JL:
Welcome to the first virtual alumni book club of 2010. I’m Jay Lenrow, alumnus of the class of 1973 and an officer of the Alumni Council. We are here in the Mattin Center on the Homewood Campus in the digital media center as we await the beginnings of a massive winter storm that may drop as much as two feet of snow on campus. Hopkins sophomore Buddy Sola is taping this talk today and it will be available to you on the website in transcribed form as well. It is a pleasure to introduce our faculty host, Professor Andy Pekosz who will discuss this month’s selection, “The Great Influenza: The Story of the Deadliest Pandemic in History”, by John N. Barry.

Professor Pekosz is assistant professor of Molecular Microbiology and Immunology at the Bloomberg School of Public Health. His research interests lie in understanding the interaction of viruses with the respiratory epithelium. His efforts are focused on Influenza A virus, the severe, acute respiratory syndrome coronavirus (SARS-CoV) and Andes virus, a South American hantavirus responsible for Hanatavirus Pulmonary Syndrome (HPS). As you will discover by reading this book, the Great Influenza of 1918 killed between 50-100 million people worldwide, including some 675,000 in the U.S. alone.

This influenza outbreak killed more people in one year than the various plagues in the middle ages killed in a century. The book covers the pandemic from three interweaving threads: the history of American medicine, where Hopkins Hospital played a major role; the spread of the virus from a farm in Kansas; and the medical community’s race to analyze and treat the disease. Professor, thank you for being with us today.

AP:
It is a great pleasure to be here.

JL:
Could you share two passages that you believe are representative of the author’s writing and discuss why you chose them?

AP:
Sure, the first one that I’d like to read comes from Chapter 15. “Many histories of the pandemic portray the eruption of the deadly disease, the hammer blow of the second wave as sudden and simultaneous in widely separate parts of the world and therefore deeply puzzling. In fact the second wave developed gradually. When water comes to a boil in a pot, first an isolated bubble releases from the bottom and rises to the surface, then another, then two or three simultaneously, then half a dozen, but unless the
heat is turned down soon enough all the water within the pot is in motion, a surface of boiling violent chaos. In 1918 each initial burst of lethality, isolated as it may have seemed, was much like a first bubble rising to the surface in a pot coming to a boil. The flame may have ignited and set off the first burst. The outbreak that killed 5% of all French recruits at one small base was another; Louisville was still another as well as for the deaths in the city of Exeter; and the outbreak in Switzerland. All of these were bursts of lethal disease, violent bubbles rising to the surface."

JL:
It is an interesting analogy, Professor, that brings to mind one of the threads that you and I had a chance to discuss earlier, which was the way the political establishment in this country or any other country deals with something like this because when those first bubbles rise to the surface, often it’s not enough for a politician to see the need to act, whereas people like yourself, public health professionals, know that this is just the waves starting to build in ferocity.

AP:
Very true, that quote really captures the essence of dealing with this epidemic particularly an epidemic that has the short incubation period that can spread rapidly across large swaths of land. The time to act is when you see those first boils because that’s when you have the most control over the course of an epidemic. But often times people need to see that rolling boil, they need to see the situation in all its intensity before they want to act and unfortunately when it comes to infectious diseases in epidemics, usually at that point in time, there’s very little one can do with public health efforts to change the course of disease once it’s really established itself.

JL:
Let’s look at two recent examples: the Hong Kong Avian Flu epidemic; and, more recently, the H1N1 or Swine Flu, this past summer and fall, here in the United States. How much better are we politically at reacting than we were back in 1918?

