Get With The Guidelines
Young Investigator Webinar Series
June 9, 2015

Speaker 1: It is now my pleasure to turn the webcast over to Sara Camp director of quality, research, and marketing. Sarah the floor is yours.

Sarah: Thank you. Greetings all and welcome to our AHA/ASA Young Investigator Webinar series. I along with the entire AHA/ASA welcome you and want you to understand this webinar highlights the work of our investigators who are early in their career development and have an interest in cardiovascular plus stroke research. Before we introduce our speakers for today, I’d like to introduce you to the young investigator research grant opportunity. The council on clinical cardiology, the stroke council, the council on cardiopulmonary critical care, perioperative and resuscitation and the council of basic cardiovascular science greatly value the development of young clinical investigators.

To further this effort, these councils offer a limited number of seed grants for young investigators for meritorious research projects based on data gathered from Get with the Guidelines. Young investigators who are eligible for these seed grants maybe characterized as [study 00:01:03] fellows in training or students within 5 years of completing residency or fellowship or other doctor or healthcare professionals who are early in their career development and have interest in cardiovascular or stroke research. The seed grants provide adequate funds to allow initial project design, access the Get with the Guidelines data as a fruitful analysis, and we will cover travel expenses of the recipient to travel to a national scientific conference to present the results.

These grant opportunities are paired with valuable mentorship from members of the American Heart Association Get with the Guidelines grant committee and inside sub-committee to oversee the database as well as national conference opportunities for the young investigators who will present their findings. For many professionals seed grants were stepping stones for future opportunities in research, collaboration, and scientific advancement. For the AHA/ASA they provide a step forward in our mission of building healthier lives free of cardiovascular diseases and stroke. You can find more information and details on applying for these grants quite clearly at our website heart.org/younginvestigators.

On today’s session, we will have the opportunity to hear from 3 presenters. Our first 2 presenters are young investigator grant recipients. First Dr. Adam DeVore will discuss his research temporal trend and variation in early scheduled follow-up after a hospitalization for heart failure. Dr. DeVore is a cardiology fellow at Duke University Medical Center and the Duke Clinical Research Institute in Durham North Carolina. He is also a member of the Get with the Guidelines-Heart Failure working group. Dr. DeVore is a recipient of a young investigator grant from the fall 2012. Our next presenter will be Dr. Heidi Greenberger. She will discuss her research race, ethnic and sex differences in
emergency medical services transport among hospitalized US stroke patients. Analysis of a Get with the Guidelines Stroke Registry.

Dr. Greenberger is an associate research scientist at Columbia University Medical Center. She is a doctor in epidemiology from Columbia University and recently completed an IHT 32 research fellowship program in arteriosclerosis and preventive cardiology. Dr. Greenberger is a recipient of a young investigator grant from [fall 00:03:20] 2013. Finally we are pleased to hear from veteran researcher Dr. Nancy Albert of the Cleveland Clinic to present her research on transitional care in heart failure. Dr. Albert is an associate chief nursing officer of nursing research and innovation for the Cleveland Clinic Health System and is a clinical nurse specialist in heart and vascular institute of the Kaufman Center for Heart Failure at Cleveland Clinic.

Additionally she is an adjunct associate professor at Case Western Reserve University Bolton School of Nursing in Cleveland Ohio and full professor at Aalborg University in Aalborg, Denmark. Nancy works as a nurse scientist, consultant, educator, administrator, and leader. She has over 215 theory publications in nursing and medical journals and over 15 plus chapters and presents on nursing research, nursing innovation, cardiovascular and heart failure topics locally, nationally, and internationally. Dr. Albert is also member of the US Government Heart Failure Clinical Work Group. Now let me please turn over the presentation to Dr. Adam DeVore.

Dr. Adam: Thank you Sarah and thanks to the American Heart Association and to all of you joining to have this opportunity to share my research. As Sarah mentioned the title of my talk today is temporal trends and variations in early scheduled follow-up after hospitalization for heart failure. These are my disclosures. First in the way of background, over the last few years reducing hospital readmissions has really become a national priority in a number of different therapeutic areas and for a good reason. One in 5 Medicare beneficiaries are re-hospitalized within 30 days of a hospital discharge and the associated cost of Medicare are estimated at more than 17 billion dollars annually.

Heart failure is one of the most common reasons for the index hospitalization that is associated with these high number of readmissions. There is a lot of attention on trying to reduce this. One strategy for reducing hospital readmissions is to improve the transition of care from the hospital to the outpatient setting. One critical aspect of this is trying to ensure early outpatient follow-up after hospital discharge. The basis of our study is from an observational study published in JAMA in 2010 that showed that first of all early outpatient follow-up for patients with heart failure was uncommon. It also showed that it is used very widely across hospitals which is shown in the figure here on the slide.

