AACE Algorithm Offers New Guidance on Managing T2DM

How Does It Compare With ADA/EASD Guidelines?
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Position Statements vs Algorithms for Type 2 Diabetes

Hi, I am Dr. Anne Peters from the University of Southern California. Today I will take on the difficult task of comparing the American Association of Clinical Endocrinologists (AACE) algorithms for the treatment of type 2 diabetes[1] with the position statement of the American Diabetes Association/European Association for the Study of Diabetes (ADA/EASD) for the management of hyperglycemia in type 2 diabetes.[2]

In fairness, I will disclose that I was one of the authors of the ADA/EASD position statement. I have biases, but I also know the process by which algorithms are created. Thus, I have some insider information to use when evaluating these statements. Furthermore, it is difficult to compare them while using the terms "algorithm," "position statement," and "guidelines" correctly. The ADA/EASD document is a position statement, which means that it is not meant to be an algorithm or a guideline. The AACE document is a series of algorithms with very minimal text; it delineates the treatment of all elements of type 2 diabetes, (hyperglycemia, obesity, prediabetes, hypertension, and dyslipidemia). The ADA/EASD position statement looks only at the treatment of hyperglycemia in type 2 diabetes. I will focus first on that position statement and then I will discuss the AACE algorithms.

The ADA/EASD Position Statement

In creating the ADA/EASD position statement,[2] each organization selected 5 members. There were 5 members from the United States and 5 from Europe. We met over 2 years to do our best to create an evidence-based position statement. We reviewed the world literature on the treatment of type 2 diabetes. The available data are not definitive, and although we know how individual drugs work, it is very hard to come up with best practices for the pathways to use those drugs. For many of us, our practice situations vary, and that may dictate how and when we can use different drugs.

The starting premise of the ADA/EASD position statement is that we should provide patient-focused care, and that inherent in providing patient-focused care, algorithms are impossible. Clinicians need to determine the patient's needs and preferences and then treat them appropriately. In the position statement, we review the literature, provide the background information, and then come up with our position on the various treatments for hyperglycemia in type 2 diabetes. We discuss 5 domains of treatment: efficacy, hypoglycemia, weight gain, cost, and side effects. We provide a basic algorithm for the treatment of type 2 diabetes and discuss different patient situations, such as an elderly patient, a patient in whom the risk for hypoglycemia is high, a patient for whom financial factors are very significant, etc. We discuss different clinical scenarios and try to help practitioners look at their own patients and decide what to do.

After writing the statement, it was reviewed by approximately 50 external reviewers and also by the steering committees and executive committees of ADA and the EASD. We incorporated all of the comments, suggestions, and criticisms. Finally, the position statement was published. I have heard many comments, both good and bad, but trust me -- try doing this and you will find out how difficult it is, which is why I respect what the members of AACE did in trying to write their own set of algorithms.

The AACE Algorithms for Type 2 Diabetes

The AACE produced algorithms[2] rather than a position statement. There are 10 pages of algorithms. They are beautiful, quite well done, and very colorful. They start with obesity and weight management and the management of prediabetes. This algorithm is somewhat confusing without text. The authors have eliminated hemoglobin A1c as part of the diagnostic criteria for prediabetes and don't describe in much detail how to decide when to treat somebody with prediabetes. There is no current US Food and Drug Administration-approved medication for the treatment of prediabetes. Although it is very important to consider prediabetes, it is also important to make your own choices with respect to how you manage your patients, and it should always start with lifestyle.

Next, the algorithms define targets. Their target hemoglobin A1c level is < 6.5% in patients who are healthy and have no contraindications to lowering their A1c to that level. I would agree that, in a healthy individual who is at low risk for hypoglycemia and/or is on agents that don't cause hypoglycemia, reducing the A1c level as close to normal as possible is a very good idea. Hemoglobin A1c levels > 6.5%, are targets for patients who aren't eligible for such tight control. I am not going to argue about cut-points for A1c, but individualizing targets is important, particularly in patients with longer-duration disease,
more comorbid conditions, and increased risk for serious sequelae of severe hypoglycemia.

