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Emergency Medicine Research: The Science and the Art

ART AND SCIENCE OF CONDUCTING RESEARCH IN THE EMERGENCY DEPARTMENT

ReachMD would like to wish you a happy and healthy New Year and with each New Year comes a fresh start. As we look ahead, ReachMD is proud to present this month's special series - Focus on Future Medicine.

The environment is chaotic and uncontrolled, but a gateway for admission to every specialty in the hospital. Did you know the emergency department is taking a lead in clinical research? You are listening to ReachMD, The Channel for Medical Professionals.

Welcome to the Clinician's Roundtable. I am Dr. Shira Johnson, your host, and with me today is Dr. Arthur Kellerman, professor of emergency medicine and associate dean for health policy at Emory University. Dr. Kellerman works clinically in the ER at Grady Memorial Hospital, Atalanta's only public hospital and level 1 trauma center. He is considered to be one of the nation's leading emergency care researchers, and he is a member of the Institute of Medicine, the IOM, of the National Academy.

Today, we are discussing emergency medicine research, the state of the art.

DR. SHIRA JOHNSON:

Welcome, Dr. Kellerman.

DR. ARTHUR KELLERMAN:

Hi, it's good to be here.

DR. SHIRA JOHNSON:

Can you tell us a little bit about your career path and some of the things you have accomplished and why you are going to talk about emergency room research today?

DR. ARTHUR KELLERMAN:

I have spent my career in emergency medicine from residency to research fellowship and have largely practiced in public intercity hospitals but in academic settings since the mid 1980s and a lot of my own personal research has been clinically based or looked at issues involving how we deliver emergency care in a populations that use emergency department and I have always found that combining teaching at the bedside, patient care and asking and answering academic questions is just an incredibly energizing, rewarding way to pursue a medical career, and in fact the emergency department has increasingly become a pivotal arena for not just inpatient care, but outpatient care in the United States and it's a very rich environment for tackling some of the most difficult and challenging dilemmas facing not only emergency physicians, but any acute care clinician.

DR. SHIRA JOHNSON:

We know that the emergency department is the gateway to the rest of the hospital and as a research pathway it has got so many opportunities. It's got great historical data and you've got a fairly captive audience. How have you seen this area explode in the last 20 years?

DR. ARTHUR KELLERMAN:

The key issues are first of all, more and more Americans, for better or for worse, had had to turn to the emergency department as the strains and challenges of our primary care system had become more evident. Also many more patients today lack health insurance than 20 years ago, and for them, the emergency department sometimes is their only source of care or their last resort. Third, we've had major developments in biomedical research that have given us new diagnostic tools and new treatment technologies to make a difference in conditions with timely intervention that weren't able to really effect in the past. For example, use of thrombolytics or prompt admission to a cath lab in the case of an acute MI or aborting stroke and evolution with thrombolytic therapy or using advanced biomarkers to detect certain clinical diseases so this combination of need and of increasingly powerful technologies have allowed us to really make a difference in the lives of patients in a way that is again both challenging, but very rewarding in emergency care settings.

DR. SHIRA JOHNSON:

Yeah, you know, and I know and some of our listeners do too. It's really a very exciting place to be right now. There have been so many studies that have been done at the ER in the last 10 or 15 years. I am just going to pick out a few of them. Can you tell us a little about the study out of Hopkins on HIV testing and what whole medical community can learn from that?

DR. ARTHUR KELLERMAN:

The papers that we are discussing came out of the scientific forum of the American College of Emergency Physicians, which is broadly considered one of the two top academic meetings for emergency medicine researchers each year in the country, the other being in the spring at the Society for Academic Emergency Medicine that this particular session was really sort of the greatest hits or the highlights of literally hundreds of research papers that were presented at scientific assembly and one that stood out was a study that looked back at 20 years of experience with HIV testing among emergency department patients at the Johns Hopkins Hospital, and this is important because Hopkins was a very influential research ground in the early days of understanding the prevalence of HIV infection, particularly in patients, who came in and did not know that they were infected and were one of the major driving forces in developing the concept of universal precautions. In other words, assuming that every patient might have HIV and therefore we should take appropriate protection from fluid and blood borne pathogens in every case. In the beginning, we were saying "Gee, this person might have AIDS, I will glove, I will be more careful. This person doesn't, I don't need to worry, and obviously today we assume every patient is HIV positive just to

make sure that we don't get burned in the patient, who is in fact infected and not aware. Well, what this paper did was essentially looked at their most recent data on serial prevalence in their emergency department population and really kind of look back historically to see how things had changed over this 20-year period of time when enormous changes in the epidemiology, and then the treatment of HIV had occurred in the United States. The bottom line was that they found that their overall prevalence rate was about 7.4% in males and in those ages 35-64 and not accounted for the majority of infections that they found in their emergency department. This was down a bit from 1992 and from 2000, but still an impressive amount, one that would certainly justify continued universal precautions. They also found that while there had been a sharp decrease in the number of patients coming in the door with unrecognized infections, once as high as 3 out of every 4 in 1987, hit a low of 20% in 2003, but now is trending back upwards; 42% of their patients were unaware that they were HIV positive.

DR. SHIRA JOHNSON:

So this would have been patients that came in for whatever reason, thought they were negative, testing was done.

