**>>Operator:**

It is now my pleasure to turn today's program over to Steve Dentel with the American Heart Association. Steve, the floor is yours.

**>>Steve Dentel:**

Thank you so much, Ginneen. On behalf of the American Heart Association, American Stroke Association, and Get with the Guidelines for Heart Failure, I would like to welcome you all to today's webinar: Managing Comorbidities in Heart Failure. As Ginneen said, my name is Steve Dentel, and I'm the national consultant with the Get with the Guidelines Heart Failure Program. On today's webinar, we have the pleasure to hear from Dr. Warren Laskey and Dr. Diane Dodendorf, who will walk us through the complex relationship between comorbidities and heart failure and their related challenges. We will have an opportunity for the audience members for questions and answers for our presenters at the end of today's webinar, and we invite you to submit questions throughout today's presentation by using the “Question and Answer” button in the lower right‑hand corner of your screen. A recording of today's webinar will be available on the American Heart Association's website, heart.org/quality, in a few weeks following this event, and we will send out an email with that link. It's now my pleasure to introduce our speakers for today. Dr. Warren Laskey is the Robert S. Flynn professor of medicine and the chief of the Division of Cardiology for the University of New Mexico’s School of Medicine. Dr. Laskey received his medical degree from New York University’s School of Medicine, New York City, and he completed his residency at the University of Minnesota and completed his fellowship in cardiology at the hospital at the University of Pennsylvania in Philadelphia. Dr. Laskey is certified in internal medicine, cardiovascular disease, and interventional cardiology. His areas of clinical expertise are interventional cardiology, valvular heart disease, and adult congenital heart disease. He has served as the chairman of the Circulatory Systems Devices Advisory Panel to the FDA and continues to serve as special consultant to that body. Dr. Laskey has recently served as president, board of the New Mexico chapter of the American Heart Association. He has promoted the participation of University of New Mexico Hospital in the American Heart Association's Get with the Guidelines programs since 2005. The University of New Mexico Hospital was one of the first hospitals in the U.S. to be recognized by joint commission for advanced certification in heart failure. Dr. Laskey continues to serve on the Get with the Guidelines science subcommittee.

Dr. Diane Dodendorf is a master's level nurse with a Ph.D. in psychology and a two‑year post-doctorate in health services research. She is the clinical quality analyst in the department of Internal Medicine and oversees the Get with the Guidelines Heart Failure effort at the University of New Mexico and has served in this capacity for seven years. She works closely with faculty, fellows, and residents on design, methodology, and data issues on a variety of quality projects. It's now my pleasure to turn today's webinar over to the presenters. Thank you so much.

**>>Warren Laskey:**

Thanks very much, Steve. And good morning to some of you; good afternoon to the rest of you. Greetings from sunny Albuquerque, New Mexico. As you can see, we're here today to discuss a very active and interesting topic relating to co‑morbidities in heart failure patients, and hopefully by the end of this presentation, you'll see this is more than just another talk about heart failure. Today we're discussing the burden of comorbidities in the elderly, United States population, defined as those greater than 65 years of age. The reason for that is because the preponderance of information pertains to this age group, but as you'll see, there's a lot of interest and information in younger patients, as well. We're discussing the burden of comorbidities in elderly patients with heart failure. We'll touch on the impact of comorbidities singly and in combination on specific outcomes in patients with heart failure. We're going to discuss and identify potentially modifiable comorbidities and the evidence to date regarding efficacy and effect modification. And finally, we'll discuss models for the management of the patients with heart failure, to paraphrase Dr. Paul Heidenriser, rather than the heart failure patient.

We need to begin with a short segue here in terms of terms. You would think that comorbidity is a fairly straightforward term and, like most things in medicine these days, it isn't. So I've just extracted a few definitions from current working dictionaries of how people define comorbidity For the purpose of this talk, I just want to point out that, A, there is some difference of opinion as to what a comorbidity is and how it's defined and, therefore, how it's measured, but that last bullet in italics pretty well sums up the field at the moment by authorities writing on the subject, that attempts to study the impact of comorbidity are complicated by this lack of consensus, to which I just alluded, about how to define and measure the concept. Related constructs such as multi‑morbidity, burden of disease, and frailty are often used interchangeably. However, there is an emerging consensus that internationally accepted definitions are needed to move the study of this topic forward. And that is quite proper.

