

*John Clymer:*

Hi, I'm John Clymer, Executive Director of the National Forum for Heart Disease and Stroke Prevention. The National Forum is working in collaboration with the Association of State and Territorial Health Officials to promote the Million Heart goal of reducing 1 million heart attacks and strokes by 2017. This podcast that you're listening to today was developed to inform state and local public health practitioners and clinicians on the use of ADA and in particular, electronic health registry data to identify trends and to implement strategies to improve the diagnosis, treatment, and control of high blood pressure. At the end of the session, listeners should be able to use electronic health records as a tool, have realistic expectations from using electronic health records, and understand some of the complications that can be involved with them, and successful strategies to overcome them.

We're pleased today to have an expert on the use of electronic health registries to control blood pressure at the population level. He is Dr. Brent Megan, who is clinical professor at the University of South Carolina School of Medicine in Greenville, and the medical director of the Care Coordination Institute based in Greenville. Dr. Egan is a principal investigator on several studies related to addressing resistant hypertension, and community based practice network, and we're pleased to have him here today to share with us his expertise and success stories in the control of high blood pressure. Dr. Egan.

*Dr. Brent Egan:*

John thanks for the introduction. I'm happy to share some of what we've done over the past 15 years in developing a hypertension registry in South Carolina. We did start in 1999. At that time few practices had electronic record systems, basically using a data card that was completed at visits that were mailed to us. We entered into a database, and generated reports back to the physicians. By 2003, many of the physicians were requiring electronic medical records. At that time, these were diverse practices requiring different electronic health record systems. So I was able to identify a couple of young individuals with good computer programming skills, who were able to take those back in databases from different electronic record systems, create a common clinical data warehouse for our reporting purposes.

We've grown over the years from literally a handful of practices in 1999 to over 350 practice sites today that have used as many as 28 different electronic health record systems, currently 26 different electronic record systems. Our main reporting tool for the ABCS is actually the NCQA recognition program, which includes aspirin, blood pressure, cholesterol, and smoking. I'll focus most of my attention today on the blood pressure, recognizing this is part of an ABCS report. Those of you who are familiar with the ABCS reports in NCQA will recognize that's predominately for secondary prevention. Individuals that have known cardiovascular disease

we also use those same indicators in a primary prevention report, and break that out separately.

So each provider gets to score for their patient panel for secondary prevention as well as their overall profile for their hypertensive patients. They get those reports on an updated basis monthly. Along with those reports they get a separate report that provides all of the patients, and the scores on each of those indicators. So the patients are listed down the left hand side, the indicators across the top, and so for each of these other sortable they can tap the top of any of these columns all of the patients out of compliance for indicator come to the top. So for example, if they've got 20 percent of their patients who don't have a lipid profile or a group that's out of blood pressure control they can quickly see who those individuals are, and think about some population management strategies just rather than when they see them individually.

What I'd like to do now is to talk about some of the data that's in the electronic record that's really essential to the report, and the importance of using electronic records as designed. What we find in some practices is that the fields that are there for discreet fields, for example like blood pressure, the blood pressure that's actually used for decision purposes may be put into a text field note. For example, sometimes on intake when blood pressure is taken it may be high, and may not be representative. Additional blood pressure may be obtained during a clinic visit. Unless those are entered into the discreet field they're not captured for the reporting purposes. So it's really important that practices put the key information to the discreet or structured field. The problem is the text field notes are difficult to parse, particularly when you're dealing with hundreds of thousands of patients, multiple visits; there simply isn't time to go through those individually and decipher that information. Most of the software for deciphering those text field notes is not sufficiently reliable, at least to our way of thinking to be able to use that. So it's really important that the practices understand the importance of getting key data into the structured to discrete fields.

Another thing that we run into is that some of the patients have office hypertension, and the providers don't have a good way of indicating that, and sometimes there's not a discrete field for the home blood pressure records. I think it's important to bring their attention to ICD9 diagnosis. ICD9 769.2, which allows them to say that the blood pressure is elevated, but there's no diagnosis of hypertension, because that can be frustrating to the providers. The next challenging area is getting a complete and accurate medication history in terms of the medications the patient is actually taking currently. So much of what we do also is based upon changing provider behavior around prescribing medications. So it's important to know what medications are currently being prescribed.

Another key area are the concomitant diagnoses such as diabetes, heart disease, kidney disease, heart failure. It can also indicate need for other medications, and also indicate a higher risk patient. So it's really important to capture that information in discrete fields either in a problem list with designated words in structured field or by a corresponding ICD9 code. Smoking status is another important variable. Important in determining risk and appropriate management, and again almost all electronic records have discrete fields that must be used for the smoking data.