Also importantly patients in the lowest performing hospitals had the highest rates of readmission. This study brought the idea of early outpatient follow-up to the forefront and worked its way into the guidelines for heart failure, but used data from 2003 to 2006, and there has been limited data since then on whether the use of early follow-up after discharge has improved over time. With that in mind, we designed a study to address these two aims; first to describe temporal trends in the rates of early scheduled
follow-up. Second to look at hospital and patient characteristics that were associated with this practice. To address this we used a variety of data sources. The first of course is the Get with the Guidelines Heart Failure Registry.

If you are unfamiliar with it is a voluntary in-hospital quality improvement initiative that began in 2005 and relevant to our analysis in 2009, Get with the Guidelines began collecting data on early scheduled follow-up. The patient management tool specifically collects information on the date, the time, and the location of the first scheduled follow-up. We also use data from the American Hospital Association annual survey and then in a subset of patients, we linked the Get with the Guidelines heart failure patients to fee for service claims administration data. I’ll show you results from all of these data sources. Patients included in the analysis were hospitalized for heart failure between February 2009 and January 2013 and were discharged to home.

Then for the subset that were linked to Medicare claims data this was through November 2012. Importantly in the rest of the slides I am going to show you early follow-up was defined as within 7 days of hospital discharge to be consistent with the prior JAMA study that I highlighted earlier. The Duke Clinical Research Institute served as the data analysis center, and I’ll show you some patient factors by time to schedule follow-up and then hospital factors stratified by above and below the median in terms of early scheduled follow-up. I’ll also show you results of a multi variable logistic regression model to further explore patient factors associated with this.

This is a diagram of the patients included in the study. I wanted to include this to kind of highlight the size of the registry here and then to let you know about some of the exclusion criteria. 42,000 patients were not discharged to home and were not included in the analysis. Then another 57,000 patients did not have complete follow-up data or information on their scheduled follow-up and were excluded. Our final study population included information on 52,438 patients from 239 hospitals in the US. In the subset with linked Medicare claims data we had 18,730 patients. This slide shows one of the key findings from our study. Use of early scheduled follow-up is shown in the blue on this figure and improved over time from 51% to 66%.

Similarly scheduled follow-up shown in the red here between 7 and 14 days and then greater than 14 days in the yellow gold declined over time. The overwhelming majority over 94% of the follow-up visits were scheduled as office visits with a very small number or 6% scheduled as home visits. As I mentioned, we are also interested in identifying patient hospital factors associated with early scheduled follow-up. This is the first of a couple of slides looking at patient factors associated with early scheduled follow-up. If you look at the first column and compare that with the other two columns, you’ll notice that those with scheduled follow-up within 7 days were slightly older more likely to have Medicare insurance, did not have a prior a history of heart failure and they were most likely to have a preserved left ventricular ejection fraction.

This is a similar table with more variables that we looked at. These are comorbid conditions. Again if you look at the first column and compare it to the others you’ll notice that patients with early follow-up were most likely to be anemic, have diabetes,
have chronic kidney disease, and then be on anticoagulation at the time of hospital discharge. We also looked at hospital factors associated with early scheduled follow-up and we looked at a number of variables and we stratified by follow-up rates above and below the median here. We saw no association with geographic region as shown here, rural or urban hospital setting.

We did see that smaller hospitals and those with less CABG capability were more likely to have hospital follow-up rates above the median. These are few more of the hospital factors that we examined. We looked at some of other process measures that we are interested in for heart failure and we saw small differences in rates of ACE inhibitor and ARB use, so those above the median in terms of early scheduled follow-up are also tend to have higher rates of that process measure. I think importantly we saw no differences in the use of electronic health records or other clinical decision support tools. This is the first of two slides that show the results of our multivariable logistic regression model.

On the slide the only factor associated with early scheduled follow-up after adjustment for other baseline characteristics were age, and you can see this association was quite modest. Some of the other factors in the model that were not associated were patient sex, patient race, and then ejection fraction. Other comorbid conditions were also associated with early follow-up and they include anemia, diabetes, chronic kidney disease and then anticoagulation at the time of hospital discharge, but again all of these associations were modest. This figure shows one of the other key findings from our study.

I mentioned that we looked at scheduled follow-up at the time of discharge using the registry, but we also look at a subset of patients with linked Medicare claims data. We looked to see how many of those with scheduled follow-up actually had follow-up within the scheduled timeframe. Shown here in the blue, are those with planned or scheduled follow-up within 7 days of discharge. You can see only 27% were able to make any office visit within that timeframe in the first year that we studied. Over time, these numbers did improve to 30% but these are well below the 50% and 60% range of scheduled follow-up that we saw at the time of discharge.

