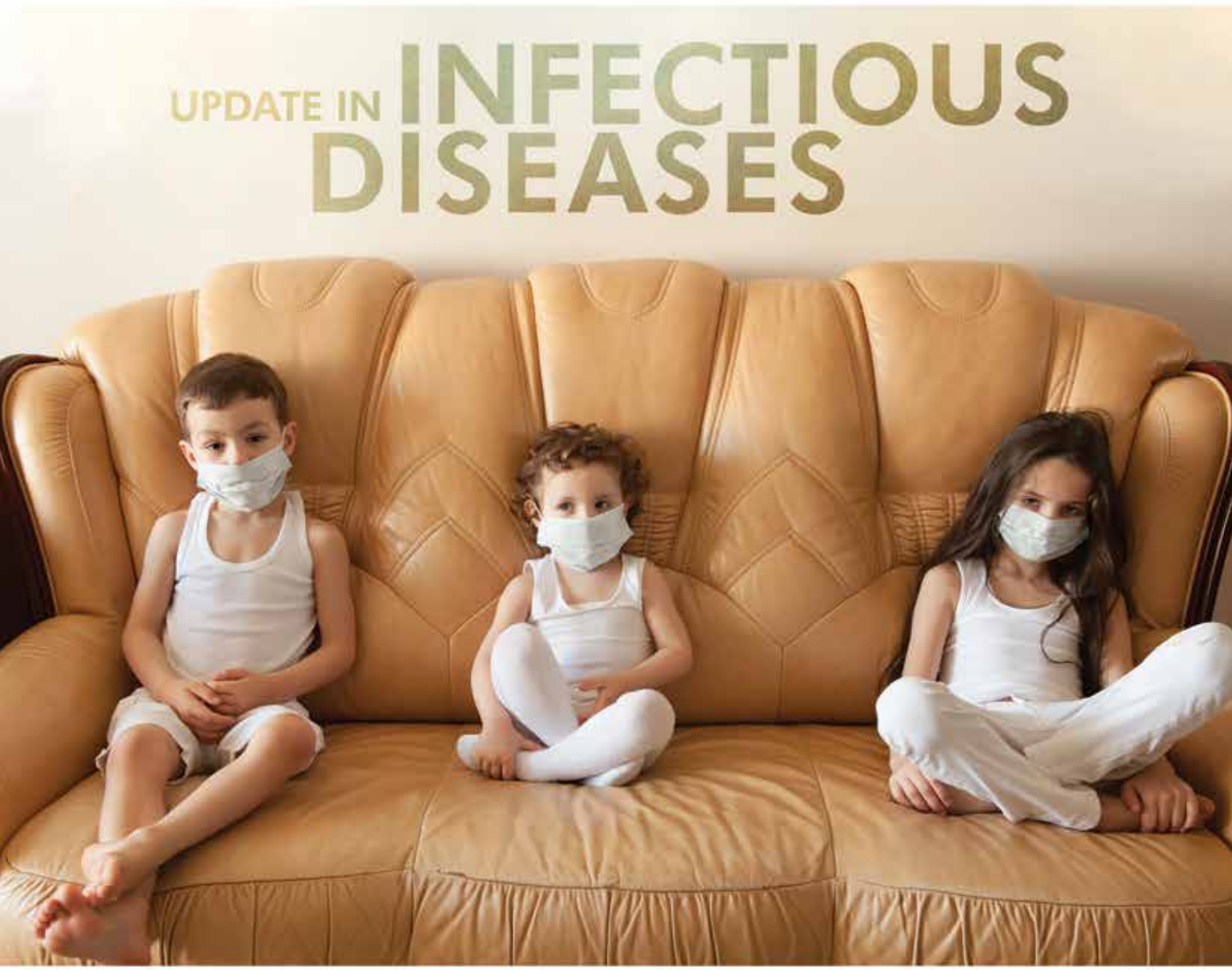
UPDATE IN INFECTIOUS DISEASES



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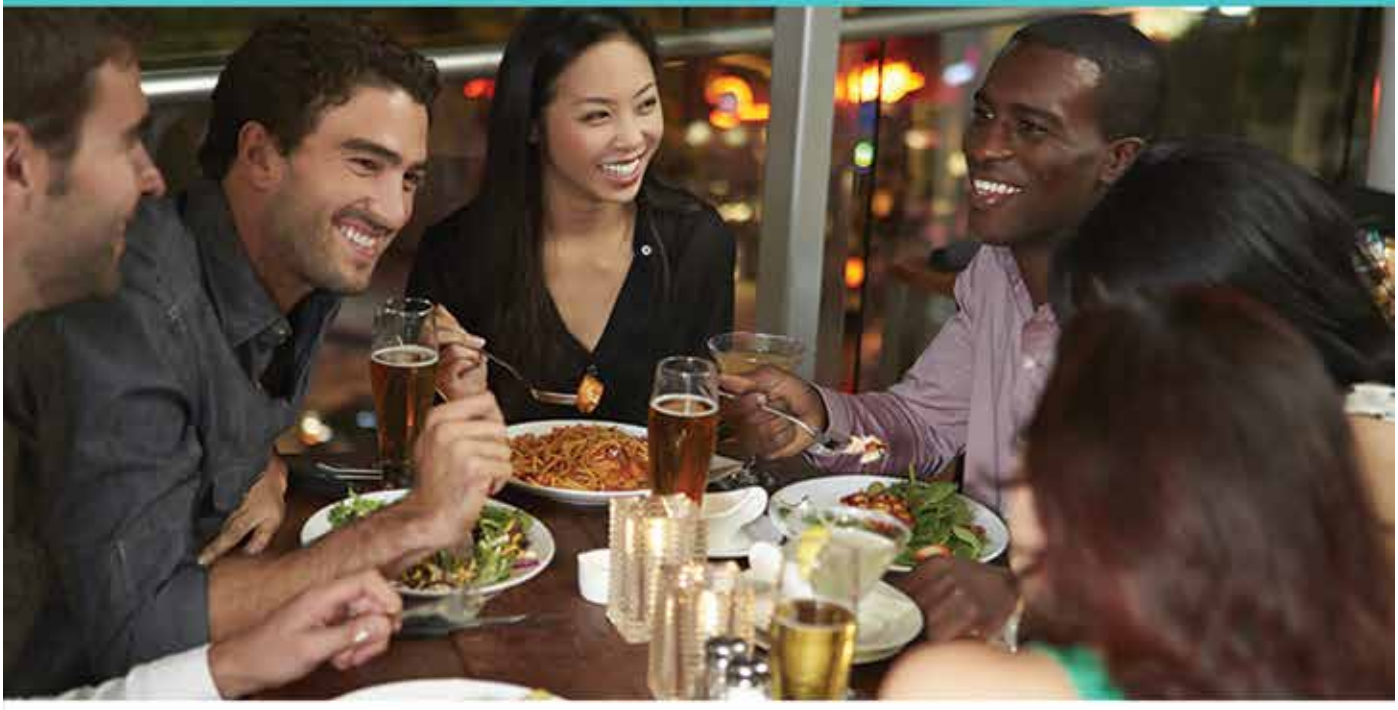

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on the cover: update in infectious diseases

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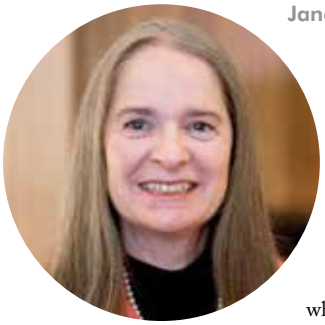

Jane Lochrie, MD

I remember having the chickenpox at age 6 along with my siblings. When I returned to class, more than half the class was out sick. At that time, parents would take their children to visit neighborhood children with the varicella virus so they would become infected before they reached adulthood, when the complications were more severe. As a nurse, I took care of many children with devastating congenital rubella. A pediatric intern that I worked with at Boston City Hospital died after he admitted a child with menigicocemia sepsis. Infectious diseases are very different today.

Deaths from infectious diseases have declined markedly in the United States during the 20th century due to a fall in infant and child mortality. In 1900, 30.4 percent of all deaths occurred among children aged less than 5 years; in 1997, that percentage was only 1.4 percent. Despite this overall progress, one of the most devastating epidemics in human history occurred during the 20th century: the 1918 influenza pandemic that resulted in 25 million deaths, including 675,000 in the United States. The HIV infection, first recognized in 1981, resulted in an estimated 13.9 million deaths. These diseases illustrate the unpredictability of infectious disease death rates and the volatility of disease emergence. This issue of *Worcester Medicine* focuses on infectious disease over the past century. I would like to thank Dr. Alwyn Rapose for his assistance with this issue.

The first article, by Susan Spencer, is a reprint from the *Telegram & Gazette*. She interviewed Dr. Robert Finberg, and he takes us back to 1918, during the Spanish flu epidemic. The flu is unusual in its ability to cause pandemics. The genetic material is able to share information and recombine with flu strains from other species and form a new strain of the flu. Typically, the flu is fatal in the two extremes of age – the elderly and the very young. The 1918 pandemic killed primarily young adults age 14-45, as many as 10 percent of that population. World War I played a role in contributing to so many deaths, as soldiers were camped in close quarters where the virus quickly spread. Some researchers have attributed the severity of the outbreak to delays in public health actions taken by health officials.

Dr. Alwyn Rapose revised a transcript of his recent "Health Matters" television broadcast. He discussed the risks of overusing antibiotics, including diarrhea, rashes and other side effects. He states that the commonest reasons for requesting antibiotics are for the common cold, urinary tract infections and skin problems. Many times, antibiotics are not required, and he gives his strategy for preventing the overuse of these medications. Two of the main problems facing the infectious disease community are antibiotic resistance and Clostridium difficile infection, both problems related to the overuse of antibiotics.

In a very different type of article, Dr. Anthony Esposito gives a fictional account of a pediatrician visiting the pediatric unit where he did his residency. He recalls the misery of healthy children stricken with Haemophilus influenzae type B. The security guard recalls his sister dying in the same unit of "flu meningitis."

Dr. Raul Davaro describes the difference between emerging and re-emerging infections. Emerging infections are infections that recently appeared or whose incidence is rapidly increasing; re-emerging infections first appeared long ago and have persisted by adapting to their environment. Though most of the emerging infections are viral, bacterial infections also occur. He attributes this to antibiotic resistance and the lack of new drug development due to reduced economic incentives for the pharmaceutical industry. Many factors contribute to the adaptation and emergence of new infections, including environmental and socioeconomic factors, demographic forces, increased air travel and global warming.

Drs. Linda Spooner and George Abraham explain the changes in the treatment of hepatitis C. In the early 1990s, the treatment was interferon monotherapy with a sustained viral response of 6 percent to 16 percent and required injections three times weekly with severe adverse effects. Numerous therapies have been approved since that time. Today, treatment is once daily oral therapy with sofosbuvir, an NS5B inhibitor that received FDA approval in 2013, in combination with ledipasvir, a NS5A inhibitor. Cure rates for all genotypes are well over 90 percent with few side effects. Unfortunately, these new treatments are so expensive that they necessitate specialty pharmacies for dispensing them and require complex prior authorization.

The role of the infectious disease physician is defined by Aalok Khole, an infectious disease fellow at the University of Massachusetts Medical Center. He explains infectious disease as a career working with a spectrum of illnesses with roots in every other medical subspecialty. He carefully analyzes the current story and all the possible repercussions of his interventions.

The Student's Perspective is provided by Jason Yang, a MD/Ph.D. candidate at the University of Massachusetts. He tells us that tuberculosis is still a major health problem worldwide, with 10 million new cases and 1.6 million deaths in 2017. He describes how the immune response is so important to the development of the disease and how the organism is able to evade immune recognition. The University of Massachusetts Medical school has a collaborative research effort to help eradicate this devastating disease.

