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The Future of Web-Based Hypertension Interventions

FUTURE OF WEB-BASED HYPERTENSION INTERVENTIONS

By the year 2025, it is predicted that more than 1.5 billion people around the world will have hypertension accounting for nearly half of heart disease risk and three-quarters of stroke risk. With new web-based technologies emerging as potential treatment options, how will we change our approach to care. Welcome to The Clinician's Roundtable. I am your host, Dr. Mark Nolan Hill, Professor of Surgery and Practicing General Surgeon and our guest is Dr. Beverly Green from the Group Health Center For Health Studies in Seattle. Dr. Green is the lead investigator of research published in JAMA on innovative web-based interventions for patients with uncontrolled hypertension.

DR. MARK NOLAN HILL:

Welcome Dr. Green.

DR. BEVERLY GREEN:

Hello.

DR. MARK NOLAN HILL:

We are discussing the future of web-based hypertension interventions. Dr. Green tell us a bit about your background. How did you get involved with particularly this type of research?

DR. BEVERLY GREEN:

I am a family physician and hypertension is the most common diagnosis family physicians make and so many visits, even though they are not for hypertension include that diagnosis and on an average day, I might see 3 to 5 or maybe ever more patients that I have to address blood pressure with. So its extremely common. In addition to being a family physician, I have a degree in public health and epidemiology and with my public health background I am always interested in large public health problems and hypertension certainly fit that groove. It’s a good mix between family practice and public health. Also because we don’t do very well in controlling hypertension and I was very curious to understand why that wasn't be able to do it better.

DR. MARK NOLAN HILL:

How do you determine that you are not doing well in controlling hypertension?

DR. BEVERLY GREEN:

You can do chart audits, that's the old fashioned way, the way we can do it with an electronic medical records we can actually look at blood pressures and we are doing a study where we look at that and if you include pre-hypertension, the new diagnosis at any visit about 60% to 70% of patients will have at least pre-hypertension if not uncontrolled hypertension, which is about 40% of visits, which just astounded us.

DR. MARK NOLAN HILL:

And how did you come up with the ideas, specifically in your research project?

DR. BEVERLY GREEN:

We already had an electronic medical record and we were using secure e-mail. We also had pharmacists that were very successful who are doing phone-based clinical interventions like increasing patients statins to get LDL below 100, putting patients with diabetes on lisinopril. So we knew we had experiences and I had personal experience with how great the pharmacists are at group health.

DR. MARK NOLAN HILL:

Has the FDA approved any of the technology that was used in your research?

DR. BEVERLY GREEN:

I am not sure about blood pressure monitors whether they need FDA approval, but I believe they do and yes and they have been validated in peer-review journals as being very accurate and there is probably only a 1 to 3 mm difference between a very well done mercury assessment and a valid automated blood pressure machine.

DR. MARK NOLAN HILL:

If this type of management progresses, as I expected <_____> based on your research, what will it take for our insurance companies to begin paying for these measures?

DR. BEVERLY GREEN:

I think an overhaul and a new way to think about care, it is possible that risk adjustment might help to some degree because it will take it

away from the service of actual visits, but I am not quite sure what it will take, but I think this kind of study increases the noticeability of the value of providing care in the ways that we already are over the telephone and over the web and we are going to have more and more of this.

DR. MARK NOLAN HILL:

How do physicians look at their own financial aspect of medicine with respect to this new evolving technology?

DR. BEVERLY GREEN:

Well group health is a managed care organization, so the physicians see a set panel that are in the group health owned clinics, so to them secure messaging is just one more thing in their day and they don't get any particular compensation whether they have extra patients or extra secure e-mails. I do sometimes think depending on the physician having a bunch of e-mails is an imposition, particularly if the patient load doesn't decrease, but I think that has been recognized in our organization as we have gotten these tools that physicians need to have adequate time or they need adequate assistance like pharmacists or nurses that look at the e-mail first. So if the patient just wants a refill, the physician doesn't have to deal with that e-mail.

DR. MARK NOLAN HILL:

If you have just joined us, you are listening to The Clinician's Roundtable, I am your host, Dr. Mark Nolan Hill and our guest is Dr. Beverly Green, from the Group Health Center for Health Studies in Seattle. We are discussing the future of web-based hypertension interventions.

Dr. Green can you give us your prediction on how this program will impact hypertension care on a much larger and even global scale?

DR. BEVERLY GREEN:

I think it has the potential to make big differences, particularly in the areas where resources to have a care visit is less. It is not hard to provide the technology, the machines are cheap even if the patient can have one on their own at home, they are in a small community their could be a place where they could go within, a little health center where they could go and they could work remotely with other providers on a global level in developing countries and we know that hypertension is a huge problem in Asia.

DR. MARK NOLAN HILL:

Now you have mentioned that this research is certainly suitable for hypertension. Why particularly hypertension and what other diseases might it also be useful for?

DR. BEVERLY GREEN:

We think it can be applied to most chronic conditions and even some of the acute concerns of patients such as preparing for an appendectomy or the followup care afterwards for surgery, and I believe there was one study that showed increased satisfaction.

Patients when they were allowed to have those services with their surgeons, so we think it has broad applications.

DR. MARK NOLAN HILL:

Did you specifically choose hypertension because of the poor control or because of the relative ease of logistics fitting into your study?

DR. BEVERLY GREEN:

We both lined up at the right time and we ran with it, both were important, that people aren't well controlled and that we have these new resources.

