

# A History of the Emerging Infectious Diseases Journal

[Announcer] This program is presented by the Centers for Disease Control and Prevention

[Peter Drotman] I'm Dr. Peter Drotman, editor-in-chief of the *Emerging Infectious Disease* journal, and today I'm talking with Dr. Jim Hughes, who is professor of medicine and public health at the Emory University. He was, for a good many years, the director of the National Center for Infectious Diseases at CDC, and we're going to discuss the 20-year history of the EID journal. Full disclosure here: Dr. Hughes is the person who appointed me editor-in-chief—that was back in 2001. And in fact, in the 20-year history of the journal, he is the *only* director who has appointed or hired an editor-in-chief for this journal, the first one, the founding editor, Dr. Joe McDade, back in 1995. Please tell us a little bit about what was going on at CDC and the birth of the field of emerging infectious diseases that gave rise to EID.

[Jim Hughes] Well Peter, thank you, first of all for the invitation to be here today. I'd like to take the opportunity to congratulate you and everyone else involved on the 20<sup>th</sup> anniversary of my favorite journal. Now, in terms of how this journal came to be... In the late 1980s and the early 1990s there began to be an awareness of the challenges that microbes would pose in the future, and we had a number of examples of emerging and re-emerging infectious diseases. The Institute of Medicine formed an expert committee that was co-led by Dr. Joshua Lederberg and Dr. Robert Shope back in the very early 1990s to take a look at domestic preparedness and response capacity for new and emerging and re-emerging infectious diseases. In 1992 they issued a seminal report from the Institute of Medicine. That report had a number of recommendations in it, the majority of which actually targeted CDC. So in the National Center for Infectious Diseases at that time, we took that report very seriously and we thought about ways in which we could respond to the recommendations in it that were directed at CDC. During 1993 and 1994, a lot of work was done by a lot of people led by Dr. Ruth Berkelman to develop a CDC emerging infection strategy, and that was issued in 1994. I will say that we had the support of Dr. Lederberg and Dr. Shope and other members of the committee in doing that, and we had enthusiastic support from Dr. David Satcher who was director of CDC at that time. In 1994, the emerging infection strategy was issued, and part of what it called for was increased interdisciplinary collaboration and better communication between people involved in clinical medicine, research, and public health. Joe McDade, at the time, was in a leadership position in the National Center for Infectious Diseases, and he really came up with the concept of developing a peer-reviewed journal that could focus in a very timely way on dissemination of information about emerging infectious disease issues. Although we didn't really realize it at the time I don't think, what came out of this was *Emerging Infectious Diseases*.

[Peter Drotman] Yeah, getting back to the founding editor, Joe McDade, he is a laboratory scientist who sort of led by example, and he was one of the, and perhaps the main, discoverer of *Legionella pneumophila* back in 1976 that may have even pre-dated your starting to work with him. Do you have any recollection of his work in the lab with the late Charles Shepard and with his subsequent work in ehrlichia and other emerging infections that he had a hand in uncovering?

[Jim Hughes] Well, to put that in perspective, I was actually at the University of Virginia in Charlottesville in 1976 doing my infectious disease fellowship. So I was aware, through media reports, of this outbreak of unexplained respiratory illness in legionnaires in Philadelphia, and I was aware that there was a long running attempt to identify the etiologic agent. I didn't know Joe

at that time, but I was aware of his role in the discovery of the organism. And of course this happened before the terminology “emerging infections” was in vogue, but Joe was introduced early on to an important new emerging infectious disease, and made a historic contribution in terms of discovering the etiologic agent.

[Peter Drotman] Now, you mentioned Drs. Shope and Joshua Lederberg. The late Bob Shope was a founding member of the editorial board of EID, and I think he’s sometimes described, at least up until that time, as the scientist who had discovered the largest number of arboviruses in the history of that field. I don’t know if that is a record that still stands or not, but Joshua Lederberg who was not actually a formal member of our editorial board, but a magnificent friend of EID and was looking out for our interest and took great care to see that he would do anything he could to help us succeed, including writing articles once in a while for us, and lobbying with the National Library of Medicine to have our articles included in their catalogs earlier than they might otherwise have been. But, you worked more closely with Josh Lederberg than I did, please tell me some of your recollection of his contributions.

[Jim Hughes] Well, Josh Lederberg was a phenomenal individual as you know, and he played a critically important role as a champion and an advocate for the CDC emerging infection strategy and for the *Emerging Infectious Diseases* journal. Both he and Dr. Shope, and a few other members of the expert committee that developed the 1992 Institute of Medicine report, came to visit CDC, I think in 1991, but as that report was nearing completion, because they realized that they did not have a full picture of CDC capacity and role in responding to emerging infectious disease issues. Dr. Bill Roper was CDC director at the time, and I remember that Dr. Lederberg and Dr. Shope and four or five other members of the committee visited for a day and met with Dr. Roper, me, and others in the director’s conference room, the old room 207 that many of CDC old-timers are familiar with in Building 1 which is no longer with us. But that meeting was critically important because the committee did become more aware of the role that CDC ought to be playing, and the numerous constraints that CDC faced at that time in terms of public health capacity and our ability to work with state and local health departments and to link with people in clinical and academic medicine was not what it needed to be, so some of those recommendations to strengthen those capacities appeared in the 1992 report. Once the report came out, Dr. Lederberg felt that there needed to be a vigorous CDC response, and he supported us in that, and he co-chaired one of the meetings that we had with external partners during the time that the strategy was being developed.

