

- DR. PETER NOSEWORTHY:** Greetings. I'm Dr. Peter Noseworthy, an electrophysiologist at Mayo Clinic in Rochester, Minnesota. In today's commentary we'll be discussing the recently released ACC-AHA syncope guidelines. I'm joined by my colleague, Dr. Win Shen, who is the lead author of these guidelines and the chair of the Division of Cardiovascular Diseases at Mayo Clinic in Arizona. Welcome Win.
- DR. WIN-KUANG SHEN:** Thank you so much, Peter
- DR. PETER NOSEWORTHY:** First off, congratulations on these guidelines. I know your team has put a lot of work into this, and speaking as a clinician, I know we're all going to be very happy to have some guidance on the issue.
- DR. WIN-KUANG SHEN:** Yes, thank you. It really took a real team work for two years before we got to this point.
- DR. PETER NOSEWORTHY:** Right, I'm aware. Now syncope is so common 40% of us will have syncope at some point in our lives. And I was actually surprised to see that these were the first formal guidelines from the AHA and ACC regarding syncope. Why do you think they were so long in coming?
- DR. WIN-KUANG SHEN:** That's a great question, and I can only give you more from my perspective. Syncope is so common and it is a symptom, so it really can be associated with so many conditions. And so if you are looking in the past, you'll see that there were reviews, and summary, and statements from different societies. And from American Heart ACC and Heart Rhythm Society, about 10 years ago there was a scientific statement on syncope but with a focus on sudden death prevention. And so when the syncope proposal was put forth to the task force-- the guideline task force at ACC and AHA, that was immediately recognized that we should provide a more comprehensive recommendation for this very diverse group of patient population. And so this was commissioned about two to three years ago when we started working on this paper.
- DR. PETER NOSEWORTHY:** I see. Syncope, of course, is a very broad topic. So what were your overall goals of these guidelines?
- DR. WIN-KUANG SHEN:** There were several. The first goal is really to set the standard definition for syncope and many other associated conditions. The reason why that is so important is because if you look into

the current papers and studies and sometimes the definitions for different conditions vary quite a bit. So that was the very first goal. And second goal, of course, is to recommend and set the standard practice for a large body of physicians health care providers-- for cardiologists, electrophysiologist, internist, and neurologist, emergency room physicians. And in this document, we also included the pediatric population. So that's the second and a broad scope as well as the goals. And then third is really to identify some the areas that we are in need of additional data and to then facilitate future clinical studies. So these are the three main goals.

DR. PETER NOSEWORTHY: Great. So getting to the meat of the guidelines, let's start with making a diagnosis. I think one of the challenges in syncope is knowing how much testing to do. We all try to avoid unnecessary testing. Can you tell me what is essential for everyone-- in the work up for everyone with syncope?

DR. WIN-KUANG SHEN: Well, what you will see that the writing committee really that came to a consensus really uniformly recommending that a detailed history and examination for the initial evaluation is obligatory. And second is that after lots of debate and deliberation, we recognize that even though the diagnosis-- a diagnostic value of ECG is really at a low yield, but it does carry significant prognostic value. So we also recommend that ECG as part of the initial evaluation. And it is absolutely correct that in this guideline, you will see that we recommend not to do a broad diagnostic testing and broad testing for blood tests, image, and modalities.

DR. PETER NOSEWORTHY: OK. So for patients with clear cut vasovagal syncope, the history and physical and an ECG is sufficient?

DR. WIN-KUANG SHEN: That is correct.

DR. PETER NOSEWORTHY: Are there any tests that are not recommended? The class three recommendations, for instance?

DR. WIN-KUANG SHEN: There are several class three recommendations, but perhaps I should qualify what I'm going to say by saying that the clinical judgment-- and what you will see in the guidelines, that we frequently evoke the phrase in selected patient population. So for instance, we made a recommendation not to do broad test blood testing in patients presenting with simple and vasovagal syncope. But on the other hand, if a person comes in with chest pain, of course that additional blood testing should be considered. And the other areas that we made costly recommendations would be imaging. For instance, we do not recommend broad scope

cardiac imaging, CT, MRI for patients with a normal ECG without the prior history of heart disease. And we also recommend not to do broad neurological imaging, like carotid ultrasound, CT scan and MRI scan of the head and neck.

DR. PETER NOSEWORTHY: OK. In the emergency department common challenges, who should be admitted to the hospital? Do the guidelines give any recommendation?

DR. WIN-KUANG SHEN: Yes. This guideline we made very clear recommendation with a summary table as we put in the serious medical conditions. If a patient presents with a list ending with more than one of the conditions that belong to the serious medical conditions, admission to the hospital would be recommended. And these are actually fairly intuitive. For instance, a patient presented with syncope with ventricular tachycardia, a patient presented syncope. Although the etiology has not been confirmed but was with serious head trauma, these are the conditions that should be considered-- the admission for evaluation should be considered.