In this figure, we looked at some of the reasons that people might not be following up, so this is a graph of the Medicare beneficiaries again with planned follow-up and actual follow-up during the study time periods. You can see it is stratified along the X axis here. Shown in the blue are patients who had scheduled follow-up and were able to keep it within that timeframe that was expected. Shown in the red are patients that didn’t have any follow-up during the expected timeframe and then shown in the gold or yellow are patients that were died or re-hospitalized. I think you can see a very small number of the patients that didn’t keep their scheduled follow-up appointment or for death or rehospitalization.

The largest proportion here those in red and those are reasons that we don’t know why the patient didn’t keep it. I’ve shown you quite a bit of data so let me summarize here. First of all, early scheduled follow-up improved over time in our study. Second after multi variable adjustment patient factors associated with early follow-up included age,
circulated that to the co-investigators. After I found out it was accepted in the spring and developed the analytic plan and then the proposal in the fall. As they may discuss here at the end it is really only a few page proposal and it is really more just of a rough idea. I didn’t work with the analytic team after I found out it was accepted in the spring and developed the analytic plan and then circulated that to the co-investigators.

Our study has a number of limitations. Some of those that are highlighted here are that this really only tells us about patients that were treated at Get with the Guidelines-Heart Failure hospitals. Specifically those that use the scheduled follow-up field. These data or observation [inaudible 00:15:10] can also be residual measured and unmeasured confounding that may impact these findings. Finally, we were unable to assess if the follow-up that we noted was associated with improved outcomes including mortality or rehospitalization. As I highlighted, this has been studied in the past. In terms of clinical implications, I think that the study really highlights the hospitals participating in Get with the Guidelines-Heart Failure improved on this process measure in really a short amount of time.

I mentioned this study was published in 2010 and was subsequently incorporated in the guidelines after that. This is a real achievement when you think about how long things typically take to incorporate into practice. Again I think variances in this practice of early follow-up appear to be more influenced by patient factors or patient risk as opposed to hospital level characteristics. Then I think importantly actual follow-up in our study improved over time, but it is much more modest with only third a of the Medicare beneficiaries that we studied having early scheduled follow-up during the timeframe. The study I think shows a real achievement here, but it also highlights that there’s a lot more work to be done and there are many more opportunities to improve transitions in care.

Because this is a young investigator webinar, I thought I would highlight just my own experience with this and let you know how great I thought was to be honest. These are the people that I had the opportunity to work with on this study. These are some of the national figures in terms of both heart failure and cardiovascular care in the United States. As a fellow it was a real opportunity to get to work with them and to really help shape this project. The last bullet I also highlighted all the people from Duke and the Duke Clinical Research Institute. I didn’t have any previous experience with Get with the Guidelines before I did this project.

It was again a real opportunity to work with the analytic team that’s very familiar with the data and really helped with the success of this project. That’s a real benefit for young investigators who are interested in this. Also I thought I would just kind of share my typical timeline. I think this is typical of other projects but just to give people who are interested in applying an idea of what to expect. I developed and submitted my proposal in the fall. As they may discuss here at the end it is really only a few page proposal and it is really more just of a rough idea. I didn’t work with the analytic team after I found out it was accepted in the spring and developed the analytic plan and then circulated that to the co-investigators.
They all provided feedback and then received data later in the summer, which was plenty of time to put together an abstract that I submitted for ACC and then completed the manuscript shortly thereafter that's actually currently under review. The whole process took basically about a year. I had the opportunity to present at a national meeting which they mentioned there is funding for that. Then really it is a great opportunity to work with co-investigators here. I know we will be answering questions at the end, but I wanted to include my email address if other people have questions that they’d like to contact me, I’d be happy to answer those as well. Now I am going to pass it over to Heidi Greenberger.

Dr. Heidi: Okay thank you very much. I echo those sentiments about how wonderful this opportunity has been and it is my pleasure to share with you the research that was able to do as a participant in this young investigator program. The research that I am going to present today is entitled race and ethnic and sex differences in emergency medical services transport among hospitalized US stroke patients. This is an analysis of the national Get with the Guidelines-Stroke Registry. I’ll also share at this time that I have no disclosures associated with this research. Let’s start with background. Race, ethnic, and sex disparities in stroke related mortality and disability are well documented.

For example black men and women experience substantially higher stroke mortality rates compared with whites and others and functional status after stroke is lower among survivors from race and ethnic minority backgrounds compared with non Hispanic whites and is also lower among women versus men even after accounting for age and comorbidity. A significant predictor of stroke related mortality and disability is the time interval between symptom onset and medical treatment. Calling 911 is recommended as the first action when experiencing stroke symptoms. The utilization of emergency medical services or EMS transport is associated with shorter hospital arrival times and more rapid treatments.