[Peter Drotman] Now let’s go to some specific examples. I sort of had a baptism of fire, so to speak, in that I became the acting editor-in-chief in 2001. And the first issue that had my name associated with it was a theme issue dedicated to the then brand new West Nile Virus invasion of North America; we had an entire issue devoted to that. And within a month or two after that we had the anthrax attacks in the East Coast; several cities and a number of prominent regular citizen individuals involved. And we not only rushed to publish the first ten cases of inhalational anthrax but then, within one year, had an entire issue devoted to the investigations. And that, those two initial outbreaks that I had some role in overseeing peer review, certainly illustrates what you were just talking about, about the need to work with state, local, clinical, and other scientists.

[Jim Hughes] Well you certainly had a baptism of fire! I remember the West Nile outbreak and obviously the anthrax letter attacks quite vividly. Those were dramatic examples of the need to

broaden the interdisciplinary approach and engage a much broader range of partners in the journal, and its ability to rapidly publish peer reviewed new scientific evidence was very important in that way.

[Peter Drotman] And that evolving reputation and cadre of reviewers and guest editors helped us when the sort of landmark year of 2003 in the history of emerging infectious diseases. Anybody in the field instantly recognizes monkeypox and SARS as two big events that dramatically illustrate why we need to know about emerging infections and expand our knowledge indeed. I know you were in the hot seat on both of those issues.

[Jim Hughes] The seat was indeed pretty hot, particularly because SARS was not over when monkeypox was recognized, so we were all on the hot seat in 2003, first with the SARS pandemic and before that was over, the recognition of monkeypox in the United States, first time that monkeypox had been recognized in the western hemisphere. These are both zoonotic diseases, as the investigation showed, and they reinforced the need to engage in a One Health approach, to engage veterinarians and others involved with animal health, both domestic animals and wild life, and people involved in environmental health. That's the One Health arena, the intersection between human health, animal health, and environmental health. The SARS outbreak was featured prominently in the *Emerging Infectious Disease* journal and it reminds me actually SARS was named by Dr. Heymann and colleagues at the WHO as the Severe Acute Respiratory Syndrome, or SARS.

[Peter Drotman] That's Dr. David Heymann who is now at Public Health England and was then and still is a member of our editorial board.

[Jim Hughes] Yes, a distinguished individual and he was an assistant director general at WHO at the time of the SARS outbreak. But back in 1993, at the time within 6 months of the release of that Institute of Medicine report in the fall of 1992, there was an outbreak of severe acute respiratory disease recognized by an alert clinician on the Navajo reservation in the southwestern United States. We weren't clever enough to think of that SARS acronym at the time, but if we had been, it would have certainly applied. It turned out, to everyone's surprise, to be caused by a previously unrecognized hantavirus named Sin Nombre virus, and the disease is known as hantavirus pulmonary syndrome. What that outbreak, and a couple of other big outbreaks around that same time, did was draw public and policymaker attention to the 1992 IOM report and its recommendations. And it made our work to develop the CDC strategy even more urgent.

[Peter Drotman] As you pointed out, many of the emerging infections of public health importance have their origin in the animal world. And a hallmark of this journal is that its scope extends to the animal world, so we don't only consider and publish papers that deal with human infections, but also animal infections, food chain infections, and infections that move from one species to another. By 2005, we had recruited a few associate editors from the zoonosis and veterinary medical community, and we did a theme issue in December of that year that was filled with reports of emerging zoonoses. And that proved so popular that we actually don't even have guest editors for that issue, but every December, we fill the issue with reports of emerging zoonoses.

Now, you've been president of the IDSA in recent years, serving a term and traveling around the country, and you work with state health departments and both medical schools and I assume also veterinary leaders. Can you say something about bridging the gap, or sometimes called "One Health" issues, is that something that is becoming of greater interest to public health scientists?

[James Hughes] Well first of all, let me say I did have the honor and privilege of serving as president of the Infectious Diseases Society of America, IDSA, a few years ago, and I was able to introduce the need for this One Health approach to other leadership in the society, and I remember we had some interesting discussions at board of directors meetings about the need to reach out more to engage the veterinary clinical and public health communities. This idea, this One Health approach is not new; it really goes back to the 19th century. But it's been promoted in recent years, primarily by individuals from the animal health world. It's been a little slower to catch on in human medicine and public health, and in environmental medicine and public health, although there has been progress, and the microbes are out there to continually remind us of the need for a broad, interdisciplinary approach, in terms of strengthening our abilities to monitor, detect early, diagnose, and respond effectively to these emerging diseases that cross species lines, as the majority of recently recognized emerging pathogens have done.