We begin with the conceptual framework for this talk, which begins with identification of what are traditionally called cardiovascular risk factors, coupled with genetic and environmental factors that culminate in, if things don't work out well, a clinical condition, specifically coronary heart disease, hypertension, diabetes, and obesity. These clinical conditions may exist in isolation, or they may exist in conjunction with heart failure. That is a totally independent process, although it is obviously affected by these risk factors and clinical conditions. When the heart failure is clinically apparent, what we now view as comorbidities as well as clinical conditions may supervene, and these comorbidities can originate as risk factors in the proximal end of the conceptual framework, or they may peek in at any time along the framework when clinical heart failure becomes apparent. So they may become consequent to or prior to, in any event, all culminating in a specific outcome which, for general purposes, might be viewed as quality of life, morbidity, mortality, and such end points that are traditionally used in heart failure research.

Risk factors, comorbidities, and their interrelationships, this goes back to those various definitions that people have used and are still using. So I just enumerate for you some of the clearly agreed upon risk factors to coronary disease, risk factors for heart failure. You can quickly see that there's a substantial degree of overlap, if not duplication. And what this means for public health and disease intervention, it relates to the non‑independence of many of these factors, such that incident rates of specific outcomes -- let's just say mortality, for example -- in the setting of their co‑occurrence, would likely exceed the rates expected from their individual effects; i.e., they're not independent as the first dictionary term suggested.

Diving into the subject now, we would choose to look at the view from CMS. CMS is the vast repository of information on disease as well as comorbidities in this country. It depends on one's viewpoint, as always in these discussions. Are we talking about splitters or lumpers? And you’ll see what you mean in a second. Medicare beneficiaries are considered to have a chronic condition if the CMS administrative data had a claim indicating that they were receiving such a service or treatment for that specific condition. So that is an isolated entity. In order to generate counts of categories ‑‑ now this is where we get into the lumping of individual conditions – CMS combines all of these in the chronic condition warehouse variable into broad categorical conditional groups. And I will go back and forth between groups and conditions, which is the difference between granularity and a little bit more of an overview. Just for additional information, the warehouse is a CMS‑sponsored research database designed to facilitate analysis of Medicare and Medicaid data across the continuum of care to improve the quality of care. Conditions are subsumed under specific morbidities.

So for example – I mean, that was a lot of verbiage, but it's easier to see what we're talking about here. For the categorical condition group called heart condition, which is how it is defined within the warehouse, you see that within the group are these specific line-item conditions.

The 11 most common comorbidities among fee-for-service CMS enrollees -- this is 2008‑2010 data overall -- are enumerated on this slide. I think you can see, as we probably all know on this talk, that hypertension leads the field, followed closely by hyperlipidemia and diabetes diagnosis. Notice that number 9 is congestive heart failure, the major topic of today, and we'll get to that in a second.

Now, the percentage of Medicare enrollees with more than one categorical conditional group -- this is the lumping rather than the splitting -- can be seen in this slide, and it's easily apparent that well over 50% of enrollees have multiple categorical conditional groups of conditions, i.e., comorbidities. So in the general Medicare population, there is a whole host of comorbidities over the age of 65. Now, that percentage of enrollees by numbers also varies by sex. It varies by sex; it varies by age. I'll show you the age variation in a second, but what is striking here and has some bearing on heart failure, and specifically heart failure with preserved ejection fraction, is that the female sex tends to exceed the male sex in terms of the prevalence of conditional groups.

A little bit more specifically, segueing back to conditions rather than groups, we see that hypertension leads the field here, followed by hyperlipidemia and diabetes. Notice that, from this type of analysis, heart failure is trailing the list as a specific condition. One thing that is perfectly clear -- and I think all of us know this -- is that as we age, the number of comorbidities or categorical conditional groups increases. This slide, again, from the warehouse, shows that quite clearly, that under the age of 40, there is about a 12 percent overall composite group prevalence, whereas over the age of 65, we're now up to 49 percent prevalence. Almost half of all patients will have multiple comorbidities.