DR. ARTHUR KELLERMAN:

They were tested and turned out to be seropositive. So it looks like we may be seeing an increase in people, who have not been getting screened and therefore unaware that they are infected. They also found a little more than 60% of patients, who reported having sex with an HIV infected partner also had a positive serostatus. So basically the bottom line for this study was that rates of unknown HIV infection, which had decreased steadily over the first 15 years now look like they are trending upward. They have also seen an overall decrease in HIV prevalence in their population over the last 5 years. Most of that is due to a decrease in people with diagnosed HIV and may in fact reflect improvements in treatment, heart therapy and the like, but clearly this is a disease that continues to be a common challenge in emergency departments and one that requires ongoing vigilance.

DR. SHIRA JOHNSON:

What is the take-home message for the rest of the practicing clinicians in the community?

DR. ARTHUR KELLERMAN:

Well, I think #1 it's that we have to continue to be careful about assuming that every patient we deal with might be HIV positive and therefore universal precautions are as relevant today as they ever were. Second, it's important for patients who are at risk for HIV to be tested. The fact that we are seeing an increase or at least the folks of Hopkins are seeing an increase in the number of patients through the percentage that didn't know they were infected, suggests that both they and us need to be more alert to making sure that people get tested because we do know that if people are aware of their status, by and large they will change their behavior and tend to be more careful and if people don't know they are infected, they are more likely to pass the infection on to a partner. Third it's clear that we have to make sure that people don't become complacent and that in an era where we now have a lot of treatment options that people take prevention less seriously. So we need to redouble our efforts on prevention, redouble our efforts on advising and when appropriate testing and continue to practice universal precautions to control this deadly disease.

DR. SHIRA JOHNSON:

And those are some great lessons to come out of emergency room research. Let's talk about the study in Stony Brook, admitted patients not having a bed, we see this as an almost everyday occurrence in larger hospitals. How was this study and what did they find?

DR. ARTHUR KELLERMAN:

The group at Stony Brook has really championed a straightforward, but for some radical notion, and that is that when the hospital is full and admitted patients are backing up in the emergency department, and this is in fact the #1 contributor to ER crowding across the country. They basically challenged the notion why do we do this, why is it okay that admitted patients, who've been hours for a bed can stay in an ER hallway or top in exam room when the hallways upstairs are completely empty and so they were a very early adopter of what they call a full capacity protocol, which is essentially when there are more than three admitted patients boarding in the ED waiting for a vacant bed and there is no space to see incoming emergency department patients, they will pick the most stable admitted patients and moved them to selected inpatient units where they are put in the bed in the hallway under the observation of inpatient nursing until their room is available, but they did more than that. Rather than simply changing the practice, very properly they studied it and over a multi-year period they compared the patients, who did go to the hallway, and there were over 2000 such admissions who spent some time in the inpatient hallway before they got in their bed compared to over 50,000 patients, who were admitted to a standard floor bed. What they found first of all were that the two groups while they were very similar in general characteristics they were different in a couple of important ways. The patients who ended up going to the floor waited an average of 7 hours for a bed. That tells you how busy this 65,000 visit a year emergency department is and how long people had to wait to get admitted. The hallway admissions actually didn't go until over 10 hours, so they really only moved people to inpatient hallways when the place was absolutely packed and people were terribly backed up. Despite that, they found that the in-hospital death rates were lower for patients, who ended up going to the hallway for a period of time than the ones, who went straight to a bed, 2.5% for those who went straight to the floor versus 1.1% for those who spent time in the inpatient hallway. They also found that patients, who went to a regular bed, but spent a long time in the ER or more likely ended up in the ICU. So in other words, putting a person in an inpatient hallway for a few hours while their room gets opened up, so that you can up your ER to take more incoming patients and reduce ambulance diversion, is a safe practice.

DR. SHIRA JOHNSON:

And again and again we have seen we have to be our own champions. We need to take this data back to your own hospital and make your own case for a different way of doing things.

DR. ARTHUR KELLERMAN:

Right, and the issue we have to make sure people understand, this is about quality and about patient safety. It is very difficult for an emergency department nurse caring for two or three times the number of patients that she or he should be to deliver safe and adequate care and most of the time if you give families the choice or you give patients the choice, they would much rather be on a quiet inpatient hallway close to a nurse's station waiting for their bed than be in the middle of a noisy, brightly lit non-private emergency department and so this is actually good for customer relations, it's good for patient satisfaction and it's good for the institution and interestingly when Stony Brook implemented this protocol, their patient satisfaction scores, their Press Ganey scores skyrocketed. Patients were far happier under this arrangement and it actually reflected well on the entire institution. So this isn't just good practice, it's probably good business for hospitals.

DR. SHIRA JOHNSON:

Dr. Kellerman, thank you for being our guest.

DR. ARTHUR KELLERMAN:

You're welcome.

DR. SHIRA JOHNSON:

We've been talking today to Dr. Arthur Kellerman. We've been discussing the art and the science of conducting research in the emergency department. Dr. Kellerman is from Emory University. I am Dr. Shira Johnson. You've been listening to the Clinician's Roundtable from ReachMD, The Channel for Medical Professionals. Please visit our website at www.reachmd.com, which features our entire library through on-demand podcasts or call us toll free with your comments and suggestions at 888-639-6157, and thank you as always for listening.

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