[Peter Drotman] Not only does the science of emerging infections advance, and not only do the disease and the microbes advance, but our capabilities need to advance. As Josh Lederberg always used to say—his favorite quote: "It's our wits versus their genes." So what do you think the future holds?

[James Hughes] The future clearly holds more challenges in this arena. You took the words out of my mouth by quoting Dr. Lederberg. His point that he made over and over again is that we're in an era where it's apparent that we are in a confrontation, if you will, between microbes and our genes, so our wits better be up to the challenge. Now, as we know, not all microbes are bad. In fact, the vast majority are either innocuous or quite good for us, in fact, and work that's ongoing on the human microbiome provides lots of evidence of that, and that's a topical area for the journal in the future as well, I would say. Over the years, it has occurred to me that the Institute of Medicine committee identified 6 factors that contributed to disease emergence back in 1992, and a follow-on committee, IOM committee, that was co-chaired by Dr. Lederberg and Dr. Peggy Hamburg who's just recently announced that she's stepping down as commissioner of FDA, issued the follow-on report in 2003, and they added seven additional factors that contribute to disease emergence and reemergence, and they validated the original 6. If you look at that long list of 13 factors, and you think about trends, you would see that trends in most of those factors actually operate in favor of the microbes. So, I've always felt that microbes, in a sense, are a probe, the pathogenic microbes are a bit of a probe, and we should regard them that way because they clearly demonstrate deficiencies in human behaviors and public health systems and healthcare systems in the United States and around the world. We've seen that most recently with the tragic Ebola situation in West Africa that is ongoing. The Ebola situation was declared by Dr. Margaret Chan back in early August as a public health emergency of international concern. We haven't had a chance to really talk about the International Health Regulations that WHO updated and issued in 2005 that went into effect in 2007. This is an international treaty signed by over a 190 member states of WHO. There remains a lot of work to do to fully implement these international health regulations and the Ebola experience, tragic as it is, has, yet again, reinforced the need to do that in a timely way.

[Peter Drotman] Actually, EID published a theme issue on the fifth anniversary of the signing of that treaty with a collection of articles on the International Health Regulations. It was well-received by people who follow regulatory public health quite closely, but it was not one of the more popular issues that we published, although we're glad we did it, it may be time to dust off some of the experiences and some of the reports on them, because clearly, we need to pay close attention to the issues that result in the need for such policies.

On another topic that is certainly among the factors that contribute to emergence is the dwindling power of some of the tools we use to address emerging infections, and garden-variety infections for that matter, and that is the issue of antimicrobial resistance, which has so many aspects to it. I know that you've been interested in that topic over literally decades. What are some of the, some of your thoughts on it?

[James Hughes] Well, antibiotic resistance is here to stay and it's getting worse, and it seems that every week or so, there's a report of a new problem with a so-called "superbug," a multiply-resistant organism that can't be treated with many, if any, currently available antibiotics. This problem is a challenge to clinicians, to researchers, and to people in public health in the U.S. and around the world. WHO has noticed this and is taking this problem seriously. The president, President Obama, recently released an executive order telling federal agencies to take this problem very seriously, and providing some specific direction to them, and the President's Council of Scientific Advisors, the PCAST committee, recently issued a very important report on this problem, as well. This is a problem in human health and animal health and environmental health, and it requires a multi-faceted strategy and a lot of transdisciplinary collaboration to address it effectively. Part of the problem is lack of an antibiotic development pipeline, which is why you hear people talking about concerns about returning to the pre-antibiotic era. For many years, new antibiotics were coming along pretty regularly, but that has, that pipeline has largely dried up. There are beginning to be some encouraging signs that large and small pharmaceutical companies are beginning to reengage somewhat in work to discover new antibiotics and bring them to market, but that's an eight to ten to twelve year effort in the case of any individual drug. So, it's important in the meantime that we develop rapid, point-of-care diagnostic tests, that will allow physicians to apply them to patients with unexplained respiratory illness, and provide guidance in terms of whether an antibiotic is indicated. Antibiotic stewardship programs in hospitals, development of vaccines targeting antibiotic-resistant organisms—these are all part of a multi-faceted strategy, as is strengthened surveillance and monitoring of both antibiotic resistance in humans and animals and antibiotic usage in both humans and animals.

[Peter Drotman] We have our work cut out for us.

[James Hughes] Indeed you do.

[Peter Drotman] And you can read about it in the pages of *Emerging Infectious Diseases*. I'm Dr. Peter Drotman for *Emerging Infectious Diseases*, talking today with Dr. Jim Hughes of Emory University and formerly of the Centers for Disease Control and Prevention.

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