Should the Target A1C Level Be Less Than 7 Percent?

No: The Case for Modest Glycemic Control in Patients with Type 2 Diabetes

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This is one in a series of pro/con editorials discussing controversial issues in family medicine.

▶ See related editorial at http://www.aafp.org/afp/2012/1215/od1.html.

Between firmly held beliefs in tight glycemic control and the available empiric data lies a wide chasm. In a review of 13 randomized controlled trials (RCTs) comparing tight control versus usual care in patients with type 2 diabetes mellitus, overall, tight control did not improve all-cause mortality, cardiovascular mortality, or total myocardial infarctions.[1] There was a decrease in the rate of nonfatal myocardial infarctions, but between 117 and 150 patients would have to be treated for five years to prevent one myocardial event. If you omit two poor-quality studies, the benefit for any outcome disappears, except for less progression to microalbuminuria. However, only 15 to 52 patients would need to be treated per year with tight control to cause one severe episode of hypoglycemia.

Several arguments in favor of tight control come to mind, such as the need to preserve islet cells, the association between glycemic control and complications, and the use of highly selected populations in the above studies. However, none of those arguments hold up.

Early preservation of islet cell function, the world's greatest glucose monitoring and management system, is arguably the key to avoiding complications. Yet in spite of this interesting hypothesis, the outcomes of patients with screen-detected diabetes treated intensively are no different than those of patients treated with usual care.[2]

In a study commonly used to justify tight control, the investigators ignored the RCT data, finding no benefit to tight control, and pooled both groups to emulate a cohort study.[3] They found a linear relationship between A1C levels and the rate of aggregated diabetes-related end points. However, since the RCTs found no benefit, this study raises concerns about tight control. The authors projected a 21 percent reduction in any diabetic complication and diabetes-related death, a 14 percent reduction in myocardial infarctions, and a 37 percent reduction in microvascular complications for every 1 percent decrease in A1C. However, these effects have not been shown in RCTs. Therefore, this cohort study confirms that poor glycemic control is a marker for bad outcomes—and if the conclusions are correct, the treatments are harmful.

Finally, the individual studies included a range of patients with newly diagnosed diabetes,[4] patients at high risk of coronary artery disease,[5,6] and patients with poorly controlled diabetes.[7] Each of these trials, although evaluating heterogeneous populations, failed to demonstrate any meaningful benefit to tight glycemic control.

By balancing safety and effectiveness based on the best available evidence from recent RCTs, a stronger argument can be made for modest control with A1C goals between 7 and 8 percent. In fact, the Healthcare Effectiveness Data and Information Set defines poor control as an A1C level of more than 9 percent, and suggests that most patients should have an A1C level of less than 8 percent.[8]

Diabetes is more complicated than merely maintaining glycemic control. We have good RCT evidence that blood pressure control,

smoking cessation, attention to diet and exercise, and treatment of hyperlipidemia reduce cardiovascular or all-cause mortality in patients with type 2 diabetes.[9-11] Patients with diabetes need a comprehensive approach that includes self-care, monitoring for complications and, yes, some degree of glycemic control.

Setting a one-size-fits-all standard for glycemic control is presumptuous. The wise family physician should engage in a discussion with his or her patient, incorporating all of the data, to determine treatment goals that are consistent with the patient's values and preferences.

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