Jessica Pagano-Therrien, Ph.D., RN, CPNP, gives us her perspective of how HIV disease has changed over her 12 years in the Pediatric HIV Program at UMass/Memorial Medical Center. Most of the children with HIV disease in the 1990s developed this in utero or at the time of delivery to mothers who were unaware of their disease status. Today, due to a successful identification and treatment program, infants born to HIV-infected mothers have a less than 2 percent chance of becoming infected. Though there have been many scientific advances, implicit bias, stigma and discrimination are still very prominent in our society and limit patients' willingness to undergo testing and access care.

In the patient's (who wants to remain anonymous) point of view, we are reminded that many of our patients are savvy Internet researchers, but many patients are not as knowledgeable. He or she reminds us that immune deficiency can be isolating and life-changing and can affect the entire family.

As always, please read President's Message, As I See It, Legal Consult and Society Snippets before closing this issue.

President's Message

Sahdev Passey, MD

I hope everyone had a happy and peaceful holiday season and is looking forward to a wonderful new year. Our society had a very productive 2018: We had our 27th annual Women in Medicine Breakfast, the 13th annual Luis Cottle Lecture, the Fall District Meeting and Award Ceremony, and lastly, our annual Holiday Reception and Night at the Movies. During all of this, we also said good bye to our beloved executive director for the past 30 years, Ms. Joyce Cariglia. We are sad to see her leave, but she deserves a wonderful retirement, for which she has worked very hard. We wish her all the best for her upcoming retirement years. I, personally, and on behalf of the Worcester District Medical Society, extend a very warm welcome to our new executive director, Ms. Martha Wright. We wish her all the best in her new position and many years of success.

As we start planning for the new year, I am very excited to share with you that on Sept. 27, 2019, we are going to celebrate the 225th anniversary of the Worcester District Medical Society. Plans are in the works, and we will keep you posted as the details are finalized. Please mark your calendar with the event date.

I would like to share with you what I have learned during the last year of my presidency. One thing we should all be very proud of is how many of our members volunteer to serve on our different committees. The thing that struck me the most was the medical students applying for the scholarship awards from the WDMS. The financial burden on some of them is so enormous. I just cannot imagine the financial hardship they are going to face in the future. I am so proud of fact that they still want to serve our community and practice medicine. I hope that all of us who have gone through this, and survived, will try to be as generous as possible with our personal contributions towards our WDMS scholarship funds. I was also impressed by the community service resumes of many of our physicians who were nominated for the Jane Fitzpatrick Community Service Award last year. That lets me know that not everything is lost in this ever-growing discontent with the current-state-of-health-care debate. There is still a feeling of giving and service to fellow human beings.

Let us hope and pray that our profession will rise above the current discourse and atmosphere of intolerance and continue to welcome and celebrate the diversity amongst us. We should continue to learn from each other and the diverse population we serve.

I wish you, your family and friends a very Happy New Year.

1918 Flu Pandemic Offers Lessons for Future

Susan Spencer, Telegram & Gazette Staff

Reprinted with permission of the Telegram & Gazette. Posted Sept. 8, 2018.

One hundred years ago this month, what's considered the deadliest disease outbreak in human history, the influenza pandemic of 1918, roared into Central Massachusetts.

The pandemic came in three waves and lasted 15 months. The second wave, which took off in Massachusetts in September, when a massive outbreak occurred at Fort Devens, was the worst.

Overall, the "Spanish flu," as it was termed, caused more deaths than AIDS did in 40 years or the bubonic plague did in a century, according to historian John M. Barry, who wrote the book, *The Great Influenza*.

An estimated 25 million to 150 million people died worldwide, including 675,000 in the United States. Many cases weren't reported and death certificates often only listed the secondary cause of death, usually pneumonia.

A digital encyclopedia of the 1918 American influenza epidemic produced by the University of Michigan Center for the History of Medicine and Michigan Publishing pegged the number of flu-related deaths in Worcester, as of January 1919, at 1,294, while others say it was likely less.

Medical science, public health and emergency response systems have changed in the past 100 years, yet researchers and health officials still fear a new type of virus could cause another global pandemic.

That virus is not going to be Ebola, which caused more than 11,300 deaths in West Africa, and one in the United States, between 2014 and 2016.

A more likely culprit will again be the flu, when a deadly variant arises from genetic re-combinations of strains that can be transmitted across species, including humans, mammals (swine) and birds.

Already there have been avian flu strains transmitted to humans directly from birds, such as in China in the past few years, with a mortality rate of up to 60 percent, according to the World Health Organization.

"What's different about influenza is its ability to cause pandemics. Most viruses just can't do that," said Dr. Robert W. Finberg, chairman of the Department of Medicine at University of Massachusetts Medical School.

Plus, the flu spreads in the air, making every cough or sneeze a potential transmission vehicle.

"Do I think it's a worry? Yes, it's a worry. Much more than Ebola. Because we don't know how to contain it."

Preparations for the next pandemic – and how to prevent it – are taking place on multiple fronts, from science labs to health care organizations to government centers.

At UMass Medical School, researchers are working on therapies that will remain effective despite the rapid mutation of flu viruses.

Unlike other viruses, one type of flu virus, type A, which includes the swine flu, contains eight strands of genetic material that can share information and recombine with flu strains from other species to make a brand-new strain.

Influenza B doesn't combine with other species, but is a factor in seasonal flu outbreaks, according to Dr. Finberg.

In a typical flu epidemic year, roughly 25,000 people in the U.S. die over the course of the season, from fall to spring. Usually deaths occur among older people or the very young.

The 1918 pandemic, now thought to be the avian flu, killed primarily young adults between ages 14 and 45, as many as 10 percent of that age group, and started months ahead of normal flu season.

One theory why is that the strong immune systems of young adults sent out super-strong defense substances called cytokines to combat the invading virus, and the "cytokine storm" ended up destroying healthy host cells.

Also, World War I played a role in contributing to so many deaths, particularly among young adults. Soldiers were camped in close quarters, where the virus quickly spread.

And some researchers have attributed delays in taking action, such as closing public gathering places, to the reluctance of health officials and newspaper publishers to alert the public to the severity of the outbreak. The reticence was perhaps out of fear of prosecution under the Sedition Act of 1918, as Mr. Barry wrote in *Smithsonian* magazine in November. The Sedition Act made it a crime to express views that cast the government or the war effort in a negative light.

Worcester historian Donald W. Chamberlayne, in a report he wrote in December about the 1918 influenza pandemic in Worcester, noted the optimism of headlines in newspapers such as the Sept. 26 *Gazette* headline: "Influenza not causing scare in Worcester."

He wrote that on Sept. 20, superintendent of City Hospital Dr. Charles A. Drew said there were a large number of cases in the hospital and city, but "he does not see any reason for the people to become unduly excited."

"The government kept lying about it," Dr. Finberg said. Parades would be held and more would die.

Dr. Finberg said that flu vaccines now are modeled based on what's circulating in the Southern Hemisphere, which is six months ahead of the flu season in the north.

With the shape-shifting nature of the flu virus, scientists are always racing to catch up with what mutations might arrive when the flu season hits in full force. That's why three or four strains are typically included in the flu vaccine.

Vaccines can be made much more quickly than they were in the past, particularly with DNA sequencing, but the DNA sequence has to be known, according to Dr. Finberg.

The 1918 pandemic can still offer important lessons on public health response.

The first wave is thought to have started at Fort Riley, Kansas, in March 1918. It spread quickly among soldiers training for and returning from battle overseas. It died down by mid-summer.

On Aug. 27, 1918, several sailors on Commonwealth Pier in Boston were reported to have the disease, the New England Historical Society wrote on its website. The sailors were sent to Chelsea Naval Hospital, from which the disease spread to Boston and the rest of Massachusetts, in particular, Fort Devens.

Albert B. Southwick wrote in the *Sunday Telegram* Nov. 5, 2006, by the end of September more than 8,000 sick and dying men clogged its hospital, which was built for 2,000.

Newspaper accounts by mid-September told of 125 cases in Leicester; eight died in Millbury in one day; Westboro and Holden closed their schools; and Leominster Hospital had to turn away people who were dying, Mr. Southwick wrote.

Worcester's first influenza-related death was on Sept. 19, according to the

University of Michigan researchers. The victim, James W. Roche, 25, was home from the Newport Naval Training School on furlough to visit his parents at 142 West St. His parents succumbed a few days later.

The Michigan analysis and Mr. Chamberlayne's report are critical of the slow response by Worcester city officials to close schools, theaters, saloons and churches to contain the spread of the disease.

As a result, the Worcester public health response time from when officials became aware of the outbreak to when it adopted first control measures was 15 days, the longest of Massachusetts' major cities.

Worcester did, however, put in place in about a week an isolation hospital in a converted dance hall at the fairgrounds on West Boylston Street.

Mr. Chamberlayne estimated that between 1,000 and 1,200 people in Worcester died, or about half a percent of the city's population, as a result of the influenza pandemic. Approximately 3 percent of households lost at least one member.

Mr. Barry wrote that in the developed world, the mortality rate was around 2 percent of the population. It was higher elsewhere.

"Part of the tremendous spread of the 1918 pandemic was a unique set of circumstances," including World War I, said Dr. Michael P. Hirsh, medical director for the Worcester Division of Public Health. Dr. Hirsh is also surgeon-in-chief and chief of pediatric surgery and trauma at UMass Memorial Children's Medical Center.

Departments of public health have gotten smarter about working with local medical communities to identify early warning signs and coordinate control measures, he continued.

Locally, UMass Memorial Medical Center and St. Vincent Hospital medical staff check with each other regularly, on the same shift, if they see an unusual number of certain types of cases, or anything out of the ordinary.

"That kind of communication wasn't available in real time (in 1918)," Dr. Hirsh said.

The state DPH also set up six regional Health and Medical Coordinating Coalitions, or HMCCs, which integrate planning and resources across acute care hospitals, community health centers and large ambulatory care organizations, emergency medical services, local public health, and long-term care.

Alissa Errede is the program manager for the Central Massachusetts HMCC, which serves 74 cities and towns, and is also the emergency preparedness chief at Worcester DPH.

Ms. Errede said that emergency dispensing sites have been strategically identified across the city and region, where the public would go for vaccinations and other front-line services.

And on the regional and state level, emergency coordination plans are set up to gather data quickly and coordinate response.

Medical reserve corps in Worcester, Grafton and Wachusett Regional, mobilize volunteers who train regularly to respond to medical emergencies in their community. Volunteers with health care or medical support experience are encouraged to sign up on the HMCC regional website www.ARCHEcoalition.org.

"The best way to really help is to do this in advance," Ms. Errede said.

Dr. Hirsh said preparing for a pandemic or other emergency, such as a natural disaster or terrorist attack, can be scary, but necessary.

"We can't be ostriches about it," he said.

Health Matters: The Overuse of Antibiotics

Bruce Karlin, MD (Host) and Alwyn Rapose, MD, FACP (Guest)

"Health Matters" is a televised program from the Worcester District Medical Society. Recording took place May 22, 2018. WCCA TV is a public access TV station and community media center in Worcester, Mass. Programming is produced by and for the people of Worcester. You can watch the program online or on Worcester cable channel 194.

Dr. Karlin: Hello, this is Dr. Bruce Karlin with the Worcester District Medical Society for another edition of "Health Matters." Tonight, I am honored to have one of my favorite infectious diseases doctors in consults, Dr. Alwyn Rapose. Tonight, we will be talking about antibiotics and the overuse of them. Dr. Rapose is a highly respected infectious diseases consultant working for Reliant Medical Group, is assistant professor at UMass and a good friend. Good to have you here, Alwyn.

Dr. Rapose: Thank you very much. It is a pleasure to speak to our Worcester community. I am happy to discuss one of the very important topics in the infectious diseases world, and that is the overuse of antibiotics. It can create a problem for multiple reasons, and we will discuss a few of them. We will discuss some of the most common situations of antibiotic overuse and why we should be very careful about the use of antibiotics.

Dr. K: Let me start with a common problem that I see in my office. Patients who call with common respiratory ailments, and they often say, "Can't you just prescribe something over the phone?" and that is always a danger. Then, when they come in, the anxiety about doing something about their symptoms is always hanging over; they are always saying, "These antibiotics are fabulous. They can wipe out symptoms in seconds. You take a dose, and you are your cured." It takes much more time to tell the patient, "No, you do not want an antibiotic, and here's why," and I think that's a starting point for today.