Another area that's important are the corresponding lab data for patients with hypertension. For example the cholesterol, LDL non HDL values, whether or not they have diabetes, the blood sugar, and A1C, and most again electronic records allow that to go into discrete and structured fields. What's not very useful is if the information is scanned into electronic medical records, than it's really not assessable for the purposes of reporting. So as we move forward to meaningful use stage 2, and more of the clinics we're working with are working on getting this meaningful use stage 2, recognition for electronic medical records. Up to roughly 17 variables in meaningful use, about 7 of these are very useful when it comes to reporting on hypertensive patients; ethnic section, sex, race, ethnicity, date of birth, and preferred language. On recording and charting of blood pressure, height, weight, and calculation of BMI, recording of smoking status for those 13 years of age and older. The use of clinical decision support tools, which is part meaningful use stage 2 around hypertension and lipids, for example, the incorporation of the lab data into structured fields, which is part of meaningful use 2, the use of clinically irrelevant information to identify patients at risk who should receive reminders. Again, what we find are the uncontrolled hypertensive patients that are more likely to miss appointments.

So part of meaningful use 2 is to identify those patients and provide reminders, again, as part of meaningful use stage 2 the generation of list for registry purposes such as hypertension. So there are some additional features of stage 2 meaningful use that are useful, but I think those seven in particular are particularly relevant to our hypertensive patients. So just in summary of some of the key variables here, one is identifying practices that are interested in quality improvement meaningful use. Over the years we've found that the best way to get started is with trusting relationships with actually knowing people. Once those relationships are developed and the program begins, then word of mouth is a very powerful tool for spreading this as the initial practices have good experience, and you develop the experience in working with electronic data, and providing value back to the practices to assist them in managing this large patient population.

Standardizing the data entry across clinics then becomes important, and sometimes simple things like height and weight even within the same clinics different units are used. For example, weight can be reported both in kilogram and in pounds, height can be reported in meters, centimeters, and inches, and sometimes what happens is the value for one unit is applied, but the wrong indicator. For example, the height may be recorded in inches, but then expressed in centimeters. So it's really important in working with clinics that they develop some standards around that. Often data that's on urine values that may be important for the hypertensive patients, the units are not standardized across labs. So it may be milligrams for 24 hours. It may be milligrams for 100 milliliters. There are all kinds of various units that are used. So if we work with different clinics, it's important to standardize that data that goes into your clinical data warehouse for reporting purposes.

I haven't discussed it so far, but for the clinics that develop a standardized protocol for measuring blood pressure increases the probability not only that the blood pressure is accurate, that it reflects the blood pressure reflects at that point in time, but also obtained in a way that's more representative of usual day time blood pressure, and so you can measure the blood pressure perfectly and accurately with a large office artifact, which may be 20 to 50 millimeters above the usual blood pressure, but not being representative. I won't go into all the details of that today, but particularly when physicians are being evaluated on their ability to control hypertension basing not on an accurate representative blood pressure is very important. As I say, when that can't be done at least for the provider to be able to indicate that they have established that an office artifact exists, and the patient really doesn't have high blood pressure using that ICD9 code.

Another key variable is to make sure the medications are accurate in terms of the specific medications that the patient is taking. The dose and frequency are also important in assessing a common phenomenon known as therapeutic inertia, that is the blood pressure is not controlled, no change in treatment. So being able to assess dose and frequency allows then in the reporting to assess whether in fact the intensity of treatment was increased. I think it's also very useful if the clinics can agree on a blood pressure measurement protocol that applies to most patients. That I believe does help decision making and decreases the likelihood that treatment will not be changed if the blood pressure is uncontrolled.

The hypertension registry is very important. It's part of meaningful use and more electronic records are doing that. If it's being provided from the outside I think it can still be very useful, and value can be added using some of the strategies that we discussed. In addition to controlling blood

pressure, many of the patients who have high blood pressure have either already had a cardiovascular event, are candidates for secondary prevention with aspirin and other anti-platelet agents, fairly significant percentage smoke cigarettes, perhaps 15 to 25 percent in most practice settings, and 60-70 percent have elevated cholesterol who are candidates for Statin therapy. In our work it appears that patients taking Statins are more likely to have their hypertension controlled, and clearly treating both blood pressure and cholesterol significantly reduces heart attack and stroke risk more than controlling blood pressure alone.

So now I've shared with you some of the issues that I think are important in developing a registry is providing reporting that adds value, and allows clinicians to do a better job controlling the blood pressure. I'd be happy to stop now, and John see if there are any questions that I might address.

*John Clymer:*

Brent, thank you very much. That was a great presentation, and I think it'll be helpful to our listeners. You're talking right now primarily to public health practitioners and clinicians, and they're dealing primarily on a population level. So I'm wondering as you have gone from a very small startup trial, or pilot to a very large complex, and far flung operation are there barriers that you have encountered to carrying out the use of electronic health records and hypertension control where you also have found ways to work around them, or through them, and if so what would you say are the two to three things that people should anticipate as potential speed bumps, and what advice do you have, Dr. Egan for how to solve them?