Differences in EMS activation rates could contribute to race, ethnic, and sex disparities in stroke outcomes. Race, ethnic, and sex differences and the frequency of stroke symptoms could contribute to differences in EMS use as well. The purpose of this study was to determine the association between race, ethnic group and EMS transport use among hospitalized male and female stroke patients adjusting for confounders. A secondary aim was to determine the independent association between stroke signs or symptoms and EMS use and whether the association was modified by patient race, ethnicity, or by patient sex.

We hypothesized that EMS utilization would be lower among race, ethnic minority men and women compared with their white counterparts. That differences in EMS use by race, ethnicity, or sex maybe explained in part by differences in stroke symptom frequency. The data source for this research was the American Heart Association American Stroke Association Get with the Guidelines Stroke Registry. Briefly, the Get with the Guidelines-Stroke Registry collects patient level data on characteristics, diagnostic testing, treatments, adherence to quality measures and in-hospital outcomes and patients hospitalized with stroke.
The study population for this study comprised patients identified [in A 00:22:30] Get with the Guidelines- stroke registry who were admitted to one of the Get with the Guidelines hospital sites with an acute stroke diagnosis. Participants were not transferred from another hospital and did not have symptom onset occurring in a healthcare setting. The time period for this research was a 2.5 year period between October 1st 2011 and March 31st, 2014. Over 550,000 acute strokes during that time period in the registry, patients were excluded if they were missing data for location where the stroke symptoms occurred, mode of transportation to the hospital, initial exam or race, ethnicity, or sex.

With those exclusions, the primary analysis included almost 400,000 stroke patients from over 1600 participating hospitals. The study variables included race and ethnicity which were self reported by each patient and recorded separately by trained hospital personnel. Sex and other patient level data including age, health insurance, medical history and admission characteristics were also collected by trained hospital personnel. EMS transport to the hospital was documented by data collectors at hospital facilities and the presence or absence of specific stroke symptoms were extracted from each patient’s initial and neurological exam.

Hospital level characteristics were obtained from the American Hospital Association Hospital Statistics. For statistical analysis, we used frequency statistics and quartiles to describe distribution of patient characteristics and we used Pearson Chi Square Test and Kruskal Wallis Tests to evaluate differences by race and ethnic group. The association between race, ethnic, and sex group with EMS use and stroke symptoms were examined using multi variable logistic regression. The regression models were adjusted for key covariates including age, health insurance, medical history, on hours arrival at the hospital, ability to ambulate at an admission, initial exam findings including stroke symptoms and signs and stroke type and hospital site characteristics.

We also evaluated the interaction between race, ethnicity, and sex and where it was significant we reported the relevant pair wise comparisons. On the results. This is a summary table of select patient demographic, clinical, and hospital characteristics. Among the almost 400,000 hospitalized stroke patients, 69% of participants were white; 19% were black, 8% were Hispanic; 3% Asian and 1% other. The majority of admissions were for ischemic stroke and the majority of hospitals were in an urban location. Patient demographic, admission, and medical conditions did vary significantly among race and ethnic groups and were adjusted for accordingly in the multivariate analysis.

This first figure illustrates the frequency of EMS use by race, ethnicity, and by sex. Overall 58.6% of stroke patients utilized EMS to transport to the hospital and this frequency of EMS use did differ significantly by race ethnicity and by sex. White females were the most likely to use EMS at 62% and Hispanic males were the least likely to use EMS at 52.2%. This table further describes these results including the multivariate adjusted associations between race, ethnicity, and by sex with EMS use. In the multivariate models adjusted for pre specified covariates using CVET, Hispanic and Asian men had 20-23% lower odds of using EMS compared to white men and Hispanic and
Asian females similarly had almost 30% lower odds of using EMS compared to white females.

Black females were also less likely to use EMS compared to white females but we did not see a significant difference in EMS use among black males compared to white males. We looked at stroke symptoms severity as a potential reason for differences in EMS use by race and sex. Paresis was the most common stroke symptom at 67.3% and it was more frequent among males versus females and also more frequent among race and ethnic minorities compared to whites. Aphasia and altered level of consciousness were less frequent symptoms observed. These also differed by race, ethnicity, and sex. Approximately one third of participants 32.4% also had other neurological or non-traditional stroke symptoms.