Dr. R: You have had just expressed one of the most common situations where physicians are pressured to prescribe an antibiotic. Antibiotics – as you have said – are wonderful medications. Because of antibiotics, we have healed a lot of diseases. Where a few years back we would have had to call in a surgeon to drain an infection or cut off a limb, today we have antibiotics that can heal. These are wonderful advances in science. However, like everything else, antibiotics come with risks. Antibiotics can cause diarrhea, rashes and other side effects. In the situation you described, patients coming with colds and coughs, statistically the most common cause of the common cold is viral, and some the most common causes of cough are allergies. Can you imagine if we prescribe antibiotics for every person who comes in with a cough, when, in the majority of cases, the cause is an allergy or a viral infection?

Dr. K: And we are talking about an overwhelming majority. It is not by just a little, not about 51 percent.

Dr. R: The most common cause of cough or sinus infections is usually allergies or viral infections, and antibiotics by definition are medications that are given to treat bacteria – to kill bacteria. The most commonly prescribed or the most commonly requested antibiotic is a Z-Pak. It is easily available, there are just five pills in there, and patients request this all the time with the expectation that the antibiotic will make them better faster. However, if you have an allergy, you will get better with more common household therapies.

Dr. K: Certainly, in my office, everybody knows that the Neti Pot, or some sort of nasal irrigation, is by far the best thing to do for colds, which helps by diluting whatever infection is there, so that the white cells can do their job and wipe it out.

Dr. R: All the stuffiness of the nose is due to these thick secretions. You do the Neti Pot, and it helps to thin the secretions, and then they flow out and you do not feel this fullness in your sinuses – which is where symptoms are coming from. As the sinuses flow, the patients get relief, and stuff like the Neti Pot, steam inhalation are wonderful first-line treatments for the most common symptoms of the common cold

Dr. K: I have a bunch of physical therapists who have trained us to do sinus massage. It sounds like a fancy thing. However, you just put your hand at the back of the neck, just next to the top of the bumps of the occiput, and you swallow and you feel the muscles hit. The swallowing muscle basically massages the bottom of the sinus. It helps with great drainage, particularly if the head is tilted behind. These things work much better than all the cold remedies that you can buy over-the-counter, with the possible exception of some guaifenesin.

Dr. R: And without the potential side effects of antibiotics. These household remedies are secrets that have come down the ages, and they work.

Dr. K: So how long generally does a common cold last? What is the course? I know my patients say, "Well, I had a cold for three days, then I went to the urgent care, and they called it something and gave me an antibiotic, and I got better the next day." Would they have gotten better anyway?

Dr. R: That is a very important question. Common viral infections – they pass away on their own. A seasonal allergy or a viral infection will pass away on its own with some steam inhalation, the Neti Pot and some patience. However, if you develop "red flag symptoms," like persistent symptoms, more than five days, or if very early in the disease you develop high fevers, that should direct you to your physician or an urgent care facility to have it evaluated before being prescribed an antibiotic. Or if initially all you had was a runny nose, but now you have developed thick brown or yellow secretions or you start coughing up blood, those are red flag symptoms which should prompt you to seek attention.

Dr. K: But again, there is no need to jump directly to an antibiotic. Even in those cases, if you can get the sinuses to flow, often the symptoms quiet down right away. I know that in Europe, they are even less likely to treat even bacterial sinusitis with antibiotics.

Dr. R: Two very important reasons why we want to help our community understand the move towards preventing overuse of antibiotics – development of antibiotic resistance and risk of diarrheal disease. We want our patients to get better faster, but if every year you take an antibiotic for a seasonal allergy, or if every three months, you get an antibiotic for a sinusitis, you are likely to develop antibiotic resistance. Development of resistant bacteria is one of the biggest problems we are facing in the infectious disease community. You may think that this happens in hospitals where patients are very sick, but it is actually happening in the community. We can start solving this problem by avoiding

overuse of antibiotics. Actually, you and me, we are full of bacteria. There are bacteria in our mouth, in our belly and even in the urinary bladder. These are considered good bacteria. They play a role in keeping us healthy. Some bacteria in the bowel help make our blood, and they help to develop the vitamins which keep us healthy. When we take antibiotics, we inadvertently destroy these good bacteria. We can also develop diarrhea from use of antibiotics. There is a big outbreak of bad diarrhea in America, especially in patients who take antibiotics. It is called C. diff infection or Clostridium difficile infection. It is a nasty disease. Patients develop severe diarrhea and there is a 30 to 40 percent chance of a recurrence. And one of the most common causes of getting C. difficile is overuse of antibiotics.

Dr. K: By the way, what do you call a fever? My patients say "my brow got sweaty" or "my shirt was wet at night" – so I must have had a fever.

Dr. R: This is a very interesting point. The infectious diseases doctors say 101 degrees Fahrenheit is a fever. But it also depends upon who is getting the fever. A young, healthy person can tolerate a fever of 101. But if you are an older person, or you have a patient with a liver or kidney transplant, the doctor should be concerned if the patient develops a temperature of 99 or 100.

Dr. K: Just talking about C. difficile and how the ID community is now thinking about C. difficile. There is a whole movement now focused on what the "biome" is, what are the bacteria in the gut, and that one of the treatments of C. difficile infection is actually to take stool from someone else – they call it a fecal transplant – and for some of these recalcitrant patients, it is the only thing that works.

Dr. R: I think we have reached this situation partly because of overuse of antibiotics. I hope the Worcester community does not have to go to fecal transplant therapy. Fecal transplantation is a treatment utilizing someone else's stool or a pill which has been processed with stool containing some good bacteria to help replenish the good bacteria that were destroyed by the overuse of antibiotics.

Dr. K: There are also some weird events that occur with the use of antibiotics. I had a patient who showed up one day complaining of an itchy skin, and her eyes were bright orange. This is a condition that the primary physicians call "painless jaundice." The patient reported that two weeks earlier she had gone to an urgent care facility for a sinus infection and they gave her Augmentin. It turns out that one of the side effects of Augmentin is what is called cholestasis, or liver injury. But there are other things that can happen with other antibiotics, and people get reactions to them, so you really want to be judicious with their use.

Dr. R: Antibiotics can potentially cause problems from head to toe. I have a patient whose entire skin was discolored because of his use of an antibiotic. Other patients have peeling off of the skin. I am not trying to scare you about the bad side effects, but these are some of the things we need to look out for. We cannot just prescribe an antibiotic for a month and expect that everything will be fine.

Dr. K: So, we should be using shorter courses.

Dr. R: As we advance in our understanding of diseases based on experience, publications, literature that is available from all over the world, we realize that there is not much evidence to support a prolonged course of antibiotics like we used to do before. For example: Infection in the blood was previously treated for four weeks. However, now there is evidence that we could treat some infections for as short as one week. While I guard against making generalizations, the point is that while previously we would treat with long courses, there is now scientific evidence that shorter courses do not cause increase recurrences of infection or readmissions to the hospital. We need to take the antibiotics for the duration where they are really needed. If an antibiotic is needed for seven days, and you take it for 10 days, you are taking three days of unnecessary antibiotics with the potential for side effects.

Dr. K: Another situation that I run into is with middle-aged ladies that have what they think is a urinary tract infection (UTI) and they want an antibiotic. I try my best to advise them to wait for the cultures. Can you describe what I should be doing and what we are looking at here?

Dr. R: It is very important to educate each other. The patient educates me about her symptoms, what are her concerns. Sometimes the concern of the patient is not the infection; there is something else playing on her mind. So, it is very important that they talk to a doctor that they know very well. Often, patients think that they have an infection when the color of the urine changes or the smell in the urine is foul. I explain that if even a healthy person passes urine into a cup and keeps the cup standing for 15 minutes, it will smell foul. In other words, stagnant urine will always smell foul, will always look dirty. So, it is very important to pee often and to pee a lot. I like to say "Pee yellow, do not pee brown." If you drink a lot of fluids and make your urine into a light-yellow color, you are less likely to get an infection. There is scientific evidence to show that a change of color or odor of urine is not diagnostic of a UTI. Even just finding bacteria in the urine is not diagnostic of a UTI. So, symptoms of a UTI should be properly explained to the patient. I note here that some published studies have shown that even if you have a UTI – if you are young and otherwise healthy, you can drink a lot of fluids, pee light-colored urine, and you might not need antibiotics. So just like Neti Pot for the sinuses – just help it to drain, let it flow.

Dr. K: In middle-aged women, as the moisturizing value of the vagina does not work as well, they develop mild vaginitis, and they may have some symptoms but without having a true UTI.

Dr. R: It is very interesting you say that. Often patients develop symptoms, they call the physician's office; whoever picks up the phone asks, "What are your symptoms?" The patient replies, "It burns when I pee." The next question should be, "Where does it burn?" If it is burning when the urine touches the skin, it is likely to be an irritation of the skin that can be treated with a skin lotion or a skin cream. This is different from burning inside the urinary bladder, which is a sign of a urinary tract infection. In that case, I would suggest a good urine sample for a culture and a short course of antibiotics based on the culture result. Some medications are given only for three days, others for five or seven days. The choice of the medication depends on which bacterium is identified in the urine. I also note that if you had an infection in the past, it does not imply that you will have the same infection in 2018.

Dr. K: Or some say, "I took that medication last year; I want the same one now." In a few minutes, can you hit upon a couple of other subjects and we can wrap up. What about skin infections? I often have patients that say "I need an antibiotic for that." I think that in so many cases you can do something just locally.

Dr. R: A wonderful example. A lot of folks develop skin problems because of the weather we have here. It becomes hot, then it becomes cold, and in the cold season, we develop dry skin. Any time our skin becomes dry and chapped, there is an opportunity for bacteria to get into our skin and cause a problem. I explain to my patients: you, me, the President, the Vice President – all of us have bacteria on our skin. As long as the bacteria remain on the skin, we do not have a problem. It's when the bacteria get under our skin – that is when we risk an infection. Hence, it is very important to prevent the bacteria from getting into the skin. So, if you have chapped skin, or fissures on heels, or toenails which are large and breaking the skin of the toes, we need to take care of that. So, moisturize the skin, keep the toenails short and use antibiotic creams if you have early infection.

Dr. K: I know we can go on for another hour. It was wonderful having you here. This is Dr. Bruce Karlin for WCCA TV and Worcester District Medical Society wishing you good health and stay with us for another edition next time. Thanks again.

Bruce Karlin, MD, is a general internist and host of "Health Matters" since 2003.

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Changes in Hepatitis C Virus Treatment Over the Past Decade: Insights and Perspectives

Linda M. Spooner, PharmD, BCPS (AQ-ID), FASHP, FCCP and George M. Abraham, MD, MPH, FACP

Introduction

In pondering how far we have come in the treatment of chronic hepatitis C virus (HCV) infection over the past three decades, the vast improvement in clinical cure rates and tolerability of therapy is exciting. In the early 1990s, the only available treatment was six to 12 months of three times weekly conventional interferon (IFN) monotherapy, leading to sustained virologic response (SVR) rates of 6 percent to 16 percent. Later in the 1990s, ribavirin, used in combination with IFN, still resulted in poor SVR rates of 40 percent or less. By the early 2000s, pegylated formulations of IFN were introduced, permitting once weekly dosing with more consistent, sustained drug concentrations. However, even when combined with twice daily ribavirin, these regimens were effective only half the time for patients with genotype 1 infection, the most common form of HCV in the United States. In 2011, the first protease inhibitors for HCV were introduced, followed quickly by the direct-acting antiviral (DAA) revolution, with the approval of sofosbuvir, a DAA that is effective for all genotypes of HCV, in 2013. Numerous other agents have been approved over the past five years, as well, permitting treatment of HCV with IFN-free, all-oral regimens.