Among the conditional group prevalence -- now this is where the condition leaps to the top – it’s about a 72 percent prevalence as of 2008 to 2010 data. I would draw your attention to the rest of the list, though, because diabetes, anemia, and other conditions, we will see where they play a role in just a short bit.

Now, this is a fairly colorful, spectacular slide. There's a lot of information here. The take‑home message on this slide is that for any given isolated condition -- let's take cancer -- there is a whole host of comorbidities accompanying cancer, and they're color‑coded as to anywhere from isolated to greater than five. Let's just fast-forward to the bottom here, the focus of today's talk, where we can see that stroke and heart failure have a significant excess of concomitant comorbidities so much so that stroke and heart failure are considered highly comorbid conditions with about 55 percent of the beneficiaries with these conditions having more than five chronic health conditions.

The impact of age, as I mentioned earlier, on these comorbidities or co‑occurring chronic conditions among five million Medicare patients is shown here. What is expected is seen in the hyperlipidemia, ischemic heart disease, and hypertension bar graph. What is a bit more surprising is the preponderance on the under 65 group of chronic kidney disease and diabetes.

If we look at the 10 most commonly occurring chronic conditions among Medicare beneficiaries, again, the five million patients housed in the warehouse, we can see that there is some overlap. In fact, there's a fair degree of overlap of comorbidities. But I would point out several important features, which is that, on the under 65 group, depression or psychological disorders is not reflected in the over 65 group. This will play a very important role as we segue through the remainder of this talk about comorbidities which are increasingly considered as playing an important role in outcomes in patients with heart failure.

So we've talked a lot about what comorbidities are. We've identified them. It's all very interesting. But what is the clinical relevance of these comorbidities in heart failure? Well, for example, Dr. Pocock and others from the MAGGIC meta‑analysis published several years ago, a meta‑analysis of 39,000 patients with heart failure from various clinical trials and registries, looked at predictors of mortality in these 39,000 patients. And you can see that comorbidities are well represented here as predictors of mortality. So obesity, smoking, hypertension, diabetes, chronic obstructive airway disease, and chronic kidney disease considered conditions prior to the development of heart failure but now considered comorbidities in the setting of heart failure with clinical relevance. Now, of course, everyone wants to know, are there differences in the comorbid burden between heart failure with preserved ejection fraction and with reduced ejection fraction?

These data taken from a recent publication from the Get with the Guidelines Heart Failure Registry show what we know to date to suggest that women, because they're older, are perhaps more likely to have some comorbidities rather than others. And I think you can see that nicely demonstrated on this slide, that there are differences in burden between HFpEF and HFrEF which do reflect age and sex differences.

So what have we accomplished to date to this point? To summarize, among fee-for-service Medicare‑Medicaid enrollee, irrespective of the presence of heart failure, the most prevalent classes of conditions include cardiovascular, as we saw, about 75 percent, metabolic, and importantly, mental health conditions. Among cardiovascular conditions, the prevalence is above 10 percent for, as you can see, hypertension, ischemic disease, heart failure. And among fee-for-service Medicaid and Medicare enrollees with heart failure, over 50 percent of these beneficiaries possess multiple chronic conditions, i.e., comorbidities, and many of the latter would have been considered risk factors in subjects without clinical heart failure.

Among the current controversies in this discussion of comorbidities and comorbid burdens are chiefly, for the purposes of today's talk, obesity and diabetes. Perhaps they travel hand in hand -- not always -- but let's take them one at a time. So the obesity paradox has been seen repeatedly in many different populations, including patients with heart failure. It is expressed as a, thus far, difficult to explain, improved survival in some sets of patients with heart failure who are obese, i.e., with a BMI in excess of 30. Now, this has been seen in patients with chronic kidney disease. It's been seen in all‑comers. This is data from the CDC. This is overall United States population data, and you can see, outlined in the red rectangle here, are what I'm referring to, which is that the BMIs between 30 and 35, what are agreeably obese, tend to have, at least by point estimates, an improved survival relative to their comparative. Now, that's not statistically significant, but this has been made time and time again. The lack of statistical significance is somewhat reassuring since all of this flies in the face of intuition. We know that obesity and overweight is a risk factor for heart failure, so why should these subjects have an improved outcome? It's still unclear, but these are the data in all‑comers. To show you current data on patients with heart failure, the obesity paradox does rear its head in the MAGGIC meta‑analysis that I showed you some data for earlier. Again, this is the 39‑plus thousand patient meta‑analysis of multiple trials and registries. And again, we can see an inverse relationship between survival and BMI. Now, that 95 percent confidence interval does cross one, but the trend here is quite clear and is one which has been seen repeatedly in other heart failure populations such as on this slide, which is a different meta‑analysis of over 20,000 patients, 22,000 patients, again, looking at this rather peculiar inverse relationship between survival and obesity. Notice, however, that obesity does confer an adverse risk as far as hospitalization goes, but in terms of mortality, it still remains a paradox as to why this observation is repeatedly made.