The adjusted odds of presenting with other neurological symptoms were lower among males versus females and higher among Asians and Hispanics compared to whites. They were lower among blacks compared to whites. Finally we looked at stroke symptoms as predictors of emergency medical service use and found that patients with classic stroke symptoms, weakness, altered level of consciousness or aphasia were most likely to use EMS compared to patients without each symptom. The magnitude of this association was higher among males versus females. In contrast, patients presenting with other neurological symptoms were significantly less likely to use EMS transport than those without other neurological symptoms.

This association did not vary by race, ethnicity, or by sex. In summary, in this large current national sample of stroke patients, we documented that fewer than 60% of acute stroke patients used EMS transport. We also documented that race, ethnic, and sex disparities in EMS transport were present and persisted after adjustment for confounders. The presence of weakness, altered level of consciousness or aphasia the classic symptoms was each associated with increased odds of EMS utilization whereas the presence of other neurological symptoms were associated with lower EMS use. The magnitude of the association between the presence of stroke symptom and the association between stroke symptom and EMS use varied by sex and race and ethnic groups.

There are limitations to this research. Other factors associated with EMS use among stroke patients are for example the presence of someone else at the time of stroke, differential knowledge of stroke symptoms or English language proficiency were not measured and could’ve been associated with the results. These results do not take into account the potentially more serious stroke patients who died outside of the hospital. Finally, stroke symptom data were collected as part of the initial exam, so we cannot be certain that the same stroke symptoms were present prior to hospital arrival at the time of decision to call or not to call EMS; however, it is not likely this would have varied differently by sex or by race, ethnicity.

In conclusion, data from this large contemporary sample of patients hospitalized with acute stroke documents suboptimal use of EMS transport among US stroke patients especially, race, ethnic minorities and those with less well recognized stroke symptoms.
I’d also like to conclude by saying my thank you for this fantastic opportunity. I’d like to thank my mentor and co-authors on this project which was recently presented at the ISC and hopefully will soon be forthcoming as a research manuscript. I’d like to thank the AHA/ASA Get with the Guidelines young investigators database research seed grant program for all your support with this fantastic experience. With that I will pass the control over to Dr. Nancy Albert.

Dr. Nancy: Thanks so much. I am going to move forward. First I’d like to thank Sarah Camp and Liz and others from the American Heart Association for giving me a chance to talk today a little bit about transitional care in heart failure. Unlike our previous two presenters, I am not going to speak about one research study. I am going to give you a little overview of my journey I guess you can say. Let’s go ahead and get started. I’ll tell you that I have no disclosures related to this presentation. When I think of the parallel paths of heart failure research related to transitional care, for me there was actually two paths going on at the same time. A path related to nurses and I’ll a speak about that fast and then we are going to talk about the path related to patients and transitional care.

When it came to nurses, I was interested in nurses knowledge about heart failure self-care principles and my main reason for having an interest in this is going to become more evident as we move along, but we all know that if we look at transitional care programs that include education and especially when education was the focus and even more especially when the session was a one hour and one to one nurse to patient education session, patients had improved outcomes at 6 months and at other time points. The improved outcomes included decreased re-hospitalization.

I become interested in knowledge. I also became interested in nurses’ comfort in educating patients about heart failure self-care principles and also the frequency in which hospital nurses are able to actually educate patients. Let’s go ahead and get started. When we think a little bit improving nurses’ knowledge of heart failure self-care principles, my influence in this topic was really based on meeting with other nurses. I was having discussions about a heart failure handbook we were generating, and one of the nurses on the committee, there was a wide group involved, said something like well we have to include calcium channel blockers because our physicians are ordering it.

At the time it was all about [hef ref 00:35:15] reduced ejection fraction and I had said to the nurses but calcium channel blockers are contraindicated in patients with an ejection fraction less than 50%. Their response was yeah but the physicians are ordering it. We need to just follow along and my response back is no nurses should know what is important and should be able to talk to physicians and make sure they really want to order a drug that’s contraindicated. The other big issue was the home care nurses were complaining because they would call physicians up and say my patient has a low blood pressure and the physician would not respond. I would say to the nurse “Well are there any other symptoms going on? Are they dizzy? Are they lightheaded? Are they cold and clammy?”

They’d say no they are acting perfectly normal. Then I would try to explain that maybe the physician didn’t care about one hemodynamic taken at one point in time. I felt like
there were some issues related to self-care that nurses would need to learn more about. The other thing is when we talk about improving nurse’s knowledge in heart failure self-care education, I was also influenced by patients and it made me wonder just how much education nurses were delivering. You could see some of the messages I got from patients. One patient was telling me how they [inaudible 00:36:32] their hot dogs and of course that got rid of the sodium in their mind.