The Days of Interferon-Based Treatment

In the first 23 years of treating HCV infection, IFN was the cornerstone of therapy. Although its formulation evolved to once weekly dosing, its use was still riddled with difficulties and challenges for patients and providers alike. IFN is administered subcutaneously, requiring lengthy teaching sessions for patients to learn how to perform the injection. The pegylated products were devices resembling insulin pens that required refrigeration. Each had its own unique method for use, dose selection, proper disposal, etc. Injection site reactions were common. To complicate matters further, the adverse effect profile was profound, leading to extreme fear of initiating therapy by many patients, based on experiences of friends, support group mates, and even blogs on the internet. The fatigue from IFN could be debilitating; many patients were unable to continue working during therapy, and if they did, needed to identify creative ways to continue to function as routinely as possible. One of our patients would take a one-hour nap in her car at lunchtime in order to be able to finish her workday effectively. Many patients experienced intense flu-like symptoms that would lessen as the week would progress, but would intensify again following the administration of the IFN dose. We often counseled patients to perform the injection on a Friday night, so that they could recover over the weekend; many felt frustrated that their time with family and friends was ruined by feeling exhausted. Additionally, the psychiatric adverse effects that often precluded the use of IFN in many patients were remarkable in those taking the drug; overwhelming depression and occasionally, extreme anger. One of our patients threw his dog out the window for barking too loudly one day. All of these issues, combined with poor SVR rates and additional toxicities impacting the bone marrow, endocrine and dermatologic systems, made the desire to find better options an urgent one.

A Stepping Stone to Better Treatment: HCV Protease Inhibitors

In 2011, telaprevir and boceprevir became available for use in combination with IFN and ribavirin for genotype 1 HCV infection. These were the first generation of HCV protease inhibitors, and they improved SVR rates to 70 percent to 80 percent. These treatments were response-guided, meaning that determination of HCV RNA every four weeks was necessary to determine if treatment should be continued, adjusted or discontinued based on futility rules. Even though SVR rates improved, these agents had numerous drawbacks, including large pill burdens, severe adverse effects, significant drug interactions and high cost. However, these, and the second-generation protease inhibitor simeprevir that followed, illustrated that better options were around the corner.

Sofosbuvir: A Novel Concept

After years of anticipation, sofosbuvir, an NS5B inhibitor that exhibits activity across all genotypes of HCV, received FDA approval in 2013. This novel DAA was first used in combination with IFN and ribavirin for genotype 1 HCV infection until other oral agents were approved. But its use in combination with ribavirin for treatment of genotypes 2 and 3 HCV resulted in the very first IFN-free regimens that signaled the dawning of a new era in HCV management. By the following year, a combination tablet containing ledipasvir, an NS5A inhibitor, and sofosbuvir was FDA approved, permitting treatment of genotype 1 infection with a single tablet once daily without IFN. Additionally, SVR rates were well over 90 percent, and patients tolerated the medication well. This tablet, known as Harvoni, was widely advertised on radio and television commercials, unfortunately with an initial cost of more than $1,300 per tablet.

Current State of Affairs

Today, HCV infection is exclusively managed with oral, IFN-free regimens. The vast majority are treated with once daily regimens that range in duration from eight to 12 weeks with SVR rates in the mid- to upper 90 percent range. Treatment selection and duration is individualized based on HCV genotype, liver function status, past treatment history, insurance coverage and drug interactions. Use of tables contained on the website www.hcvguidelines.org (HCV Guidance: Recommendations for Testing, Managing, and Treating Hepatitis C) permits rapid determination of potential regimens for various populations of infected individuals. Although treatment is more successful and better tolerated than ever before, there are still challenges to treatment. These medications have complex prior authorization criteria that vary widely across insurance plans. Their cost necessitates the use of specialty pharmacies for dispensing of the medication. Some DAAs have a higher propensity to cause drug interactions and must be used with caution in those patients taking multiple routine medications. However, access to these medications continues to improve, and their benefits are shared by so many patients who otherwise would never have been treated. It will be exciting to see if treatment durations continue to shorten and treatments become even easier as more research is performed, providing even more opportunities to treat more patients.

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A Childhood Scourge Locked Away: *Haemophilus influenza* Type B Disease

Anthony L. Esposito, MD

The door resisted.

The security guard turned to his elderly companion, smiled weakly, and said, "It sometimes swells in the summer…from the humidity."

His bow-tied companion nodded, and noting the beads of sweat blossoming on the guard's brow, asked, "Are you sure we should be here?" Stepping back and eyeing the fading sign above the reluctant door, which read "Pediatrics Unit," he added, "Perhaps we should go outside and take a walk around the wing. That might be enough."

The guard, a thin, middle-aged man, stiffened. "No way, doc. Too much broken glass an' trash outside. I don't think you came all the way from California to wade through a junkyard."

Truth be told, thought the physician, *I was invited by the MASS Pediatrics Association to give a historical overview of vaccine-preventable childhood infections. This side trip to the hospital where I trained was the result of…of what? Nostalgia? Curiosity?* He considered the possibilities for a moment, and concluded, *Yes, nostalgic curiosity, yet another senior citizen affliction.*

"Just give me another minute or two," said the guard. Seeing uncertainty form on the aged physician's face, he added, "I come here all the time."

"You do?"

"Sure, doc. This wing of the hospital is sorta sacred to me." He turned and stared through the solid door. "My sister died of flu meningitis here. In April '79." He sighed, again faced his companion, and added, "Her name was Kelly…Kelly Fitzpatrick. She was almost four." Focusing now on the physician's white hair, he added, "If you were here in '79, you might have treated her."

The doctor nodded. "Yes," he said. "I was a pediatric resident here in '79." And when he saw the guard's eyes brighten with expectation, he added, "I'm sorry, but I don't recall the name." He thought to himself, *if you were a child when your sister was stricken, you are lucky you did not become infected. I saw many secondary cases of H. influenzae disease among siblings.*

The guard's features sagged, and he turned to again focus on the reluctant door.

There were so many Kelly Fitzpatricks when I trained here, thought the pediatrician. *Healthy children seized by Haemophilus influenzae and hurried to death's door. Even with antibiotics, 5 to 10 percent of the kids died, and many those who survived were left neurologically impaired by paralysis, hearing loss or cognitive defects. I'd see those sad survivors and their bewildered parents in my outpatient clinic.* He sighed.

The pediatrician recalled doing rounds in the unit, which the residents had dubbed "the Robert Pfeiffer Wing," in recognition of the physician who first isolated the bacterium, when most of the 36 beds were occupied by young children infected with the encapsulated microbe, *H. influenzae* type B. Cyanotic infants gasping for air and coughing feebly as their lungs filled with an ineffective exudate. Toddlers with meningitis whimpering softly as their brains swelled. Perplexed 4-year-olds sitting forward and drooling as their epiglottises enlarged. Beautiful children with grotesque swelling of their eyelids. "Pre-septal cellulitis," he murmured. "Haven't seen a case in years."

"What's that?" asked the guard, turning from the door.

"Just thinking aloud," said the pediatrician apologetically. "After the *Haemophilus* vaccine became available, serious infections like the meningitis your sister had essentially disappeared."

The pediatrician recalled the statistics he had used often enough in his lectures to medical trainees and attendings: While he was in training and before the introduction of an effective vaccine, 20,000 to 25,000 children experienced an infection cause by *H. influenza* – meningitis, pneumonia, epiglottitis, cellulitis, septic arthritis and other invasive diseases – annually. Following the introduction of capsular polysaccharide-conjugate vaccines in 1990, attack rates for invasive infections in children under 5 years of age fell from about 100 cases per 100,000 to less than 1 per 100,000.

The pediatrician again focused on the security guard, who was pulling furiously on the handle. "Do you know what will be built on this site after the demolition?"

The guard released his grip on the handle, stretched his back, took a calming breath and said, "A new OR…for orthopedic surgery, I think. Supposed to be very high-tech."

The pediatrician nodded, glanced at the implacable barrier, and said, "Time to call it quits?"

The guard wiped the sweat from his brow with the sleeve of his tan uniform and said, "I'll bet they've sealed the door from the inside. This wing is supposed to come down before the end of the month. They probably want to keep out scavengers an' dope-heads." He paused and added, "There are three other entrances. We could try those."

As he considered the guard's offer, the pediatrician's thoughts of the door were abruptly brushed aside by images of sick infants under oxygen tents, resilient children wheeling their IV poles, determined parents resting on cots, and worst of all, stricken relatives.

"What ya think, doc? Want to give one of the other doors a try?"

With the guard's words, the images flowing through the doctor's mind changed course, as if a floodgate channeling a more melancholic river opened, and he envisioned what was behind the door: a toddler's table and chairs enveloped in dust; faded crayon drawings pinned to a stained cork board; cribs and beds shrouded in plastic; yellowing photographs of resident classes hanging in the common room; and most compelling of all, a lifeless air and a gaping silence.

"No," said the physician. "I'm satisfied by what I've seen."

"But doc, you've not seen anything, really."

The aging physician smiled. "Well, my guide and friend, I've seen that some things are well enough remembered even when locked away." He straightened and added, "Let's find something cold to drink and leave the past undisturbed."

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If I Were You... I'D WONDER Too!

Aalok Khole, MD

The most common question that frequents my patient encounters is "ID? What is that? What do you exactly do?" This is usually followed by "Infectious diseases…so who is infectious? Am I, or are you?" Occasionally this comes with playful smirks from both sides, but at other times is accompanied by expressions of fright or disbelief!

Through biology lessons in college and medical school, infectious diseases, for me, were limited to illnesses – classified into "Communicable vs Non-communicable," "Vector-borne vs. Food/Water-borne," "Bacterial vs. Fungal vs. Viral vs. Parasitic." I never thought of it as a unique entity or a spectrum of illnesses with roots in every other medical sub-specialty. For me, endocarditis was tabulated under cardiology, pneumonia was a derivative of pulmonology, hepatitis being embedded in gastroenterology, so on and so forth.

It was only in 2012, when I did an elective in Infectious Diseases at Saint Vincent Hospital, that I understood the broad realm of the field. I had an opportunity to witness firsthand the key role played by an ID physician in deciding the therapeutic course and influencing the overall management in the cases mentioned above and even more. An ID physician did much more than just prescribing an antibiotic. It involved deciding the drug of choice, dosage, route of administration, drug interactions, side effects, evaluating possible adverse events and making changes based on clinical factors and microbiological data. No small task, you say? I completely agree!

During my residency at Saint Vincent Hospital, the thought of sub-specialty training often stirred a conflict within me because I thought my skills would be restricted to just one organ system. However, I quickly realized that the field of infectious diseases not only proves itself to be an exception, but literally disallows it. As an ID physician, you step back, carefully analyze the current story and the possible repercussions of your interventions in association with the realization that one or more organ systems might be affected in the war that the disease is waging against the human body. ID requires one to have a sound knowledge base as regards the varying interplays between the body's physiological systems, thereby ensuring affinity to internal medicine as a whole. This aspect attracted me to ID when I chose my sub-specialty training.

My fellowship at UMass Medical Center increased my love and respect for ID. It opened doors to aspects with which I was not entirely familiar. I had the honor of working alongside several ID providers with interests in transplant ID, viral infections, bone and joint infections and vector-borne diseases like malaria, dengue and Ebola, to name a few. My outpatient experience was blessed with a team of expert clinical and affiliate practitioners, be it in travel medicine or providing thorough, integrated care for HIV, Hepatitis C and TB in underprivileged, minority groups and immigrant populations. Para-clinical teams, including the antimicrobial stewardship (the art of antibiotic appropriation) and infection control/hospital epidemiology specialists, demonstrated themselves as essential aids to the clinical world of ID. Our research teams strive every day to determine the pathophysiology of disease at the molecular level, with the aim of identifying new treatment targets. All in all, the experience thus far has reiterated my belief that in ID, you get to do it all.

In this competitive era in which health care systems strive for financial efficiency, everyone is trying their best to achieve the highest rating in quality metrics. Infectious diseases physicians – in my opinion – play a pivotal role. Outpatient antimicrobial therapy, where ID physicians are an integral component, is an effective tool facilitating early hospital discharge and overall improved patient care. Through close interactions with internists and sub-specialists, as well as with general and specialty surgeons, ID physicians are uniquely positioned to participate in the multi-disciplinary, integrated care model that is the growing need of the hour.