DR. MARK NOLAN HILL:

Do you think that there will be limitations in terms of the patient population being facile enough to deal with the new electronic age of computers and the internet.

DR. BEVERLY GREEN:

Well we did look at computer access and there were 20% of the people that we called and asked them if they wanted to come in for a screening visit, didn't have access to computer by not having internet or an e-mail address and those people tended to have lower educational levels, older and more likely to be from ethnic or racial minority groups. So we know that there is a group that will be excluded. However, as the generations age, the younger generation are being exposed in school. We think that this digital divide will narrow over time and more and more people will be very savvy with these tools and, in fact, they will probably use their telephone rather than a computer and that they won't have to write in their blood pressures, there will be ways to automatically transmit the numbers and that patients will actually demand these types of services not just for blood pressure, but for making appointments, for communication, for refills, for knowing more about their health conditions.

DR. MARK NOLAN HILL:

The American Heart Association has unveiled the Blood Pressure Management Center, what's that all about?

DR. BEVERLY GREEN:

On of the things about their comments that I was a little concerned about was that they figure that if people went to this web site and had all these tools, it would be enough. Ours occurred in the integrated medical system and I think that needs to be proven that you just can make a nice fancy web site that downloads blood pressures and transmits them that are worth the same.

DR. MARK NOLAN HILL:

Are there any groups across the country that are doing similar things that you are doing?

DR. BEVERLY GREEN:

Yes.

DR. MARK NOLAN HILL:

Tell us about that please.

DR. BEVERLY GREEN:

I know of other people that are extending the research to include other conditions and other people that are including high blood pressure in populations that have other conditions such as diabetes and heart disease.

DR. MARK NOLAN HILL:

And are their findings likewise as good as yours.

DR. BEVERLY GREEN:

Well they haven't completed. Ours is the first study that was completed, so I haven't seen the results on any other blood pressure because they are just starting. In terms of other chronic conditions, actually we were the first large randomized controlled trials for any chronic conditions. So I hope there aren't results yet. There are other things like process measures and patient satisfaction, but not treatment outcomes.

DR. MARK NOLAN HILL:

With so many diseases that our care has been wonderful in terms of decreasing morbidity and mortality and really improving patients health so much, why does it seem that we are doing such a poor job with hypertension?

DR. BEVERLY GREEN:

I think it is complex, as I mentioned before, it is not always the priority on the patients list when they come in for visit and there is often plenty of excuses when the doctor discovers that it might be elevated or they may not even notice that in their busy day, it happens to me frequently. At the end of the day, I am finishing my charting, and I say oops that patient had a pretty high blood pressure and I didn't even see it and I think that happens, but even when I do see it and address it with patients, we might both decide as because they are having a headache day or they didn't take their medicine right that day or find some other reason not to change and intensify the medications or tell them to come back and we will have them check it again to make sure it is up twice and a lot of time is lost and the patient may never come back. The other factor is, what is that the patients do at home, do they take their medicines, and the electronic medical record actually is very nice way to see if the patient is taking their medications. Even if they don't fill it within a closed system, you can count the days in between refills and if they are late on their refills consistently late, then you know that they are not taking their

medicine everyday and then you can address that issue in particular.

DR. MARK NOLAN HILL:

On a practical matter, we talk about sustained hypertension when patients take their own blood pressures at home. How do you determine that one blood pressure may be spurious and another may be part of a trend?

DR. BEVERLY GREEN:

Well that is a very good question. Blood pressure is highly variable and particularly the higher the blood pressure goes and can vary as much as 30 points in one day in one individual with high blood pressure, more typically it doesn't vary that much, but wouldn't be unusual for it to vary 10 points, so we think that the more blood pressures you get, the better and how do you average all those blood pressures. Well, a couple of things. Usually when a patient comes in to their doctor, they bring a card. What do you do with that card. You sit there and stare at it for a while and don't know what to do with it. In our study, we actually had some workarounds because the thing is that all this can be done electronically to an average, you can trend, you can look for deviations that aren't expected, that are out of the 95th percentile and throw those numbers out when they are very much outliers and machines can do this. We did a workaround where the numbers we got, we did that for them and we averaged and we trended and it was actually put on a graphics that already existed and our patients shared medical records where the patient can look at their trend over time.

DR. MARK NOLAN HILL:

Just curious, what accounts for the variability of all those points within one day of a patient with hypertension?

DR. BEVERLY GREEN:

We know that biphasic blood pressure is highest in the morning and it goes down during sleep. We know all kinds of activities like physical activity raise blood pressure, drinking coffee, smoking. So there is a lot of factors for us that changes blood pressure is reactive, it is part of heart function and those things affect the numbers. When you are at rest for a long time and really relax and for the day it might be the lowest.

DR. MARK NOLAN HILL:

And you think that pharmacists will play a more proactive and reactive role as you have in your study?

DR. BEVERLY GREEN:

I don't know if it will be pharmacists per se, but I know that the team concept will become more and more important.

DR. MARK NOLAN HILL:

I want to thank our guest, Dr. Beverly Green. We have been discussing the future of web-based hypertension interventions.

I am Dr. Mark Nolan Hill and you have been listening to the Clinician's Roundtable on ReachMD XM157, the Channel for Medical Professionals. Be sure to visit our web site at reachmd.com featuring on-demand podcasts of our entire library.

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