*Dr. Brent Egan:*

Sure, I think some of the speed bumps are personnel change. So you have agreements with a set of individuals, it may be a lead physician, a clinic administrator, or an IT individual, and all of those turn out to be very important. For example, the physician in the clinic administrator and the CEO can agree this is a good idea, but if the IT people are concerned about HIPPA violations, and very wary that perhaps this is something that might supplant their activities, or threaten job security, and then those relationships are critical. So once you've established that good relationship with an IT group to have personnel turnover, particularly at the top can be very challenging. I think what we've done is dedicated personnel to working with, and maintaining those relationships. We try to visit practices from time to time. We also have telephone contact with key individuals and we try to anticipate these changes from time to time. We also have telephone contact with key individuals, and we try to anticipate these changes.

It's less frequent, but practices can change electronic records systems. They typically don't carry data forward from one to the other as they change systems. So an identifier system that allows you to link data from

your historical data to the current data is very important. Again something you can anticipate, and work through with the clinics, but clinics do from time to time change electronic records systems. Sometimes the patients are registered in a different way so that the patient numbers are different, and so you need to think about how you're going to maintain a continuous database when electronic record systems change.

The other challenges, and again we tap into the back end databases from virtually any electronic records system to create this clinical data warehouse for recording purposes. Many electronic records vendors do not provide the dictionary for their back end database. It can be very complex, and some of them can charge very substantial sums of money to help out with sorting out those databases. Over the years, we've largely deciphered those database structures ourselves, but that can be fairly time consuming on the front end until you develop a library with enough systems that you're rapidly able to acquire new practices, and bring them in rapidly, and provide those value added reports, and so John those are just some of the challenges. Most of it's actually relational, some of it's technical as I say sorting out the database structures, but a lot of it is maintaining good relationships with multiple individuals at each practice site or group of practices, because those relationships are key to the data flow, and to the effective use of the reporting.

*John Clymer:*

Dr. Egan, I'm really impressed by the point that I think you're making, and I want to repeat it back to you to make sure that I'm hearing it correctly, and maybe to restate it for our listeners. I think what I've heard you say is a take away message is that one can encounter various technological, and implementation impediments or speed bumps along the way, and that the key to preventing them, and particularly working through them effectively and efficiently is having solid personal relationships, or professional relationships in place, and that those relationships are often the key to overcoming the technological barriers. Is that right?

*Dr. Brent Egan:*

You've captured it. I would say it's 80 to 90 percent relational issues, and it's 10 to 20 percent technical issues, but the relationship issues are paramount, and you don't have an opportunity to solve technical issues if you don't have good strong relationships with key leadership at several levels.

*John Clymer:*

So I think it's important for me to note here, you're too modest to say this, that you have practices and done research, and been an innovator in multiple states, and the Midwest, and now in South Carolina with a lot of success over the years. So you've done this in multiple settings, and your experience, and your success in forming your inclusion that relationships are vitally important to being effective and serving the population and

helping people control their blood pressure. That's a point that isn't often made when people are focused on the use of new technology. So I think one that is very valuable, so thank you for making that.

*Dr. Brent Egan:* Yeah, and I think the obvious is those things are beneath the surface. That's not what most people see, and there are various ways in doing that in terms of those relationships. It can be done through you know educational programs. It can be done through face to face meetings, but I think if you go about it strategically, that is identifying the key individuals that have relationships, developing those, it may be the president of the state medical association. It can be various individuals in various locations. So if we were starting this anew, we literally started it as a grass roots effort from the ground up, and were I in the state office of public health, and trying to get something like this started, I would make a real effort to identify leaders in various healthcare systems identify the interest of the state medical association, the primary care associations, and others. Wherever good strong relationships exist, there's an opportunity then to leverage those to grow a program more quickly, but you cannot do it without relationships.

*John Clymer:* I'm really glad you reinforced that, and I think it's important for us to recognize, and be reminded on an almost daily basis that yes computer systems, and information systems, and the management thereof are important and valuable tools for us, but shoe leather is often the most important tool, and frequently a missing ingredient. So I'm glad you reinforced that for us.

*John Clymer:* Well, Dr. Tom Freidman, who is director of the Centers for Disease Control and Prevention says that controlling high blood pressure is the single most important thing that we can do to extend and improve lives. And Dr. Brent Egan, you've shared with us today some expertise, and very practical advice about how to serve large populations as well as individual patients, and to take advantage of technology in our public health practices, and clinical practices to reach that goal that Dr. Freidman outlined, to help people control hypertension, their high blood pressure. Thank you Dr. Egan. I would refer listeners to the website to additional information not only about Dr. Egan's background, but also to expand on his presentation, and we appreciate you're listening, and hope that you found this podcast presented by the National Forum for Heart Disease and Stroke Prevention, and the Association of State and Territorial Health Officials to be helpful to you in your own practice.

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