The scope of ID described above probably signifies the tip of the iceberg. As I march towards completing my fellowship and begin working independently as an attending physician, I hope to harness the vigor from my training and apply it to making notable contributions to the field, eventually aimed at improving patient care.

Hopefully, the day is not far when everyone will know what an ID physician truly does. Until then, I will continue to calmly answer the questions I mentioned at the beginning of this article…one patient at a time.

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Emerging Infections Diseases

Raul Davaro, MD, FACP

"Not a single year passes without [which]… we can tell the world: here is a new disease!"
Rudolf Virchow, 1867

Infectious diseases are responsible for 15 million (26 percent) of 57 million annual deaths in a global population of 6.2 billion.

The plague of Athens, the Black Death, the American yellow fever epidemic, and the influenza pandemic after World War I are examples of infections that spread over entire continents, exacting a heavy toll in terms of mortality and morbidity.

In the 1970s, with antibiotics and vaccines at hand and the eradication of smallpox within reach, there was a general optimism that infectious diseases would soon be a thing of the past.

The pandemic of HIV crushed this optimism, and infectious diseases were put back on the global health agenda.

The terms "emerging and reemerging diseases" were formally given by Joshua Lederberg, Robert B. Shope and Mary Wilson in 1987.

Emerging infectious diseases are infections that have recently appeared within a population or infections whose incidence or geographic range is rapidly increasing or threatens to increase in the near future.

The most modern example of an emerging infectious disease is HIV/AIDS, which likely emerged a century ago after multiple independent events in which the virus jumped from one primate host to another (chimpanzees to humans) and subsequently, as a result of a complex array of social and demographic factors, spread readily within the human population.

Most of the important reemerging infectious disease agents first appeared long ago, but have survived and persisted by adapting to humans and to environments that have been altered by humans. Dengue virus and West Nile virus (WNV) – distantly related flavi viruses – serve as good examples. They have spread by the geographic movement of humans in association with the mosquito vectors for the diseases. For example, dengue came to the Americas in association with the slave trade of earlier centuries. Similarly, WNV came to the United States in 1999, when an infected human, bird or mosquito came by air travel from the Middle East to the Western Hemisphere, thus introducing this infection to the New World mosquitoes and birds.

Dengue virus, WNV, Ebola, H5N1 and H7N9 avian influenza viruses, and the Middle East respiratory syndrome coronavirus (MERS-CoV) represent only a subset of viral diseases, yet they often capture public attention because of their ability to spread rapidly and potentially cause high morbidity and mortality. The World Bank estimates the anticipated gross domestic product (GDP) cost of a moderately severe global flu pandemic at about 5 percent of world income (roughly $3.5 trillion – a sum greater than Germany's GDP). The full cost of such an epidemic, including the lost value of health and longevity, is definitely higher. Initial estimates indicated that Zika, in addition to causing significant human hardship, resulted in $3.5 billion in economic losses in 2016 alone.

Although the majority of recent EIDs have been viral, bacterial infections are also a threat. The devastating cholera epidemic in Haiti, the foodborne *Escherichia coli* O104:H4 outbreak in Germany in 2011, and the invasive nontyphoidal *Salmonella* in Africa are prominent examples.

The emergence of resistant bacteria worldwide is endangering the efficacy of antibiotics. Now, decades after the first patients were treated with antibiotics, bacterial infections have again become a threat. The antibiotic resistance crisis has been attributed to the overuse and misuse of these medications, as well as a lack of new drug development by the pharmaceutical industry due to reduced economic incentives and challenging regulatory requirements.

Antibiotic-resistant pathogens are not confined to hospitals. Drug-resistant pathogens are also seen in the community. The outbreak in Pakistan of extensively drug-resistant typhoid and the spread of extensively drug-resistant gonorrhea in many parts of the world are examples of exceedingly serious public health problems.

Many factors contribute to the adaptation and emergence of new infections.

Factors affecting the environment include depletion of forests, expansion and modernization of agricultural practices, and natural disasters such as floods. These factors lead to changes in microbial ecological niches and fuel microbial adaptation to the human host. Socio-demographic factors such as increased population density, falling living standards, decline of infrastructure, human travel, war and social instability, and killing of wild animals for meat all lead to an increase in host-microbe contact, which facilitate infections in humans.

Demographic forces amplify the risks associated with emerging infectious diseases. The global population is expected to grow to 8 billion within eight years, with nearly 60 percent living in relatively crowded urban areas. By 2050, half of the world's population will live in tropical environments, which bear a much larger burden of disease. Rapid aging of the global population will further increase susceptibility, as both ability to fight off infection and efficacy of immunization wane with age. Additionally, air travel increases annually, with more than 100,000 flights per day as of 2014. Global travel volume is estimated at over a billion individuals crossing an international border annually and is projected to increase. These factors favor the emergence, evolution and spread of new pathogens.

Although emerging infections remain relatively rare occurrences, these low-probability but high-impact events are another factor that travel medicine practitioners need to be aware of, as the cumulative global risk increases.

The Intergovernmental Panel on Climate Change (IPCC) predicted an average temperature rise of 1.5–5.8 °C across the globe during the 21st century, accompanied by increased extreme and anomalous weather events, including heat waves, floods and droughts. Many of the most common infectious diseases, and particularly those transmitted by insects, are highly sensitive to climate variation. These include new and resurgent vector-borne communicable diseases like dengue, malaria, hantavirus and cholera.

Infectious diseases have affected humans since the dawn of mankind. The introduction of vaccines, the discovery of antibiotics, access to drinking water and improvement in housing and nutrition have been essential tools in decreasing these infections, especially in children and young adults.

The emergence of new infections and the re-emergence of old ones pose a significant challenge compounded by changes in climate, demographics and global travel.

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We've come so far, yet so much has stayed the same

Jesica Pagano-Therrien, Ph.D., RN, CPNP

I joined the Pediatric HIV program at UMass Memorial Medical Center in 2006, the year that marked the 25th anniversary of the first reported AIDS cases (HIV.gov, 2018). It was estimated that more than 1 million adults and adolescents in the U.S. were living with HIV at the end of 2006, with disproportionate numbers of cases among non-white individuals and men who have sex with men (MSM) (Centers for Disease Control and Prevention, 2008a).

The patients in our HIV program were among the 9,000 children younger than 13 years old living with HIV/AIDS in the U.S. in 2006 (Centers for Disease Control and Prevention, 2008b), who had mostly become HIV-infected in the 1990s, either in utero or at delivery to mothers unaware of their status, in a time before we knew how to effectively intervene to prevent transmission from mother to child. Many came from very difficult social circumstances, sometimes having lost both parents to HIV/AIDS. Depression, anxiety, school-related and behavioral issues were common concerns among my patients. Lack of social support was also common, often resulting in poor adherence to antiretroviral therapy and engagement in care (Chambers et al., 2015). Much of my work with these patients centered not on HIV itself, but on these contextual factors that challenged delivery of treatment.

When I arrived, the patients and families who had been coming to the clinic for years were wary of a new nurse practitioner – yet another person with whom they would be asked to share information about a very private aspect of their lives. It would take considerable time before I was able to build a rapport and establish trust with them. Loss of privacy and stigma were what these patients and families feared most. Negative stereotypes, value judgments and discrimination often accompanied disclosure of HIV status and for some, resulted in the loss of support from family and friends. Trust grew slowly as I became a consistent member of their clinical team.

Stigma was also a challenge for the women with whom I worked in our prevention of mother-to-child transmission clinic. Comprehensive programs to identify and treat pregnant women living with HIV were in place, and successful prevention efforts meant that infants had a less than 2 percent risk of becoming HIV infected (Cooper, 2002). Still, new mothers would go to great lengths to protect their privacy. I recall tearful conversations reinforcing the need for women coming from cultures where breastfeeding is the norm to abstain from breastfeeding, counseling them on ways to manage engorgement, and practicing what to say to well-meaning family members who they feared would judge them harshly for not breastfeeding. And I spent countless appointments strategizing with new mothers about how to administer twice daily medications to their otherwise healthy infants without raising suspicion among concerned friends who might ask why their healthy babies needed to take medication. Avoidance of HIV-related stigma was at the root of these efforts.

Fast-forward to 2018. Most of the adolescents and young adults that I met in 2006 have survived into adulthood. They are transitioning from pediatric to adult-centered HIV care and beginning families of their own. Among women living with HIV who were engaged in care and treatment, there have not been any cases of perinatal HIV transmission in our program in more than 15 years. And we are beginning to have good uptake of pre-exposure prophylaxis (PrEP) among young gay and bisexual youth in our community with the hope that the numbers of new cases will diminish.

While there are many successes to celebrate, scientific advances in treatment for HIV have outpaced success in addressing HIV/AIDS-related stigma and discrimination, which continue to be the most prominent social stressors among people living with HIV (Stangl, Lloyd, Brady, Holland, & Baral, 2013). I continue to have the same difficult conversations with young mothers trying desperately to conserve their privacy, and patients still fear the implications of privacy breaches. Adolescents and young adults bear the highest burden of new infections, and with young MSM of color experiencing infection rates higher than any other groups (Centers for Disease Control and Prevention, 2018), we know there is still work left to do.

From within the health care setting (Chambers et al., 2015), nurses can address stigma by advocating for adjustments to institutional practices which are perceived as discriminatory, like having separate clinic spaces for patients with HIV/AIDS. We must also take opportunities to raise awareness, offer education, correct misinformation and serve as advocates when we witness blatant or subtle discrimination. As health care providers, we must also acknowledge the role that implicit biases may play in our perpetuation of stigma and examine how we can change our own practices. At a community level, the persistence of stigma, fueled by misinformation, ignorance and fear, impacts HIV prevention efforts (Lambda Legal, 2010) through reduced uptake of HIV testing and access to care for those who need it. The measure of true success in reducing HIV-related stigma will be increased testing and fewer new infections.

Reducing the experience of stigma and discrimination for our patients through education, skill building, and counseling and support have been widely studied (Stangl et al., 2013), but there is no consensus on best practices. We have found it most effective to focus stigma reduction on individual-level factors that negatively influence the stigmatization process, such as fear, prejudice or lack of awareness of stigma, with the goal of maximizing outcomes and quality of life for patients and families. Provision of individualized emotional, social and practical support underpins these efforts and is the most profound way that nurses and health care providers can address HIV-related stigma.

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Infectious Diseases: An Interview Revealing a Patient's Perspective

EDITOR'S NOTE: The patient interviewed in this article has requested anonymity to protect his/her privacy.

Question: What is your understanding of your medical condition?
Answer: I have CLL (leukemia). I am on Ibrutinib treatment (chemotherapy) indefinitely until something better becomes available or stem cell transplantation is considered. This treatment is usually well tolerated, but I am at increased risk of viral, bacterial and fungal infections. My condition started with gradually increasing swellings of lymph nodes in my head and neck regions. My primary care doctor ran a million tests, and initially he was thinking it could be something like Lyme disease, Epstein-Barr virus, HIV or some other infectious disease.

Q: Have doctors done a good job explaining your condition and future risks associated with the treatment you chose?
A: Yes, and I have also done a tremendous amount of research myself, including online groups of people with the same diagnosis in multiple countries. Using the Internet gives me access to information and other patients like me. My doctors and I discuss all the new treatments currently in research, and they discuss all the questions I have; this has made what they are telling me easier for me to understand.

Q: Your chemotherapy is associated with increased risk of viral and bacterial infections. Have the doctors done a good job of prescribing necessary treatments and prophylactic medications to you in a timely fashion when needed?
A: Since starting chemotherapy, I have had several cold sore breakouts (*herpes*) on my face. I used to get these from time to time before, but since starting chemotherapy, it is a more frequent occurrence. My doctors are good about calling in the prophylactic medication for this, but because I have state insurance, the pharmacy would not allow refills until the day I was out, which has been very inconvenient and resulted in more breakouts. Thanksgiving time last year, I did not have my medication. I had a lot of pain around my mouth and severe breakouts… I didn't want anyone to see me without a mask on, so I ate my food in a separate room and avoided spending time with my family because I was embarrassed.