Moving from obesity to diabetes, the other large player on the horizon, I would just open that discussion with we all know that diabetes is a risk factor for heart disease. We know that diabetes is a risk factor for heart failure. What we don't know is what the future holds for us. We do know that there has been an increase in prevalence of diabetes in the general population as well as in hospitalized patients with heart failure. These are projections made from fairly sophisticated statistical models of where we might see diabetes going up to the year 2050. As you can see, there's a fairly wide spread between upper and lower bounds of this projection, but it's quite clear that, overall, that median trend suggests, as has been said repeatedly by others, that the prevalence of diabetes will continue to increase in the United States through the year 2050 to varying degrees.

That said, the outcome of patients with diabetes appears to be improving. Now, that may be counterintuitive. It might be surprising to many of you, but these are data from a very recent study from population-based data, from the supreme DM registry, shall we say, which is a multicenter, community‑based registry, looking at the impact of diabetes on acute coronary syndromes, on stroke, on heart failure, and on all-cause mortality. The diabetes data are reflected by the solid dots, the upper line here. You can see every one of these outcomes is trending down over the time interval of examination, suggesting that the improvement ‑‑ there is an improvement in outcome in diabetic subjects. I would draw your attention to the improvement in mortality with heart failure in the setting of diabetes. Yes, it is true that patients with heart failure and diabetes still have a higher mortality, but these lines do appear to be converging. As far as all-cause mortality, there is general agreement that all-cause mortality among diabetics in this population is decreasing, trending towards control, as well. Even more striking is the comparison, if we look at the heart failure plot in the left lower hand here, we can see, again, diabetics in the solid line, trending down fairly significantly. So we can see that the dotted line suggests these are diabetics without a history of cardiovascular disease, which is almost virtually superimposed on patients without any cardiac disease at all. So it appears as though, from these data in the general population, the improvement in outcome of diabetics is certainly a very important trend. Now, one thing that's for sure, if we couple this increase in prevalence of diabetes that we saw in these projections with an improvement in survival, it's easy to see that if we can project through to 2050, there will be more people around with diabetes, i.e., a comorbid condition, in the setting of heart failure.

Leaving diabetes and obesity for a moment, we want to turn to additional comorbid conditions we don't often think of in the current era. Let's just look at the age distribution of almost three million patients with heart failure. This is data that we extracted from the National Inpatient Sample over the years 2000 to 2010. You can see that this is not quite a perfectly normal or Gaussian distribution, that there is a left tail; i.e., there is a significant proportion, about 20 to 25 percent, of patients under the age of 65 with heart failure. Many, an increasing number, in fact, of these patients, will present with heart failure due to, for example, congenital heart disease. And you can see here in this slide that the prevalence of the number of admissions of patients with congenital heart disease has been increasing steadily through 2005, and these data will continue to increase through 2010. The relevance of congenital disease as a new comorbidity is as follows, that the presence of heart failure and congenital heart disease confers an adverse risk to patients admitted with heart failure. So here is yet a new comorbid condition for us to ponder and to think about.

**>>Diane Dodendorf:**

I want to address the less discussed comorbidities. These are the psycho-social factors that impact heart failure patients. They are invisible, to a certain degree. They are not typically part of traditional medical assessment of heart failure. Patients are not likely to disclose depression/anxiety without prompts, and referral and treatment may be difficult for these patients. A survey was conducted by American Heart Association – this was back in 2014. They used focus groups and asked what their difficulties were with managing heart failure. The respondents primarily focused on emotional support and lifestyle factors. And the lifestyle includes diet, exercise, stress management. The medical care, they talked about feeling better and getting their ejection fraction up. That same data shows here, in a graph, what is my biggest struggle? While medical care is the highest feature, emotional support, lifestyle, and financial issues were significantly reported by these patients.