AP:
Well, I think that the fact that communication skills, communication methods are so advanced right now we can really keep track of outbreaks in almost a real time manner. The H5N1 outbreaks that started to occur around 2003 in earnest were important because they set the stage and reminded us of how severe influenza disease could be because those H5N1 outbreaks really resulted in disease and people can get infected. And the virus hasn’t been able to spread from person to person, so in many ways it was the bell that was warning us about what influenza could do. Because of those outbreaks, we established a lot of good public health measures and some good resources to draw on when the eventual epidemic came. In 2009 that pandemic did come and our responses to that have been very, very good in terms of what we can do in following the virus, understanding the virus, understanding its spread but, it’s also a pandemic where we have to see how it unfolds. It’s very difficult to predict these things. There are a lot of parallels between 2009 H1N1 with respect to its emerging in 1918, at an odd time, spring and early summer. The first wave sort of moving slowly through the population, a second wave that did emerge come September and October, which led to a large number of cases but not as severe a disease as we
saw in 1918. And now we’re waiting for the next step of what this outbreak will be, whether there will be a third pandemic or a third wave of the pandemic and whether or not this virus will change in some way like the 1918 seems to have changed during its first 1-2 years in the human population.

JL:
One of the interesting notes from the book also was the thought that the government, even though we did have some communication and that’s not what we obviously have today. We had means of communication – newspapers in major and smaller cities in the nation, telegraph. But the government seemed to do very little to let the general populus know that something was going on.

AP:
Yeah and part of the issue brought forward about this is that World War I was going on and there were some limitations on the press in what they could and could not report, but one of the fascinating things to me is this fact that there is this sort of heterogeneity, this very different response to the pandemic between public health officials and the general population as you move from city to city. Some places felt like it was just influenza and felt no need to prepare. Other cities earnestly prepared for a pandemic once they knew something was coming. Other cities in the midst of a pandemic, in the midst of people dying, still did not appear to find it necessary to put major public health measures in. So it’s one of the interesting things about how differently communities responded to this pandemic in 1918 and it’s something I don’t think we saw in 2009 H1N1 because we’re so interconnected now that the press was looking for these inconsistencies. Why can’t we have one single message out there, we can talk to each other and communicate so quickly and have one single message out there. So any slight inconsistency in the messages was amplified, so where as in 1918 there were lots of different ways to approach the pandemic depending on where you lived and who was responsible for the response.

JL: So it’s also interesting to note in 1918 Johns Hopkins medicine was still a rather new institution. Although it was already gaining a considerable reputation not only in this country, but worldwide and we were eight years removed from Dr. Osler creating the then most modern curriculum in the world. You mentioned earlier that you read the book for the first time before coming to Hopkins. Rereading and seeing the names on the walls and the portraits at the hospital, it had a slightly different meaning. Do you want to elaborate?

AP:
Very true, I first read this book when I was on the faculty of the Washington University in St. Louis and obviously very interested in it. When I came here to Hopkins 2 years ago I started to see, right across my office is the William Welch Library. We have busts of William Welch as the Dean of the School of Public Health and that history really came through so when I reread this book it was with a completely different light particularly the beginning with Hopkins as a medical institution and a public health institution, and how it was right around this time that modern medicine was really established in the United States in terms of the basic research component and the training of a medical faculty and a public health faculty. It was interesting to hear one of the things that I wanted to really think about was I’d known that William Welch had gotten infected with the virus during this period of time. I couldn’t
remember what his response was to the infection. But I did find that section as I read through it and I wanted to just read out loud a little bit about that part of this which is from Chapter 22. ‘But as the train moved south he felt worse and worse perhaps suffering a sudden violent headache and an unproductive cough in which nothing came up and with a fever. ...he looked at himself objectively and made a correct diagnosis, he had influenza. No record exists for this precise clinical course. All of Baltimore and all of the east coast were erupting in flames. The virus struck Hopkins itself so hard that the University closed its hospital to all but its own staff and students. Three Hopkins medical students, three Hopkins nurses and three Hopkins doctors would die. Welch did not go to a hospital, almost 70 years old, 40 years older than those that were dying in the greatest of numbers, having just left the horrors at Devins and knowing the enormous strain on and therefore the likely poor care at the hospital facility. He later said, ‘I could not have dreamed of going to a hospital at that time.’ Instead he went to bed immediately in his own rooms and stayed there. He knew better than to push himself now, pushing himself now after being infected with this disease could easily open the path for a secondary invader to kill. After ten days in bed at home, when he felt well enough to travel at all, to recuperate more he retired to his beloved Hotel ...in Atlantic City, the odd tacky place that was his haven.’