Q: How have you had to change your behaviors to decrease your risk of infections? How have your loved ones had to change their behaviors in order to decrease your risk of infections?
A: I have always been against vaccinations and never received one vaccine (flu/pneumonia, etc.) in my adult life. However, when I was diagnosed with cancer, doctors informed me I would have to receive them to prevent those infections while on treatment. My family has also had to receive the vaccinations, despite not necessarily agreeing with them, in order to protect me. I have a cat and started wearing protective wear when changing his litter box. I started wearing a mask when I went out into public areas during the cold/flu season. I stay away from sick people and make sure to wash my hands constantly. My fiancé works in a daycare center and showers as soon as she gets home from work. We wash things off with vinegar, and anyone feeling sick stays away from me. I try not to touch things commonly touched by others without gloves on, and I use a lot of hand sanitizer when I do.

Q: Do you feel your questions are respected and answered appropriately?
A: At first, some were not open to the questions I had; I felt like my concerns were not listened to. Now that I have spoken to many doctors, I know what I am looking for in a provider, and I have finally found ones that work for me and respect my needs for my treatment.

A Cough and a Lifelong Partner: How *Mycobacterium tuberculosis* Persists Against Host Immunity

Jason Yang

"Tuberculosis is Ebola with wings." Dr. Zarir Udwadia, a pulmonologist in Mumbai, India, uttered these words grimly while talking about the rise of totally drug-resistant tuberculosis.[1] Indeed, while Ebola claimed more than 11,000 lives during its peak 15 months, tuberculosis (TB) quietly erased 2 million lives.[1] Approximately 25 percent of the global population, or 1.7 billion people, have TB.[2] This tremendous disease burden did not happen overnight, as the history of TB dates well before 1882, when Robert Koch isolated the disease-causing bacterium, *Mycobacterium tuberculosis* (Mtb). From the writings of Hippocrates to 19th-century documents, TB has wreaked havoc on human civilization, earning spine-chilling monikers like "phthisis," "King's evil," "consumption" and "the great white plague."[3] Even though there is a long-standing history of co-existence between Mtb and humans, we still have not completely eradicated the disease. In fact, one may argue that Mtb has evolved to adapt to our immune systems, enabling it to cause 10 million new TB cases and 1.6 million deaths in 2017.[4]

Understanding how Mtb survives against our immune responses begins with an appreciation of TB pathogenesis. Mtb is an aerobic, rod-shaped, acid-fast staining, intracellular facultative bacterium with a thick, waxy mycolic acid cell wall.[5] The infection spreads via aerosolized droplets containing Mtb from the cough of a patient. A bystander may inhale these droplets into their lungs, where alveolar macrophages surveying the lung space will engulf these bacteria.[6] With most other pathogens, these macrophages can effectively eliminate them. However, Mtb prevents the macrophages' antimicrobial mechanisms such as phago-lysosomal fusion and acidification.[7,8] Mtb subsequently replicates within the phagosomes of these macrophages, creating a special niche where other immune cells cannot easily target.[9,10] Moreover, Mtb, while residing inside these macrophages, can manipulate host cell death pathways to promote necrosis over apoptosis, facilitating cell-to-cell transmission.[11] Following the innate immune response led by macrophages, the adaptive immune response also cannot completely eliminate the bacterial burden. Mtb has been shown to delay the initiation of the adaptive immune response, as well as escaping immune recognition.[12] Due to the incomplete elimination of Mtb, lymphocytes, fibroblasts and other cells coordinate with macrophages to form granulomas, preventing intra- and extra-parenchymal spread of the disease.[13] Ninety percent to 95 percent of infected patients have "latent TB," where they contain the infection, live asymptomatically and cannot transmit disease.[10] However, 5 percent to 10 percent of the patients, often immunocompromised, develop clinical TB with fever, chills, chronic productive cough, hemoptysis, weight loss and night sweats. These patients have "active" TB and can transmit it. In patients with poor infection control, TB can disseminate to the cervical lymph nodes (scrofula), the brain (meningitis), the spine (Pott's disease), the joints, and the gastrointestinal and genitourinary tracts.[14] Interestingly, those with latent TB have a 10 percent lifetime chance of reactivating their disease to the active state, especially if they become immunocompromised.[15,16] The common theme arising from TB pathogenesis is how Mtb can escape host immunity at almost every step of the infection.

The success of the adaptive immune response during TB depends on how well the immune cells, chiefly CD4 and CD8 T cells, can recognize Mtb-infected cells. Antigen-presenting cells, like macrophages and dendritic cells, traffic to nearby lymph nodes to present bacterial proteins as antigens to naïve CD4 and CD8 T cells. If recognized, these naïve T cells undergo dramatic expansion to create an antigen-specific T cell response. These antigen-specific T cells will then traffic to areas of infection to recognize and eliminate any infected cells presenting those same antigens. One Mtb antigen, Ag85b, is expressed in high abundance during early infection, leading to a dominant, Ag85b-specific CD4 T cell response.[17] However, once the infection has been established, Mtb turns down the expression of Ag85b, rendering all of those antigen-specific CD4 T cells ineffective.[17] To further evade immune recognition, Mtb also manipulates the host kinesin-dependent cellular export system to actively get rid of its own proteins, which would otherwise be processed as antigens that could be recognized by T cells.[18] Another Mtb protein, TB10.4, represents a unique antigen, as both humans and mice have a highly dominant CD8 T cell response to it during TB.[19] However, immune-deficient mice infected with Mtb did not have better bacterial burden control when they received TB10.4-specific CD8 T cells, compared to mice that did not receive them.[20] Moreover, a recent study showed that these TB10.4-specific CD8 T cells actually could not recognize Mtb-infected macrophages, even though they comprised as much as 40 percent of the total CD8 T cells in the lungs of Mtb-infected mice.[21] These results are even more dramatic when considering that both Ag85b and TB10.4 antigens have been incorporated into current TB vaccine developments.[22] Many of the vaccine strategies focus on these antigens specifically because they elicit such highly abundant T cell responses. Yet, these studies clearly demonstrate that quantity does not correlate with quality and that future vaccine designs must investigate the effectiveness of elicited T cell responses rather than just the abundance of such responses.

The research findings summarized here provide not only a snapshot of how well Mtb has adapted to evade our immune systems but also highlight opportunities for further research. Current research efforts at UMass Medical School have taken a multifaceted approach to tackle this issue. The laboratory of Dr. Christopher Sassetti aims at understanding the metabolism of Mtb, as well as how bacterial genetics interact with host genetics during disease. The laboratory of Dr. Hardy Kornfeld investigates how hyperglycemic states, such as diabetes, may alter the immune response to TB. Finally, the laboratory of Dr. Samuel Behar focuses on elucidating mechanisms behind Mtb immune evasion, as well as T cell memory response formation during vaccination and T cell exhaustion during chronic infection. Under the collaborative research environment fostered by the UMass medical community, these labs have also continued to work together to move us one step closer to clipping the wings of this devastating disease.

Jason Yang is a MD/Ph.D. student at the University of Massachusetts Medical School.

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Forget Lanes – We All Need to Head Together Toward Preventing Firearm Injury

Michael Hirsh, MD

EDITOR'S NOTE: This article was originally published in The Conversation on Nov. 28, 2018 (https://theconversation.com/forget-lanes-we-all-need-to-head-together-toward-preventing-firearm-injury-107399). It is reprinted with permission.

Many of us working in the "Gun Sense" field – that is, finding a middle ground position to advance firearm safety and reduce preventable injury in our patients – had an "a-ha" moment that led us to toil in these fields.

Mine was on Nov. 2, 1981, when my friend and co-resident Dr. John C. Wood II was shot right in front of our hospital emergency room at Columbia Presbyterian Hospital in Washington Heights, New York City.

I have taken care of many gunshot wound victims since then, but none so difficult emotionally as this one. I participated in cracking my friend's chest to start open cardiac massage and saw his heart devoid of blood from a through-and-through gunshot wound into his heart with a Saturday night special.

The survivability of a cardiac gunshot wound like this is close to zero, even though he was minutes away from the ER. He was in the OR and placed on cardiac bypass within 10 minutes of arrival. But his pupils were fixed and dilated and he had exsanguinated, or bled out, into his chest cavity. He did not survive despite our best efforts. It was an event that rocked Columbia and all who knew John, a fully boarded pediatrics-turned-surgical resident, a world-class Juilliard-trained French horn player and former Columbia rugby team captain.

The urgency of the firearm violence issue facing our country was heightened this past week when nine people were killed in three separate mass shootings over an 18-hour period in the U.S. In the past month, there have been attacks at places of worship, yoga studios and hospitals. Add these to the shootings in schools and in movie theaters, and the tremendous sense of unease our citizenry is experiencing is completely understandable.

As physicians and surgeons on the front lines, many of my colleagues and I feel that it is no longer acceptable to treat this problem like our trauma team is a MASH unit. We have an obligation and an opportunity to reach out and speak out, and my hope is the country is listening. Because this is indeed our lane.

Watching the violence grow

My training took me to other cities, and everywhere, the tragedy of firearm injury seemed to follow. I knew after that night in November '81 I could no longer practice in New York City, but I could not escape the parade of firearm tragedies. Children shot accidentally. Teens shot in gang wars. Teens and elders shooting themselves in impulsive moments of despair, yielding nearly 100 percent completion of their suicide task.

Gun violence increasingly became my focus when I heard Sarah Brady explain the concept of limiting access to lethal means. Sarah is the wife of Jim Brady, Ronald Reagan's press secretary shot in the 1981 presidential assassination attempt. Brady spent the rest of his life partially paralyzed. He died in 2014, and the medical examiner ruled his death a homicide.

The Brady approach to gun control is limiting access. It is based on the premise that we might not be able to deal with the root causes of the violence – racism, poverty, mental illness – but that we could perhaps deal with the vector of violence that elevates all these factors into lethality – access to firearms. This is the philosophy behind the Brady Campaign, which aims to limit gun violence in the U.S. I began to wonder what I as an individual trauma surgeon could do to make a difference.

Looking for answers

In the 1990s, I was working in Pittsburgh as a pediatric trauma surgeon. A gang turf war over control of the crack cocaine trade broke out between the Bloods and the Crips. Both sides were heavily armed. As the body count rose on the north side of Pittsburgh where I was working, legislators tried to help by establishing a mandatory sentence for anyone in possession of a firearm when arrested for drug trafficking.

This caused the dealers to push the age of the drug runners to preteens and young teens, and they were equally armed. Our pediatric gunshot-wound victim patient numbers soared. When an 11-year-old was shot with an AK-47 in front of the mayor's house, suddenly the city responded. Pittsburgh held community meetings. As director of a Robert Wood Johnson Injury Prevention Program, I was selected to represent the Allegheny General Hospital. The community disparaged our hospital as being insensitive and uncaring. Many believed we were "profiting" from the carnage and just sending the patients back out into the street to face more mayhem even if they had survived.

Our hospital encouraged my practice partner, Dr. Matt Masiello, and me to do something. We were both transplanted New Yorkers in the 'Burgh, and we had heard about a new kind of gun buyback program in Washington Heights where a carpet store owner, Fernando Mateo, had emptied his inventory in exchange for locals bringing in their firearms. Previously, gun buybacks had only offered cash for the weapons. We decided to build a version of the program exchanging the guns for gift certificates to local merchants rather than actual merchandise. We collected 1,400 weapons that first year in 1994 and about 10,000 since then.
The buyback program has become much more than just a way to give the patrons the ability to rid their homes of unwanted or unsecured weapons. We built a public information blitz about the responsibility that goes along with the right to own a firearm, and we built awareness of the increased risk of suicide, homicide, femicide, accidental shooting, or breaking and entering for the purpose of stealing a firearm.