Another patient who was on a very tight fluid restriction who was thinking of being a transplant candidate we were evaluating him, started eating whole watermelons just to get fluids rather than listening to the messages about fluid restrictions. Patients would say things like well we are going out to Chinese buffet on the way home from our office visit or after discharge. We started asking questions about how well they were being educated to eat out when they weren’t eating at home. We couldn’t find any reports in the literature or nurse’s knowledge of heart failure self education principles. The assumption was that nurses know what they are talking about when educating patients.

After all they are working at the bed side day in and day out. They are cardiac nurses and we also made the assumption I think that nurses keep up with guideline directed medical therapy content and understood all the details when they were handing out medications in the hospital setting and that they would be able to teach patients about medications and other elements of care. We developed a research program and it was a tool looking at nurse’s knowledge of self-care principles in the home after discharge. It was a 20-item tool. It used yes no responses. It also had a check box on it asking nurses if they wanted more information on the topic. We did a lot of content validity testing with the 20 items to make sure they were content valid.

We used the team help us develop this program of research. Then I just want to show you over here the one that says Albert at the bottom in green my research. You can see that on average the mean score was about 72%. At the time I did the study my kids were in a catholic grade school and I jokingly told my pals that if this was my child taking a test in school, she would have had a D minus because less than 70 was a failing grade at school, but you can see even for this research other people have replicated the study and here I am showing you five other people and you could see all of the scores were well below what we consider the passing rate for nurses to be knowledgeable enough to deliver heart failure self-care education to patients in a hospital setting.

Some of these studies you could see use community nurses and homecare nurses as well as hospital based nurses but in general we didn’t do very well, so we could think about how hospital nurses and other nurses what their knowledge base is, and if they don’t have that knowledge base how well they are able to teach other people. I put the slide over here about learn and lead and after the study was over, we developed a very extensive RN education program and it became mandatory for all coronary intensive care units, heart failure intensive care units and any cardiac telemetry nurse and home care nurse that cared for patients with heart failure.

We put that program on for a few years but we discovered over time that knowledge does an equal action. Nurses may say they are knowledgeable about heart failure but
that doesn't mean they are going to go off and teach patients. It was really hard to
determine what nurses really know about heart failure from a 20 item questionnaire. It
gives you a broad overview, but it doesn't give you the details. We felt we needed to
learn more about nurses’ strengths and weaknesses self-care and we needed to develop
focus interventions that were really going to help them do a better job again mainly
because the literature over time in transition care kept showing that patients who were
educated had better outcomes, but a lot of the other interventions that were going at
the time were not proving to be very beneficial in terms of improving outcomes.

Before spending money on interventions we wanted to make sure the interventions
were really going to work. We developed a new research study looking at comfort and
frequency in delivering education. Again there was nothing in the literature on this
topic, so we developed a survey and did content validity testing and then reliability
testing over time. You could see now we have 8 themes with 44 items instead of just 20
very broadly worded questions on knowledge. In this case we used a Likert Type scale
to assess nurses’ comfort and nurse’s frequency. We also asked questions about how
much time do nurses spend delivering heart failure education before patient is
discharged.

We were actually pretty shocked by the responses. You could see here that 43.5% of
nurses that less than 10 minutes and even if you add the bar to the right 5-10 .. To less
than 10 minutes over here and add in the 10-15 minutes, it is still less than 50% of
patients or over 50% of nurses spent less than 15 minutes delivering education. We
need to consider how much education can you deliver in less than 15 minutes and how
often are patients being asked to do teach back and demonstrate understanding of
knowledge. More importantly when we looked at results in terms of different themes
about what nurses were delivering you could see by the box on the left under the
comfort factors the four lowest themes that nurses were comfortable with were activity
and exercise, medications, low sodium diet and helping patients understand accurate
heart failure beliefs.

The other thing we noticed is when we looked at the frequency of delivering heart
failure education to patients. If you look at those same four areas, they all ranked lowest
again. You could see the ordering was a little bit different but activity and exercise
remain the lowest frequency in terms of delivery of information. Low sodium diet and
medications were next and if you look up the red bar at the top where it is got 57.7%,
that shows that nurses only deliver all of these themes, or delivered this education
57.7% of the time.

Nursing frequency in delivering education was suboptimal. More important to us the
three most important factors in terms of improving clinical outcomes that we know
today would be medications, low sodium diet, and activity. That's where more the
research is shown improvements and outcomes and those were the 3 factors nurses
were the least comfortable and gave the least frequency to educating patients about.
This is an example of the medication theme we looked at and you could see the
different medications we asked nurses about. Again if you look at the heart failure
medications you can see that their comfort and frequency in delivering information about ACE inhibitors and aldosterone antagonists was the lowest.