So I read this and was a little bit disappointed. I was looking for more insights from him especially when you think about the fact that from looking at the army bases and seeing the tremendous mortality and tremendous suffering that this was causing, particularly in a young group of men, and seeing what was happening in cities along the East Coast at the time and then realizing well enough on his own that he was suffering from the same symptoms that he’s seen all these other people suffering from. I was really hoping to get a little more insight on what he was thinking having just come from the situation in that way and realizing he was a part of those statistics he was analyzing. So it left me a little bit disappointed, then it’s something I have to look into a little more.

JL:
The speed of this virus is what astounded me. One of the statistics that Barry quotes is that one in every 67 members of the American armed forces actually died from this virus, and all those deaths occurred in a period of 10 weeks. That’s astounding. How did this kind of vortex, the draft in the army during the following fall, and the fact that we were in the midst of the early stages of a World War, how did that all mix in to help cause this epidemic?

AP:
There are several factors that really came together; one was the fact that this influenza virus was a very different kind of influenza than we had previously ever seen. Many of the doctors that had seen the disease thought this has to be something new, something different because of the presentation and how quickly this virus had spread in certain situations. So the virus itself had some interesting properties that allowed it to take hold on the human population rather quickly, and then combined with the fact that the U.S. was fighting a war and it was in the process of shipping large numbers of soldiers overseas, first training them of course, and then moving them over, and in those kinds of environments the influenza was absolutely thriving. We talk about there being a safety zone between 3-6 feet from the infected person and if you’re within that zone there is a high likelihood of getting infected. If you
are outside of that zone there is much less likelihood of being infected. So if you see some of these barracks of people, bed after bed after bed right next to each other within three feet, hundreds of people in a room, it’s just a situation, unknown to the medical officers at the time, that was just perfect for spreading a virus like influenza.

JL:
Do you have any issues you could single out that the readers would find interesting?

AP:
I think that looking at, what I like about this book, is how the book brings together the multiple aspects of life that sort of factor into any epidemic. You have the personal responses, the individuals themselves, how their daily routines are being changed; you have the public health responses, how do we protect the general public in general; we have the medical response, how do we treat people, what do we do with patients who are being ill; and the political responses, knowing there is a war going on at the same time there is an outbreak going around and not wanting too much fear in the population. Yet they were facing a danger that was much, much greater than anything they experienced in recent memory. So I think how all those factors play together is something that is very, very interesting, particularly since we have now gone through this 2009 H1N1 pandemic, which of course has unfolded in a different way. We have been very fortunate in that the virus hasn’t mutated to become more deadly, but in many ways there are some parallels here. It is attacking the younger population. It seems to be inducing severe disease in relatively young people who should be resistant to severe influenza. And it is spreading and has spread incredibly fast. If you think about the fact that in April this infection was limited to Mexico City and 1 or 2 cases in California and since April we’ve had the entire southern hemisphere exposed to this virus and now this past year the entire northern hemisphere was exposed to this virus. So it can move as quickly as previous influenza pandemics can. We have just been fortunate that we have not seen that severe disease come through. And the politics of our response to this comes into play as I have mentioned before. I think when we don’t see a disease that causes that tremendous amount of mortality we have a tendency to try to relax the measures that we’re using to try to stem that infection.

JL:
I was struck not only by the politics of the political establishment but the internal politics of medicine. I guess you still have that tension today among the doctors, the public health officials, and the nursing group. And Barry had a lot to say about how each one of them had their own turf, and as much as they were cooperating to battle this pandemic they were also battling to protect their own portion of the medical establishment.

AP:
That’s very true. I think sometimes the public has a perception that the medical establishment is one cohesive unit of people who have all been trained the same way and perhaps all think the same way, when in fact public health individuals look at diseases in very different ways from a medical doctor, from the nursing establishment. So I think how those pieces fit together is something so many people don’t
realize how intricate those balances are and how different the approaches are there, coupled with the fact that I think sometimes people think that all doctors have been trained the same way so they will all respond to the same set of symptoms, to the same cases, to the same disease in the same way, when in fact medical doctors and public health officials have all been trained and we all have our own thought processes and our own ways of analyzing a situation and we often come up with different conclusions as to what should or should not be done. So there are certain symptoms in an epidemic that are just evolving where we don’t have all of our facts together or we don’t have all the information. Different people will look at these situations and analyze them differently and therefore come up with different and sometimes contrasting opinions.