We have now reproduced the program in a number of cities across the U.S. In my hometown of Worcester, Mass., working out of the UMass Memorial Medical Center, our multi-pronged approach to gun safety education coupled with the gun buyback has given us the distinction of having the lowest-penetrating trauma rate in New England.

In calendar year 2017, we had zero firearm fatalities, down from five the year before.

This was an astounding number, in view of national stats showing a rise from 33,000 deaths in 2010 to 38,000 in 2018. We faculty at the University of Massachusetts have built a curriculum for students at our medical school to empower doctors to ask the right questions in the proper way.

I am truly excited about the response my fellow physicians have demonstrated in their reaction to the National Rifle Association's "stay in your lane" comments. The NRA has already tried and failed to gag doctors in Florida from talking with their patients about gun safety.

In 2011, it backed a bill ultimately passed by the Florida legislature that would have forbidden doctors from asking patients about gun ownership or gun storage unless the doctor had a specific reason to do so. Doctors in violation could have been punished by loss of license and up to a $10,000 fine.

"Physicians interrogating and lecturing parents and children about guns is not about gun safety," read a letter from the NRA in support of the bill. "It is a political agenda to ban guns. Parents do not take their children to physicians for a political lecture against the ownership of firearms, they go there for medical care."

Though it took six years to do so, the parts of the law that gagged doctors were overturned by the 11th Circuit Court of Appeals in February 2017.

And now, even more than in previous years, doctors are saying they have seen enough – actually, way too much.

Now the awakening of the MDs gives me a sense of encouragement and hope that we as a profession can lead our country away from the intransigent position in which nothing gets done. Gun buyback is a middle-ground Gun Sense position that can rally a community around the cause that I have been fighting for since that dark day in November 1981. I hope other municipalities will join us, as these programs do work.

The New Look of Nicotine Addiction

Tina Grosowsky, MA

Last spring, I was inundated with requests from curious and concerned parents and schools about vaping. Vaping among youth had skyrocketed. Particularly, I heard questions about the use of one product, JUUL, and adults were trying to figure out how to respond. Many had no idea that vaping products contain nicotine that can damage a teenager's developing brain and lead to addiction.

In response to concerns, the Massachusetts Department of Public Health launched a statewide information campaign called *The New Look of Nicotine Addiction*. The website of the campaign, GetOutraged.org, is a resource to help concerned adults understand what vaping is, how vaping can harm teens' developing brains and to provide ideas for how parents can talk with their children about vaping and JUULing.

Youth are being targeted by the vaping and tobacco industries. Unfortunately, their tactics are working, with nearly one in four high school youth in Massachusetts reporting that they use e-cigarettes. How? Vape "juices" come in thousands of different flavors; sweet flavors attract young people and are the leading reason that youth are vaping. And these products are not harmless. Nicotine is highly addictive and can damage a young person's developing brain. It changes the way synapses are formed, which can harm the parts of the brain that control attention and learning. Nicotine exposure can also lead to mood disorders and can permanently lower impulse control.

To learn more about vaping, please visit GetOutraged.org. There you can see what vaping products look like, get answers to frequently asked questions and find resources for schools and community organizations. Printed materials are available to order free of charge or to download.

I am available to work with schools, coalitions, employers and community-based organizations around these and other tobacco-related issues. Please contact me for more information.

Tina Grosowsky, MA, is the project coordinator, Central MA Tobacco Free Community Partnership, Department of Psychiatry, UMass Medical School.

Can HIPAA Reform Help Tackle Information Blocking?

Peter J. Martin, Esq.

When initially proposed, the HIPAA Privacy Standards had three principal goals: to protect and enhance patients' privacy rights, to improve health care quality, and to improve the efficiency and effectiveness of health care delivery. As many health care practitioners can attest, HIPAA's success in fostering these three purposes is mixed at best. Now, with the recent recognition of "information blocking" as a problem requiring a legislative and regulatory response, the Department of Health and Human Services is inviting practitioners and others to re-visit HIPAA in an effort to revise the HIPAA Privacy and Security Standards. This presents an opportunity for providers to weigh in with their own experiences and suggestions for using HIPAA to tackle information blocking and other issues.

The 21st Century Cures Act defined "information blocking" as a practice that is "likely to interfere with, prevent, or materially discourage access, exchange, or use of electronic health information." Providers found by the Office of the Inspector General to have engaged in information blocking, knowing that such practice is unreasonable, may be referred by the OIG to "the appropriate agency" and be subjected to "appropriate disincentives" to be determined by further rulemaking. Examples in the statute of information blocking largely have to do with the implementation of health information technologies that hinder interoperability and increase the complexity of exchanging information between information systems.

HHS's focus on revising HIPAA includes, but is broader than, addressing information blocking. The request for information issued on Dec.14, 2018, specifically mentions the goals of facilitating efficient care coordination and case management and promoting the transformation to value-based health care. The request also seeks proposals to encourage sharing of treatment information with family members of patients in emergency situations, particularly regarding opioid use, and removing or modifying the current requirement that patients acknowledge receipt of a provider's Notice of Privacy Practices. General issues, and specific questions, raised by the request for information include the following:

Requiring providers to transfer protected health information to other providers. Currently, HIPAA only requires disclosure of PHI to the individual and to HHS's Office for Civil Rights to determine HIPAA compliance. HHS also wants to know in this connection whether there should be some standards for the timeliness of such provider-to-provider transfers of PHI, for example, when a patient transfers care from one provider to another.

Exempting transfers of PHI from providers to non-providers for care coordination or case management activities from the minimum necessary standard. Should the minimum necessary standard also be relaxed for such transfers of PHI for utilization review, claims management and formulary development?

Expanding the ability of covered providers to disclose PHI to social service agencies and community-based support programs to facilitate provision of non-medical services. What if the recipient program involves law enforcement officials? Should such recipients be required to enter into some kind of business associate or other agreement with the provider?

Modifying HIPAA in response to the particular challenges posed by substance use disorder and serious mental illness patients. How to reconcile HIPAA with state laws regarding personal representatives so as to encourage greater family member involvement in the patient's treatment? What about the restrictions imposed by the 42 CFR Part 2 regulations on the records of substance use disorder programs?

Meeting the statutory requirement that accountings of disclosures be expanded to include disclosures for treatment, payment and health care operations purposes. The HITECH Act required HHS to modify the Privacy Rule to include such disclosures made during the three years prior to the request for an accounting. HHS has receded from an earlier proposal that individuals receive an "access report" and now asks a number of questions about the burdens associated with the expansion of this requirement.

Eliminating the requirement that providers with a direct treatment relationship make a good faith attempt to obtain an acknowledgement of receipt of the provider's Notice of Privacy Practices. One of HHS's questions regarding this issue is whether individuals mistake signing the acknowledgement with entering into a contract, waiving their rights or being a condition of receiving care. Another question asks whether the NPP is bundled with other intake documents and how long those documents are.

The issues raised in this request for information may be quite familiar with practitioners and may suggest related issues and frustrations posed by HIPAA compliance in an era of accountable care. Comments on the request for information are being accepted until Feb. 12, 2019. Electronic submissions may be sent via http://www.regulations.gov; search for Docket Number HHS-OCR-0945-AA00.

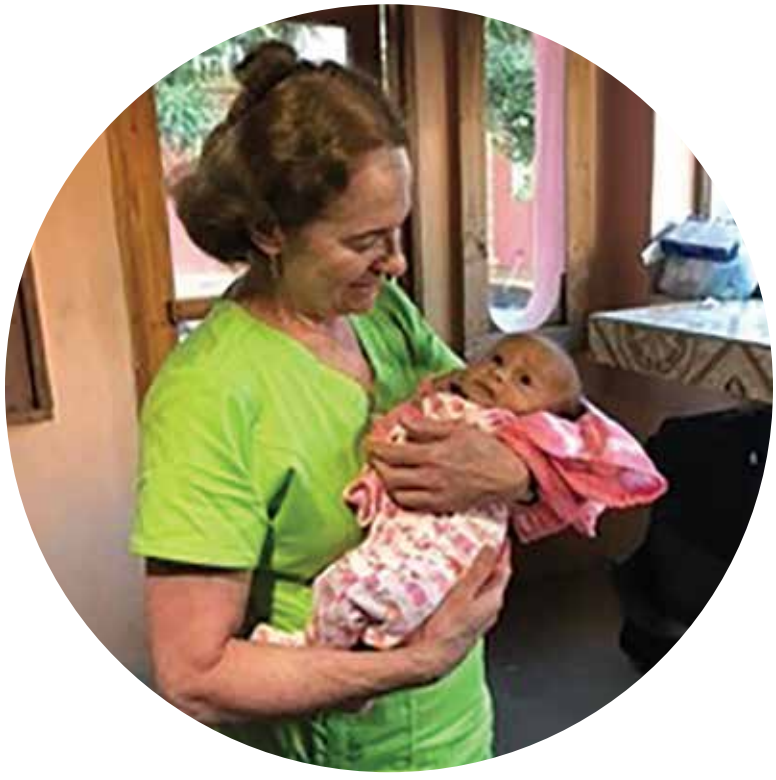
Peter J. Martin, Esquire, is a partner in the Worcester office of Bowditch & Dewey, LLP, his practice concentrating on health care and nonprofit law.

SAVE THE DATE

WORCESTER DISTRICT MEDICAL SOCIETY 223RD ANNUAL ORATION

WEDNESDAY, FEBRUARY 13, 2019 • 5:30PM
BEECHWOOD HOTEL • WORCESTER, MA

"HOPE FOR HAITI: HEALING ONE PATIENT AT A TIME"



ORATOR:

DR. JANE LOCHRIE

MEDICAL DIRECTOR, ST. ANNE'S FREE MEDICAL PROGRAM

FOR MORE INFORMATION ABOUT WDMS, VISIT OUR WEBSITE WDMS.ORG

2018 WDMS SCHOLARSHIP PROGRAM

Michele Pugnaire, MD

On behalf of the WDMS Scholarship Committee, I am pleased to introduce our 2018 scholarship recipients. They are a most impressive group of future physicians from diverse backgrounds, medical schools (including UMass and others regionally and nationally) and a variety of communities across the Worcester district. They represent the "best of the best," with their outstanding academic credentials, exceptional accomplishments in leadership and research and, most notably, their passion and deep-seated commitment for community service and volunteerism.

Through the generous support of our scholarship sponsors and donations from our WDMS membership, the committee awarded a record number of 20 scholarships in 2018. These were presented at the WDMS Fall District Meeting and Awards Ceremony on Nov. 14. Joining us that evening were our scholarship recipients, along with their award sponsors, family members and friends. As always, our scholarship awardees expressed their gratitude and appreciation for the financial support provided through their scholarships. As you can see in the photos from the scholarship awards ceremony, the smiles on our students' faces tell it all.

The application process is competitive, with selection criteria including high academic standing, active involvement in community service and financial need. Awards are restricted to students in medical or osteopathic schools who are legal residents of Central Massachusetts.

Given the rising burden of medical debt for our students, it's not surprising that each year, the number of worthy applicants always exceeds the number of scholarships available. Please consider contributing to our scholarship program to support these outstanding students and future physicians, so that ALL worthy applicants can benefit from a scholarship.