**>>Warren Laskey:**

Interestingly, there was a very recent publication from the group at Brigham and Women's Hospital from their outpatient heart failure program which looked at a quality of life score developed by the Brigham Hospital group, and reported limitations, patient‑reported limitations, to quality of life. The reason this slide and this study is interjected here is because it is so unusual to have this degree of concordance between two dissimilar efforts. We just saw, as Dr. Dodendorf told us, the results of a survey conducted among AHA volunteers with heart failure. That survey was done in conjunction with the development of a PCORI proposal, and it outlined a number of other features that patients are concerned about. Amazingly, this study from the Brigham confirms that and tells us that less than 50 percent of their patients with heart failure said their quality of life was primarily limited by heart failure symptoms. In other words, these folks have a lot of other concerns. Among these other concerns are psychological issues, the stress, the anxiety, and worse. There are pharmacologic concerns due to the requisite polypharmacy for heart failure. There are rehabilitation concerns, educational concerns, so on and so forth. And what these bar graphs show us -- let's just ignore the particular ejection fraction for a moment. Let's just look at the dominant limitation to the quality of life and look at the largest bar graph, in green, all the way on the left, is due to non‑medical concerns, that is concerns that do not relate to their heart failure management but relate to other issues. And we cannot forget this because it is a large proportion of the comorbid burden of these patients with heart failure.

**>>Diane Dodendorf:**

So I broke down psycho-social issues in this table. The psychological most commonly is depression and anxiety. This is well established in the literature. Sociological, there have been a number of studies looking at SES in neighborhoods. One study looked at, simply, did they have a partner or no partner? So clearly, the partner and social support are supported in the literature. Medication adherence fits in here because of psycho-social and socioeconomic factors, as well as transportation. Education is another one. Post-high school education has been studied as a factor. Health literacy and understanding, how much does the patient really know what to do? Environment makes a difference, urban/rural, whether there's community support. For example, sidewalks that are safe so you can do your walking. And financial fits in here, too, with employment income, health insurance, as well.

The next -- depression in the literature has been clearly established as an important factor, in fact, so far as to say that it can predict the decline in health status of patients who have heart failure. This is the same table replicated, and in the right‑hand column, I have addressed each of those issues. For depression and anxiety, I would encourage people to screen and refer and treat. The PHQ9 is commonly used for depression screening. The BMH20 is another screening tool that includes depression, anxiety, drug and alcohol issues, relationships, both home, school, and work. The movement to integrate behavioral health issues into primary clinics has been widely addressed but not so much in specialty care clinics. Sociological, in terms of screening, ask. Ask how they get to their appointments. Ask if they can get to the next appointment. And try to identify some system resources, both in the hospital system or in the community. Education, screen and assess. There's a teach-back strategy that's commonly used. And often your hospital systems will have resources for literacy. Environment, again, asking the patient what kind of resources they have, how easy or difficult is it for them to get prescriptions, et cetera. Financial, again, screen and assess. And most hospital systems have patient assistance programs.

Here at University of New Mexico, we have a psychologist at the Heart Failure Clinic, which is unusual that behavioral health would be in a specialty clinic. Typically, what happens is there's a warm handoff from the cardiologist, meaning the physician will walk the patient down the hall, introduce them to the psychologist, and encourage the person to follow up with the psychologist. Typically, it's three to five visits, and the psychologists are co‑located in the same clinic. Cognitive behavioral therapy is the most common method used. And our numbers indicate, with the BHM20, which is given initially and then subsequently, is there's clearly an improvement in anxiety and in depression.