Beta blockers were much better. The things they felt the most comfortable with were not really heart failure specific medications. Drugs like aspirin and warfarin and so there is a disconnect between information patients need to have just to be knowledgeable enough to hopefully take action and what nurses were constantly delivering. How did we translate evidence from this research study. By the way I did mention it just because of lack of time but this was a multi centered study. It was not just a single center study. It involved a hospital in Atlanta, a community hospital in North Eastern Ohio and also my hospital Cleveland Clinic on the main campus.

At Cleveland Clinic, we revised our heart failure handbook and we paid more attention to the content on medications, low sodium diet, and activity and exercise thinking that if nurses were not going to be delivering the content correctly that maybe we would do a better job of putting the words in paper to help patients out. We revised our videos and included more self-care content. We asked our firm D’s to start making rounds twice during hospitalization for our Medicare and Medicaid patients. They came in once early in the hospital stay and gave about one hour scenario or synopsis to patients about heart failure medications.

On the day of discharge, they spent about an additional 10-20 minutes going over medications at discharge. Today we started this about 3 years ago now and it is still going on today. We offer group led heart failure classes 3 times a week on our nursing floor that is the floor that has the most heart failure patients on. It is led by a CNS and it is also carried out by a firm D and a dietician. The CNS spends a lot of time talking about activity and getting up and going after discharge knowing that that was one of the themes that popped up. We used a heart failure zone handout and we also offer mandatory RN online education module for our nurses.

When new nurses get hired they take a one hour online education module, and it focus on the themes that nurses had the lowest results in for comfort and frequency. The bottom-line is when you think about translating research into practice, you can’t change practice until you know what practice is so this study was a really big eye opening study. When we combine what we learned from this multi center study with other research that was out there, when we had the opportunity to work on transitions of care in heart failure and the American Heart Association scientific statement. We actually put 9 clinical recommendations into the scientific statement.

Two of the clinical recommendations were to ensure qualified and trained heart failure nurse or other providers that deliver heart failure services and of course we were thinking about education as one of those services, but we did use other research out there to show qualifications for up titrating drugs etc by physician providers as well. Then you could see the second bullet to allow adequate time in hospital and post discharge to deliver complex interventions and asses patient and caregiver responses. We wrote it very broadly, but the point is that we use this research to help make these recommendations.
What else do we do when it came to improving the lives of patients from a transition standpoint? One of the things we wanted to look at is improving clinical outcomes. We wanted to use a randomized control trial to look at video education at discharge and see if maybe using other methods of educating patients in addition to usual care nurse delivered education was beneficial. We also did a comparative study using the common sense model of illness belief to educate patients pre discharge. We conducted a randomized control study of 1000 mL fluid restriction for 6 weeks after discharge again trying to reduce the 30–day rehospitalization wait and we made some assumptions about patients going home with still being fluid overloaded but much of the fluid overload maybe still hemodynamic fluid overload.

The obvious fluid overload, the eyes above the water may have been taken care of during the hospitalization but there may be still other fluid onboard. The other thing we wanted to do is look at how we can improve adherence to 7-day follow-up appointment. One of the studies I am going to just very quickly go over is an RN APN led program and show you the results of that. Then the last one I am going to talk very quickly about is activity. Because of time I am going to be pretty quick here and just give you the bullet synopsis. We did our randomized control study looking to see a video education with the improved over usual care education. Again some of the lessons learned were that some patients never even took the plastic wrap off the video.

Just because you give people interventions and in this case a video does not mean they are going to use it. There were no differences in healthcare consumption between groups and no differences in mortality between groups. We did find, however, that video education patients had greater sign and symptom reduction, less edema, less fatigue, and they initiated more actions for edema and dyspnea whether it meant taking an extra dose of diuretic or other actions. They also had higher mean self-care behavior scores reflecting greater adherence to self-care behavior.

In a study that we did more recently looking at, it was again a comparative study. This is a two group pre post design, looking at nurse education given during the hospital period to see if it would have any impact on short-term outcomes using the common sense model of illness belief we looked at hospitalization, ED care, and unplanned office visits as our outcomes. You could see under hospitalization the odds of a first hospitalization for decompensated heart failure was lower in the patients who got the intervention versus those in the usual care group but there were no differences in all hospitalizations over the 6 month period and hospitalization for heart failure over the 6 month or in the hospital length of stay.

We also found out that giving education based on a theoretical model, in our case the common sense model, led to fewer ED visits for heart failure decompensation and you could see the odds ratio in a 71% reduction, so quite a few patients coming back into the ER but there was no difference in unplanned office visits for heart failure at all.