DR. PETER NOSEWORTHY: OK. As an electrophysiologist, I find that we're doing fewer and fewer EP studies. But there's still probably a role for a EP study in selected patients. Can you expand on that?

DR. WIN-KUANG SHEN: Yes. EP study, as we know, 20 or 30 years ago really was viewed as the court of final appeal for syncope evaluation. Through the years that we learned the value of EP study, that perhaps the sensitivity and specificity varied depending on different conditions. And number two reason why that EP study has decreased through the years is because, as we know, patients with structural heart disease-- with non ischemic cardiomyopathy, with reduced ejection fraction less than 35%, and with or without syncope these patients qualified for an ICD. And then furthermore that we have so many different monitoring devices today that allow us to monitor these intermittent episodes. As a result, the value of the EP study has diminished. But in patients that after myocardial infarction, and with the preserve ejection fraction at, say, 45%. And these are the patients EP study that can be useful.

DR. PETER NOSEWORTHY: Similarly, for a tilt table testing. Although we still do tilt table testing at Mayo Clinic, and I know other centers do, some have entirely abandoned the process or the test altogether. What are the recommendations for tilt table testing?

DR. WIN-KUANG SHEN: Most times at the diagnosis of vasovagal syncope can be made after a thorough initial evaluation with a history and physical examination. In patients where the recurrent episodes are not very well defined, or when the presentation is not typical of vasovagal syncope, this is the time that the tilt table testing can be useful.

DR. PETER NOSEWORTHY: OK. Well, moving on to management, the management of recurrent vasovagal syncope I think is a major challenge for cardiologists. And the various therapies, beta blockers, florinef, midodrine, SSRI's, pacemakers, impression stalking, salt tablets, and so on, have all really had limited benefit. What are the evidence based recommendations for management of recurrent vasovagal or neurocardiogenic syncope?

DR. WIN-KUANG SHEN: Well, as you already mentioned, the use of pharmacological interventions. And when we looked at and we reviewed the evidence, and sure, there are some clinical trials had lots of observational studies. But if we combine the scope, the quantity, and quality of the data, most of these recommendations for pharmacological therapy actually became a class 2b. We made one class one recommendation, but based upon expert opinions. And that is to educate the patient to make sure they understand vasovagal syncope overall is a benign condition. And if they really could prevent triggers and to also pay attention to the initiating prodromes, and a lot of the times vasovagal syncope could be prevented.

DR. PETER NOSEWORTHY: OK, great. Should any of these patients receive a pacemaker?

DR. WIN-KUANG SHEN: Yes. Lots of studies have been performed-- randomized trials, double blinded, and not double blinded studies. And as a matter of fact, this was the question we put forth to the evidence review committee, and you were a member of the writing committee on the evidence review. We really asked the evidence review committee to in a very thorough manner and did extensive literature research. And we specified the studies and to the types of studies, the duration of the study, inclusion-exclusion criteria, meet the criteria to be analyzed that in the meta analysis. After this process, the writing committee of the guidelines really were very calm when it comes to the final decision of making the recommendation of pacemakers, we made the pacemaker to be a class 2b recommendation in patients who are older than age 40 that with recurrent vasovagal syncope with documented spontaneous pauses.

DR. PETER NOSEWORTHY: OK. And what qualifies as a significant pause for pacemaker implantation?

DR. WIN-KUANG SHEN: We followed the exact definition from the clinical trials, and that is when the pause is documented-- associated with symptoms of syncope-- and that pause is defined as greater than or equal to three seconds. In a person without syncope, a pause is documented to be six

seconds or longer. And those two situations would qualify-- to be qualified as a pause and the pacemaker could be considered that in patients with recurrent syncope and older than age 40.

DR. PETER NOSEWORTHY: OK, great. Another thing that comes up a lot in practice is driving. Do these guidelines make recommendations about driving after syncope?

DR. WIN-KUANG SHEN: This was a very important topic, but at the same time was very challenging. The writing committee discussed, deliberated, and reviewed extensively of the evidence. And we really couldn't reach to the level of consensus of recommendations. After discussion with the task force committee-- with the chair of the task force-- what we did was we then-- after reviewing all of the evidence-- what we did was the following.

One is that we made one recommendation, and that is that physicians and health care providers that should be familiar with both the local and federal laws about driving with syncope-- after syncope. Number two is that when it comes to commercial driving, we recognize that it is really not the health care providers that make the recommendations about commercial drivers. It is the Department of Transportation who have strict guidelines about whether the commercial drivers could drive or not drive, so we defer that to the federal law from the Department of Transportation. When it comes to private driving, what the writing committee did was that we made a summary of a table of all of the conditions.

And so what we did was to suggest that an observational period without recurring syncope, and then the patients would be allowed to resume driving. So there was no formal recommendation for private driving, but we did make suggestions with a summary table.

DR. PETER NOSEWORTHY: OK, thank you. That's very useful. So I would like to thank Dr. Shen for joining us today to review the new ACC-AHA syncope guidelines. And thank you for joining us on theheart.org and Medscape.