**>>Warren Laskey:**

So with that little pat on our backs, just to share some data with the rest of you about what we're doing here to address some of the less obvious and more difficult comorbidities, I fear that we may have thrown an awful lot at you in terms of medical and non‑medical comorbidities. Again, to remind you that some of these, or at least almost half of these, non‑medical comorbidities are of tremendous concern to our patients, demonstrated by the AHA survey and by the recent data I shared with you from that Brigham and Women's study. So how best to address this constellation or this agglomeration of comorbid conditions in patients with heart failure? How do we deal with all of these various dimensions of care as we march on? Well, there still is, and there certainly was at one time, a great deal of enthusiasm for the patient‑centered medical home, which seemed ideologically like the ideal environment on which we can focus primary care, enhance primary care to our patients with heart failure, as well as improve efficiency of care. It's clear that the heart failure specialist cannot – and, in fact, will not -- manage all of these comorbidities, so it falls to the primary care community. So the patient‑centered medical home was an outgrowth of the healthcare reform effort some years ago. A survey was done in 2007 among 32,000 office-based encounters in the primary care realm which looked at how specialty care, how primary care, and how all of these might be able to function within this either virtual or real home called the patient‑centered medical home.

Care was delivered by specialists for seven chronic conditions, including heart failure. There was an estimation of the impact of the reallocation of just about half of this effort to a primary care workforce. Again, I remind you that heart failure clinics, heart failure specialists cannot manage all of these comorbidities to which we just added a few more today during this talk. And it looked as though a significant proportion of patient visits for heart failure were established patients. The rest were new. So there is a tremendous burden still on the specialist but even more of a burden because of the preponderance of comorbidities. If we were to project a reallocation of 50 percent of this effort, i.e., the effort to manage the comorbidities among a primary care workforce, that reallocation in this survey, using these data as shown in the plot on the right‑hand side, would add tremendously, probably exponentially, to the current burden of work among primary care providers. We know right now that there's a paucity of primary care providers. Adding this amount of additional -- i.e., 1.5 extra -- work weeks per year for each primary care provider would significantly add to their burden, as well. So there is no perfect model, of course. This is just the result of one attempt to manage heart failure and its many comorbidities.

And so other efforts such as the patient-centered disease management effort, which is similar to the patient‑centered medical home but not identical to – and here, I show you the results of a randomized comparative trial recently published in JAMA. Just under 400 patients distributed amongst four VA hospitals. Patients were randomized through such a collaborative care model as Dr. Dodendorf was just alluding to, i.e., the heart failure piece and the non‑medical heart failure piece and the psychiatric piece, and the control arm was usual care in patients with heart failure. The primary outcome was the change in the Kansas City quality of life score at one year, and as you can see, although I apologize for the quality of these duplications, but the upper curve is the intervention arm, the lower curve is the usual care arm, and they look virtually superimposable. There was a significant improvement in both groups and no difference in score between groups at one year. However, there was a greater improvement in the PHQ‑9, again, to touch on the psychological aspect of the comorbid burden. There was an improvement in the intervention arm in those who screened positive for depression. And again, we've just seen briefly the impact of depression on overall prognosis. So there may be a glimmer of hope here in patient‑centered disease management programs, although, agreeably, there are many, many different variations on this theme.

Finally, we move to what is currently called self-management. I think this is currently the state-of-the-art for how we would bring these many different dimensions and aspects of the patients with heart failure and their comorbidities to successful observation and treatment. This is the result of the large meta‑analysis recently conducted by folks in The Netherlands, self-management interventions. Again, there are many, many variations on a theme of what a self‑management intervention program is. You can see that there are a number of studies which are summarized here. First of all, I want to point out the importance to our talk today, which is that many of these patients did have attendant comorbidities, so in the control arm well matched with the intervention arm, but comorbids are present upwards of 40 percent in these heart failure populations. Irrespective of the specific type of self-management intervention, again, realizing there's many shades of a self-management program, but if you take all of them in a meta‑analysis and take into account the requisite heterogeneity, we can see that on average, overall, there was an improvement in health related quality of life at 12 months -- that's the left lower panel here -- and there was an improvement in overall mortality at that one‑year point. So self-management interventions, while they need greater specificity that time did not allow us to go into, is perhaps a direction certainly worth pursuing for the management of multiple comorbidities in patients with heart failure.