JL: Do you see much knowledge of this among the new students entering the School of Public Health or is it something that really their eyes are open to when they get there?

AP: I think because of books like John Barry’s, the knowledge of the 1918 Pandemic is much, much greater now than when I was trained in graduate school. So what I think is interesting is to see students come in now with that 1918 Influenza experience in their minds and to have experienced a different kind of influenza pandemic. Most people who have lived through the 1957 pandemic and the 1968 pandemic do remember just how serious those pandemic outbreaks were. Certainly not in the same magnitude of 1918 but pandemics can be severe outbreaks and cause a lot of mortality and morbidity in the population. So I think a lot of them see now this epidemic as another way to compare and contrast the two. What is different about this one in terms of severe disease and then how this disease severity then impacts what public health measures are put in place to stem the tide of the disease?

JL: What might our readers be interested in knowing about this book that we haven’t touched on? What questions might they be asking themselves as they read the book?

AP: Well I think that one of the interesting things to think about is the approaches of how the pandemic of 1918 was attempted to be minimized. Really our only tool was public health measures and we really did not have a very good understanding of influenza as a virus, how influenza was spread, what the disease time course was, what the time for infectivity was, at what stage of the infection you were able to spread the virus to others. Again, in the U.S. in particular, we had not had that medical research community in place to really have had much information about those kinds of things. And so the responses there are very, very different from the responses we have now. Because we’ve had 70 or 80 years of medical research where we’ve investigated these kinds of outbreaks and know these details now and we can come at these questions with, in some ways, many of the same public health measures again in 2009 H1N1. In the beginning of the pandemic we did not have the vaccines available. We were really basing most of our preventative work on public health measures but those public health measures were much more attuned to influenza because of the medical research establishment that we have here.
in the U.S., which is described at the beginning of John Barry’s book and has really come to bare for this pandemic. So this is an interesting sort of way to look at this, with 1918 being the start of this here in the U.S. and how that same medical research institution that started then has still been brought to bear in a new pandemic here in 2009.

JL:
If I am not mistaken you need at least some semblance of the virus to create a new vaccine to combat that virus, is that correct?

AP:
That is absolutely correct.

JL:
So that means until you have this new mutated strain of the virus in the early stages of the outbreak, there is no vaccine available.

AP:
Absolutely, and it’s one of the issues that we always have with generating vaccines to influenza. I have talked before that we want to be proactive, we want to be able to act at early stages of an epidemic, but when it comes to generating things like vaccines we are forced to wait for the epidemic to emerge so we can find that virus and then start to generate vaccines based on the virus that is emerging and that puts us at a disadvantage.

JL:
What things do you think we have missed hitting on so far in our discussion?

AP:
Again, I will emphasize the fact that one of the reasons I like this particular book is because of the interplay between all of these different factors. I think as people read through this they should try hard to work through some of the science that is in there and some of the politics that are details in there because it really does provide an interesting insight into not knowing how a virus can affect a society and how a virus can cause a disease among people and I think it’s an interesting lesson to be learned.

JL:
Thank you very much Dr. Pekosz. Please note to our participants that Dr. Pekosz will be posting about 6 questions on our website on our on line discussion during the month of February and we urge you to get involved. Also if you do not have a copy of the book yet, please go to the Hopkins alumni website and click on our link to Amazon and order it that way. Also, if you find this topic to be interesting, there are two other books that we could recommend, one is “Flu: The Story of the Great Influenza Pandemic of 1919 and the Search for the Virus That Caused It”, by New York Times reporter Gina Colada, and “America’s Forgotten Pandemic” by Alfred Crosby.
I thank you very much and until next month this is Jay Lenrow and again Professor thank you very much for your time.

AP: Thank you for having me.