The "meat" of the AACE algorithms is the glycemic control algorithm, which starts with lifestyle modification. We all know that lifestyle (diet and exercise) in the treatment of type 2 diabetes is important, and we always need to talk about it with our patients. Then the algorithm divides patients into A1c levels. If the patient's A1c level is < 7.5%, you start the patient on monotherapy. If the patient's A1c is ≥ 7.5%, you start the patient on dual therapy. There is also a category for A1c levels > 9%, and in that category you determine whether the patient has symptoms. Symptomatic patients are started on insulin, and those who are not symptomatic are started on either dual or triple combination therapy. Drugs are color-coded. Good drugs, which are considered the safest and most effective, are green. For monotherapy, these include metformin, glucagon-like peptide-1 (GLP-1) receptor agonists, dipeptidyl peptidase-4 (DPP-4) inhibitors, and alpha-glucosidase inhibitors. Yellow drugs are those with more side effects and should be used with some caution. They include the sodium glucose cotransporter-2 (SGLT2) inhibitors, thiazolidinediones, sulfonylureas, and glinides. The first choice for monotherapy would be metformin, a GLP-1 receptor agonist, a DPP-4 inhibitor, or an alpha-glucosidase inhibitor. For patients who need dual therapy, 2 other green drugs can be added, which include coleselam and bromocriptine. Clinicians are directed to combine a drug from the monotherapy column with another drug from the dual-therapy column. I didn't say that this was simple; you need to look at the algorithm.

For example, you could start with metformin and add a DPP-4 inhibitor, something that we commonly do. You could also start with an alpha-glucosidase inhibitor and add bromocriptine, which is a pathway that is less commonly taken and may or may not be proven to be as effective. You need to look at these drugs and combinations and make your own decisions. Under dual therapy they add a bar for basal insulin, but that is yellow, so that would be used with caution. Moving on to triple therapy, you would combine all of the agents that you need to get the patient to target.

The next algorithm is for starting insulin. This insulin algorithm is somewhat hard to follow, even though I know what I would do. The algorithm suggests determining whether the patient's A1c level is < 8% or > 8%. If it is < 8%, you start a total daily dose of basal insulin between 0.1 and 0.2 units/kg. If the A1c is > 8%, you start with a total daily dose between 0.2 and 0.3 units/kg. The algorithm doesn't specify which oral agents to keep patients on or whether you should keep patients on oral agents at all. It doesn't mention oral agents when using insulin. My preference is to keep patients on metformin.

An algorithm for increasing the dose of insulin seems similar to the treat-to-target algorithm, but it's unclear whether this algorithm is for use by patients or practitioners, or both, for insulin dose adjustments. For intensification, the algorithm states that you can add a GLP-1 receptor agonist or a DPP-4 inhibitor, assuming that the patient isn't already on those agents when you need to intensify. Then they suggest adding prandial insulin, but it is added in 3 split doses before breakfast, lunch, and dinner in a 50/50 ratio between basal and bolus insulin. I'm not sure how that plays in determining how to start patients on insulin. The algorithms also present the management of dyslipidemia and hypertension. These differ somewhat from the ADA guidelines,[3] which are different from the ADA/EASD position statement. Finally, the algorithms go through profiles of the different antidiabetic agents, but they don't include costs. Although in an ideal world you would never have to consider cost, in many practice situations, cost becomes important and is something we need to consider, particularly as we look at the burden that we are giving our patients with these different medications, some of which cost a lot.

The final page of the algorithm has pointers that go along with what has already been said. They didn't list the practice settings of the authors or disclose any of the potential conflicts of interest. That is important to know as we try to make sense of where these algorithms came from and how they were developed.

I applaud AACE for coming up with these algorithms. We need to have different approaches to treating diabetes because our patients are different. Our practice settings are different. I want everybody to focus, no matter what guideline you follow, on getting your patient's A1c down to the lowest level that is safe and well tolerated to prevent patients from developing the complications of diabetes over the long run. Thank you very much. This has been Dr. Anne Peters for Medscape.

References