So let's just breathe for a second and review where we've been. Back to the beginning, among all Medicare-Medicaid enrollees, the most prevalent classes of conditions included cardiovascular, metabolic, and mental health conditions. Among the cardiovascular conditions, we saw the prevalence was above 10 percent for the standard triad of hypertension, ischemic disease, and heart failure. The prevalence of metabolic disorders in such patients is not trivial. Diabetes by some publications may be upwards of 40 to 45 percent. But let's not forget the concomitancy of mental health conditions, anxiety, depression, and schizophrenia. These still rank high on the list of Medicare comorbid conditions. Among Medicare enrollees with heart failure, as we saw, over half of these beneficiaries possess greater than five chronic health conditions. Most of those, if not many, would have been considered risk factors in subjects who did not develop heart failure so would have still needed attention. Interactions among such conditions might increase the risk of adverse outcomes, such as we've seen in diabetes, although perhaps mitigated more recently by that condition, or possibly a decrease in the risk of adverse outcomes, such as the obesity paradox, where obese patients appeared to have an improved prognosis. The multiplicity of comorbid conditions Band‑Aids an integrated multidisciplinary care environment. Current limited evidence suggests a beneficial effect on heart failure specific outcomes as well as non‑heart failure specific outcomes of self-management programs. And I summarized that for you in the last slide, which does not do justice to the vast magnitude of effort devoted towards self-management programs, how they're defined, and how they're employed. The impact of psychosocial comorbidity is very real, difficult to quantify, but potentially modifiable, as you've seen from the previous slides. Patient-centric approaches to recognition and treatment should be incorporated into any disease management program.

There is still much work to do. A longitudinal analysis of the impact of age, period, and, yes, cohort -- that is when these patients were born -- on the incidence and prevalence of traditional factors in patients with heart failure is in order. We do not have such a national registry as exists in some of the European countries. There is a need for greater attention to the frequency of psycho-social comorbidity and its ascertainment in patients with heart failure. There is a need for enhanced population level surveillance of some of these newer risks and conditions. Among them are congenital disease coming up as well as patients with concomitant malignancies who, either due to remote effects of therapy or the therapy itself, may translate to clinical heart failure. And finally, there is the important incorporation of the evidence base as it develops into practice guidelines.

With that, I would leave you with the following optimistic but pessimistic view of where we are with guidelines. Notice the authors on this recent publication. These are all distinguished authorities, an international group of authorities writing on the state-of-the-art of how guidelines may have limited applicability to patients with comorbid conditions. The third author, Carolyn Clancy, has been a principal in AHRQ for many, many years and can certainly speak directly to the subject. The result of this systematic analysis -- this was not a meta‑analysis -- was as follows: That they assessed the quality and quantity of supporting evidence for comorbid related recommendations for four highly prevalent chronic conditions; they found that the guidelines included very few recommendations on patients with comorbidities; the strength of the supporting evidence was moderate; and these authors concluded, as we did in the last slide, by saying that guidelines should be more explicit about the applicability of their recommendations to patients with comorbidity. And I would leave you with the fact that in the 2013 update, the ACCHA Heart Failure Clinical Guideline Update, there is no more than a paragraph on the management of patients with comorbidities. So there is, indeed, much work to do. Hopefully we have enhanced your awareness of the scope of that work as well as your enthusiasm for rolling up your sleeves and getting to work with these patients who are increasingly more complex. Both Diane and I would like to thank you for your attention, and we will end our discussion at this point.

**>>Operator:**

Ladies and gentlemen, thank you for joining us today.

**>>Steve Dentel:**

So, operator, if you could – Ginneen, if you could remind them how to submit a question.

**>>Operator:**

Yes, thank you. Ladies and gentlemen, as a reminder, if you'd like to ask a question, please click on the green “Q&A” button in the lower left‑hand corner of your screen. Type your question in the open area, and click “Submit.” And I'll now turn it back for the Q&A session.

**>>Steve Dentel:**

I wanted to thank both of you. This really was a phenomenal presentation, and especially thank the attendees as we wait for some questions to roll in.

**>>Warren Laskey:**

Steve, I see some here on the left‑hand panel.

**>>Steve Dentel:**

Yeah, most of them are about slides and technical things that were at the very beginning. So just waiting for some clinical questions to come in. So I'll throw this one out to you: What is your experience, then, at University of New Mexico with partnering with the heart failure clinic with population health efforts?