When it comes to fluid restriction, again I mentioned a little bit about fluid restriction and getting rid of fluid and hemodynamic fluid versus interstitial fluid, we thought that maybe fluid restriction would be easier for patients to manage versus a strict low sodium diet. Of course today we know that maybe we should be less strict with our
sodium diet, but at the time the study was done we were really still pushing the 2000 mg sodium diet.

We thought it would be easier for patients to restrict fluids knowing that they could quench thirst with hard candy or suckers or ice chips or frozen strawberries and grapes. They didn’t have to read labels or count sodium content. We conducted a randomized control study. It was a pilot study. We had a lot of physicians that were very skeptical and thought I was torturing our patients, but we did find in the intervention group compared to the usual care group an improvement in 60 day quality of life using the Kansas City Cardiomyopathy Questionnaire. You could see the results on this slide over here. If you look at the P value you shall see there was no difference in physical limitations, but there was a huge reduction in symptom frequency, symptom burden and total symptom score overall summary score and overall clinical score in patients who received the 1 liter fluid restriction.

I’ll point out that this was an intend to treat study and not every patient followed the intervention. Even with patients not following the intervention, we saw an improvement. Very briefly, our APN led RED intervention, I guess I should be happy to say that our readmission rate or 7-day follow-up adherence rate was better than Dr. DeVore’s adherence rate that he showed with Get with the Guidelines. At the time, our adherence rate was right about 40% and we thought that was awful but it was better than what I saw in the screen a minute ago. We thought we would carry out an intervention where an APN goes into patients’ room before discharge and has a conversation with 3 bullet points.

They would talk a little bit about the early post discharge period being a vulnerable period and explain why we want to see patients early post discharge. We would explain to them that we made changes in the hospital and we need to reassess them to make sure they are beneficial. We would also talk about that they are at very high risk for 30 day rehospitalization and why we were trying to have them come back in. You could see the results of this pilot study and this was a pilot study of 30 patients in each group and just done at the Cleveland Clinic, that there was a statistically significant improvement in adherence to the 7-day follow-up visit just from doing this simple intervention with the 3 hours and giving patients a card with contact info, the picture of a caregiver who would be providing the 7-day visit information and be leading that 7 day visit.

Then the last thing very quickly is heart failure and activity. We know that activity is encouraged in our heart failure patients and we also know that from [HF action 00:54:07] that heart failure is not very well followed. We did a mixed method study. This was a randomized control study. We had 6 different sites involved although the qualitative component was just completed at Cleveland Clinic, we had 48 patients enrolled in the qualitative component and we learned a lot about what patients think about activity. One of the biggest problems was that patients didn’t know what to do and physicians didn’t getting specific. Physicians gave very global messages and patients weren’t really aware of how to take care of themselves.
On the quantitative side, with all six sites involved and one of which was an international site from Sweden, all of the little items you see here in red versus the ones in black were items that were significantly associated with predictors of adherence to exercise. We learned a lot about this, and we are in the process of getting a paper written right now but translation of discoveries as needed. When you are doing research whatever it is, think about how you are going to be translating your research into practice and consider who are the people that are going to benefit, who are the people you need to educate so that they can do a better job of helping you bring your research forward.

My last slide here on general thoughts is as you are getting started is considering setting up a research program it maybe down one track or it may be like mine where I had multiple tracks with patients with nurses and patients. Collaborate; it is really important to collaborate. You learn so much more when you have other people involved and get the perspectives of multiple different viewpoints. Using current knowledge that is out there and the new knowledge that you developed and clinical experience and networking to bring your research to life and then also to translate it. I think I am going to stop there and so if there's a few minutes left we will have time for questions. Thank you so much.

Speaker 1: You can ask them any question using the Q and A button located on the lower left hand corner of your screen. Type your question in the open area and press then to submit.

Dr. Sarah: While people are typing in their questions, we do have one question I believe which is for you Dr. Greenberger from Earl Pullman. Did your study look at municipal EMS versus proprietary EMS on the cost of insurance, cost of EMS usage?

Dr. Heidi: The answer to the first part of the question is no. The EMS used question was a dichotomous question yes versus no. We did not have specific detail with regard to the type of EMS. The second question is an important one. We were able to adjust for health insurance type.

Sr. Sarah: Thank you. Any other questions we are getting on the phone? If not, we want on behalf on American Heart Association and American Stroke Association thank all of our presenters and our attendees for your valuable time and participation in today’s webinar. Again if you have any questions about the young investigators process or Get with the Guidelines, please visit our website at heart.org. We thank you and look forward to seeing you. Actually we have a webinar on this Thursday. If you'd like to attend just reach out and we will make sure you are invited. Thank you so much and have a great day.

Speaker 1: Thank you again for joining us today. This concludes today’s presentation. You may now disconnect.
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