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Defining Stable Glycemic Control

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Dr. Mathieu:
Hello. This is CME on PACE CME and ReachMD, and I'm Chantal Mathieu. I'm an endocrinologist in Leuven, Belgium. So, let us discuss stable glycemia control. Most of you will be very familiar with hemoglobin A1C as a measure to express the mean glycemic control of an individual. And indeed, mean glycemic control is what we are aiming for in our treatment of people living with type 2 diabetes, because we know that hemoglobin A1C, the glycated form of hemoglobin, gives us an impression of the mean blood sugar levels. And these mean blood sugar levels are correlated with good glycemic control, and thus, the arrival of chronic complications, but also of acute complications, and are related with the quality of life of individuals, as this is correlated with complications.

However, hemoglobin A1C and this mean glycemia is not everything. We have a lot of glucose variability, and you can have a person with the same hemoglobin A1C with low glucose variability, and the person with this hemoglobin A1C with very high glucose variability. And there are some arguments from literature to say that the higher glucose variability is associated with a higher risk in particular of macrovascular disease. But also, people living with diabetes are quite unhappy when their blood glucose levels are unstable because they will be exposed not only to high blood sugar levels, but also to the dreaded hypoglycemia. And when we look at hemoglobin A1C, we see that it is actually quite a poor surrogate for hypoglycemic risk. Indeed, in this study, by Kezia et al, it is clear that you can be exposed to hypoglycemia at any level of hemoglobin A1C.

Remember also, the ACCORD study, where in particular, individuals with the higher hemoglobin A1C were more exposed to severe hypoglycemic risk.

And this now brings me to the new technical tool that we have, namely continuous glucose monitoring, where we can now not only have glimpses of glucose measurements of the individual in one day, but we have continuous curves. And also, these continuous curves now bring in new metrics. We have self-measured blood glucose with finger sticks, we have hemoglobin A1C, and now we have these metrics called time in range, the percent of glucose levels that individuals spend between 70 and 180 milligrams per deciliter. We also have time below range, below the 70 milligram per deciliter, or even below 54 milligrams per deciliter. And we have consensus now that tell us what the desired time spent in range is, namely more than 70% in individuals with type 1 and type 2 diabetes, and time below range, so below 70 milligrams per deciliter. We want to be below 4%.

Of course, if you have an elderly, frail individual, you are less stringent on the percent of time spent in range. We're happy there if it's above 50%, but if you have an individual who is pregnant, there we even tighten the levels where we want to be. There we say that we want to be 70% of our time in range, but now between 63 and 140 milligram per deciliter.

And finally, we also have other metrics that now give a feeling of this variability. We have the GMI, the glucose management indicator,

and glycemic variability where we want to be below 36%. And the last metric that has been introduced is the time in tight range, namely the percent of time an individual spends between 70 and 140 milligram per deciliter. And we want that to be above 50%.

So, my take away is, indeed, we have now different metrics. We have the glucose measurements that can come from finger sticks. We have hemoglobin A1C, but we also have CGM metrics, the time in range, the time in tight range, the variability that all are important metrics to give us an idea about the glucose control of an individual.

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