**>>Warren Laskey:**

So, in brief, we're just beginning to expand the domain of our outpatient treatment and surveillance of patients with heart failure to incorporate into the population of patients at large. This involves a substantial effort, as the questioner probably already knows, in terms of resources, infrastructure, surveillance, and key here is surveillance. Active surveillance is essential here, not passive. We cannot wait to be told that a patient has been admitted elsewhere or that a patient had died. We need to find this out actively. So implementation of active surveillance for our heart failure population, while aided by much of the instruments provided by Get with the Guidelines Heart Failure, is just beginning to extend into the outpatient realm. So these are very early tentative efforts. I think Diane just shared with you a bit of that in terms of what's been going on in outpatient treatment for some of the psychological dimensions of the heart failure condition, but we're just getting there.

**>>Steve Dentel:**

And can you elaborate on the self-management intervention program that you have firsthand knowledge about?

**>>Warren Laskey:**

Right. So I'll put an anecdote here. This was one of our – this was our proposal to PCORI, in fact, which, however, was not approved. We feel that self-management -- and many, many others feel this way, as well -- summarized very succinctly in that overall slide of the results of the meta‑analysis, self-management, self-empowerment, self‑efficacy, self-everything is, I think, where the final common pathway must reside for effective control and management of these multiple comorbid conditions as well as the heart failure state itself. It comes in many different varieties. There are so many types of self-management programs, but they all do focus on self‑efficacy, self-empowerment of letting the patient take more control through a variety of mechanisms in order to manage their condition a bit more successfully than just the intermittent visits to the heart failure clinic or to the primary care clinic.

**>>Steve Dentel:**

Another question, have you implemented strategies on the inpatient side for addressing social-psych issues versus what is manageable in the clinic? Many of these patients are frequent flyers, re‑admits.

**>>Diane Dodendorf:**   
Yes, on the inpatient service, every patient is administered the PHQ‑9. Results are documented in the patient's chart, and that's followed up on the outpatient clinic. They're scheduled for post-discharges within seven days, and the psychologist and staff are aware of the inpatient scores. There was another question in here about the Minnesota quality of life. We do use that assessment tool in the outpatient clinic, as well.

**>>Steve Dentel:**

So can you ‑‑ so another question would be, with patients that are managed in a heart failure clinic, do the physicians just focus on heart failure, or do they also treat their comorbid conditions like diabetes, obesity?

**>>Warren Laskey:**   
So the answer to that here, in New Mexico, which has a striking paucity of primary care providers, is our folks attempt to do it all. Now, as I've just made the last 50 minutes, the point of it, it cannot be done solely by specialists. And so we are also getting our toe in the water with respect to patient‑centered medical home. There are several of those which have developed and been approved by the government to move forward to second and third phases, and we try to work very closely with the primary care provider under the rubric of the patient‑centered medical home. But the answer to your question is, we do what we have to. And so, yes, our mid-levels and our physicians in the heart failure clinic do manage a large portion of these comorbid conditions.

**>>Steve Dentel:**

I think we have time for one or two more questions. Are you using palliative care for patients with multiple comorbidities? If so, how?

**>>Diane Dodendorf:**

Palliative care has been established here for a number of years and has grown in size and number of consults. They have an outpatient clinic now that physicians can refer their patients to. Yes, palliative care is involved. We're actively looking at a system where triggers would be initiated on admission to the hospital if a patient had a number of comorbid conditions, with a communication to the attending physician. So yes, we're moving in that direction.

**>>Warren Laskey:**

And I think another three or four faculty have just been hired this last year for palliative care to keep up with this increasing workload of referrals.

**>>Steve Dentel:**

So we are at the top of the hour. I apologize for not getting to all the questions. But I wanted to thank our presenters for leading us in this fantastic presentation today, and thanks to all of you, our attendees, for participation in today’s event. Following today's event, a recording of the webinar and presentation slides will be available on the American Heart Association's website, heart.org/quality, and we will be emailing you a survey to gather your feedback on today's webinar. Thank you again, and have a great day.

**>>Operator:**

Thank you all for joining us today. This does conclude the program, and you may now disconnect. Everyone, have a wonderful day.