Michele Pugnaire, MD, Chair, WDMS Scholarship Committee

SCHOLARSHIP AWARD RECIPIENTS

SCHOLARSHIPS PRESENTED AT THE
WORCESTER DISTRICT MEDICAL SOCIETY
FALL DISTRICT MEETING AND AWARDS CEREMONY

WEDNESDAY, NOVEMBER 14, 2018

Left to Right: Kelsey Jones, Melinda Futran, Kara Kennedy, Jean Horrigan accepting the award for Jamie Horrigan, John and Toni Heard accepting the award for Matthew Heard amd Alex Newbury

Front Row (left to right): Dr. Michele Pugnaire, Regina Brown, Michelle Shabo, Akshay Kapoor, Marian Younge, Alexander Buslov, Colleen Flanagan, Britney Atwater, Joyce Cariglia, Edward Amaral and Neena Patwardhan. **Back Row (left to right):** Dr. Leon Josephs, Dr. Somya Viswanathan, Dr. Stephen Tosi and David Williams

THE DR. HERBERT E. NIEBURGS SCHOLARSHIP AWARD RECIPIENTS

Left to Right: Laurel Banach, Kelly Flanagan, Brian Coletti, Emily Gauvin and Alexander Buslov

Presenter:
Nathan Turner

Accepting the award on behalf of Caitlin Gauvin, Brian Coletti and Emily Gauvin

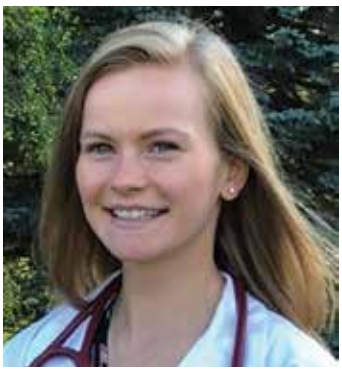
Award Recipient:
Laurel Banach

Award Recipient:
Daniel Marsden

Alexander Buslov accepting the award on behalf of Lucy Li

Award Recipient:
Kelly Flanagan

Award Recipient:
Caitlin Gauvin



Award Recipient:
Jamie Horrigan

Award Recipient:
Matthew Heard

Award Recipient:
Aarane Ratnaseelan

Award Recipient:
Lucy Li

Award Recipient:
William Sidelinger

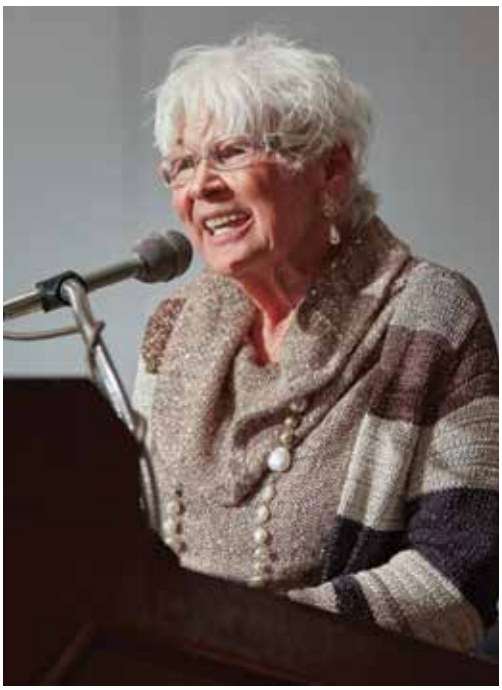
28th Annual Dr. A. Jane Fitzpatrick Community Service Award Recipient
Left to Right: Nominator: Warren Ferguson, MD, Award Recipient: Erik L. Garcia, MD and Chair, WDMS Awards Committee: Michael Hirsh, MD

WDMS Career Achievement Award Recipient
Left to Right: Nominator: Terence Flotte, MD, Award Recipient: Daniel Lasser, MD, MPH and Chair, WDMS Awards Committee: Michael Hirsh, MD

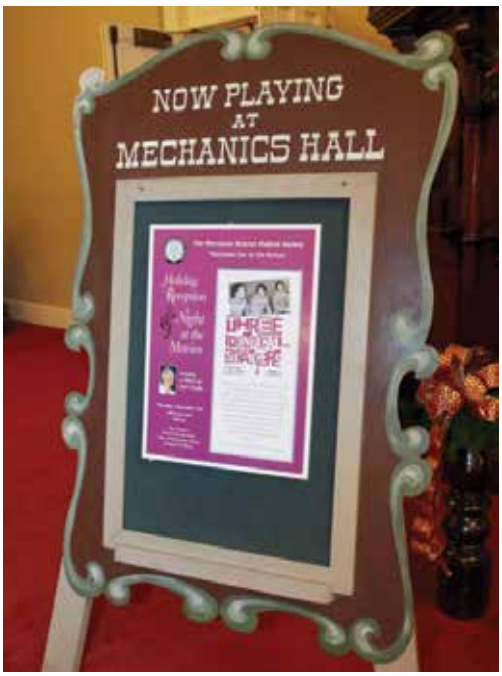
WORCESTER DISTRICT MEDICAL SOCIETY

HOLIDAY CELEBRATION & MOVIE NIGHT INCLUDING THE TRIBUTE FOR JOYCE CARIGLIA

THURSDAY, DECEMBER 13, 2018

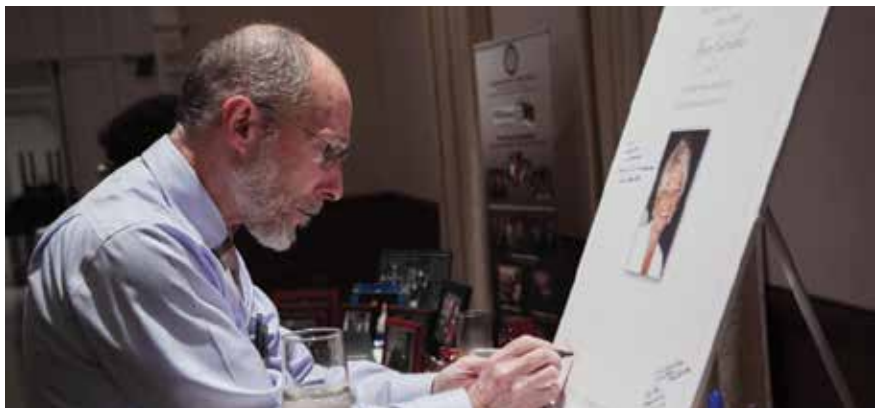


Joyce Cariglia



Movie: Three Identical Strangers

Martha Wright, MBA, Joyce Cariglia, Dr. Sahdev Passey and Melissa Boucher



Dr. James Broadhurst

Front Row: Dr. Jane Lochrie, Dr. James Broadhurst, Dr. Sahdev Passey, Joyce Cariglia, Dr. Lynda Young and Dr. Peter Schneider **Back Row:** Dr. Mary O'Brien, Dr. George Abraham, Dr. Michael Hirsh, Dr. Giles Whalen, Dr. Bruce Karlin, Dr. Sidney Kadish, Dr. William Primack, Dr. Thomas Rosenfeld, Dr. Dale Magee, Dr. Frederic Baker and Dr. Paul Steen

Worcester District Medical Society

Calendar of Events

2018

September 14 — Friday, 7:30 a.m., Beechwood Hotel

27TH ANNUAL WOMEN IN MEDICINE BREAKFAST

Speaker: The Honorable Harriette L. Chandler, Massachusetts State Senator for the 1st Worcester District

Cosponsored by Physicians Insurance Agency of Massachusetts (PIAM)

October 11 — Thursday, 5:30 p.m., Beechwood Hotel

13TH ANNUAL LOUIS A. COTTLE LECTURE

Topic: TBD

A generous bequest from the Louis A. Cottle Trust was received allowing WDMS to establish an annual lecture series in memory of Dr. Cottle, a dedicated Worcester physician.

November 14 — Wednesday, 5:30 p.m., Beechwood Hotel

FALL DISTRICT MEETING AND AWARDS CEREMONY

The dinner meeting includes the Dr. A. Jane Fitzpatrick Community Service Award, the WDMS Career Achievement Award, and Scholarship Award Presentations.

November–December 30 & 1 — Friday and Saturday, 9:00 a.m., MMS Headquarters and the Westin Hotel, Waltham, MA

2018 INTERIM MEETING AND MEETING OF THE MMS HOUSE OF DELEGATES

All WDMS members are invited to attend as guests and may submit a resolution to the Massachusetts Medical Society.

December 13 — Thursday, 5:30 p.m., Washburn Hall, Mechanics Hall

HOLIDAY RECEPTION AND A NIGHT AT THE MOVIES

Join us for a holiday buffet and movie with a group discussion to follow.

2019

February 13 — Wednesday, 5:30 p.m., Beechwood Hotel

223RD ANNUAL ORATION

Hope for Haiti; Healing One Patient at a Time

Orator: Jane Lochrie, MD

Dr. Lochrie is the medical director of the St. Anne's Free Medical Program, editor of *Worcester Medicine*, past-president of the WDMS, and current chair of the Personnel Committee. She recently traveled to Haiti for a medical mission.

March 1 — Friday, 7:00 p.m. reception; 8:00 p.m. program, Mechanics Hall

CZECH NATIONAL SYMPHONY

100 Years of Leonard Bernstein, *Candide Overture*, *West Side Story* Dances, Selections from *Trouble in Tahiti* and *Songfest*, and *Mass* Meditations

March 13 — Wednesday, 5:30 p.m., Beechwood Hotel

WOMEN IN MEDICINE LEADERSHIP FORUM

Program to be determined

March 30 — DOCTORS' DAY

Event to be announced

March 30 is National Doctors' Day when patients, friends, family and colleagues honor physicians and express their gratitude for physicians' continuing commitment to patients and exceptional medical care.

The event will be sponsored by the Worcester District Medical Society Alliance.

April 10 — Wednesday, 5:30 p.m., Beechwood Hotel

ANNUAL BUSINESS MEETING

Meeting includes presentation of the 2019 Community Clinician of the Year Award.

May 2 & 4 — Thursday and Saturday, 9:00 a.m., the Seaport Hotel and World Trade Center, Boston

2019 MMS ANNUAL MEETING AND HOUSE OF DELEGATES

All WDMS members are invited to attend as a guest and may submit a resolution to the Massachusetts Medical Society.

May 16 — Thursday, 5:30 p.m., University of Massachusetts Medical School

MEET THE AUTHOR SERIES

"Attending"

Author: Ronald Epstein, MD, professor of Family Medicine, Psychiatry, Oncology and Medicine (Palliative Care), University of Rochester School of Medicine and Dentistry

Cosponsored by WDMS and Humanities in Medicine Committee of the Lamar Soutter Library at the University of Massachusetts Medical School

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SHANGHAI OPERA SYMPHONY ORCHESTRA

DVORAK SYMPHONY NO. 9
SIBELIUS VIOLIN CONCERTO
ROSSINI BARBER OF SEVILLE OVERTURE

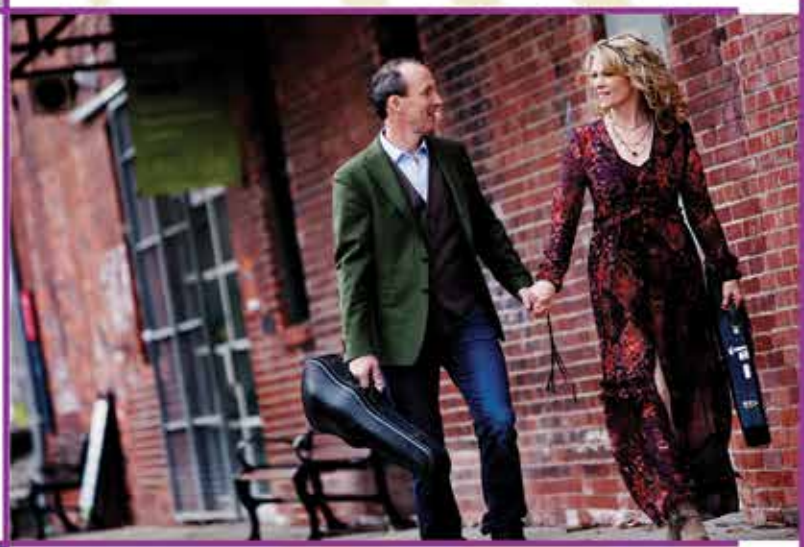
FRIDAY FEBRUARY 15, 2019
MECHANICS HALL

NATALIE MACMASTER & DONNELL LEAHY

VISIONS FROM CAPE BRETON

FRIDAY, MARCH 15, 2019
THE HANOVER THEATRE

CELTIC FUN FOR THE WHOLE FAMILY THIS ST. PATRICK'S DAY!



SWAN LAKE RUSSIAN NATIONAL BALLET

TCHAIKOVSKY'S FULLY STAGED MASTERPIECE

FRIDAY, MARCH 22, 2019
THE HANOVER THEATRE

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WINTER *Ball*

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