CAPSULE COMMENTARIES

Capsule Commentary on Correa et al., Assessing the Effect of Clinical Inertia on Diabetes Outcomes: a Modeling Approach

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J Gen Intern Med 34(3):443
DOI: 10.1007/s11606-018-4809-8

In this study, Correa et al.[1] use a novel approach to shed new light on a familiar phenomenon-clinical inertia in the management of type 2 diabetes. Trials such as UKPDS[2] have established that improved glycemic control can reduce the risk of diabetes complications. Similarly, observational studies have demonstrated that clinicians often fail to take advantage of opportunities to intensify therapy in patients with poor glycemic control, so-called clinical inertia. This research attempts to quantify the cost of these missed opportunities using a sophisticated type of computer simulation termed an agent-based model.[3]

Using their agent-based model, the authors simulate the lives of the populace of San Antonio, at least those aspects relevant to their endocrine and cardiovascular systems. Their digital Texans age 25 years, gain weight and lose it, quit smoking and then relapse, develop diabetes and, sometimes, succumb to its complications, while digital providers, sometimes, adjust their medication regimens. Then, with a key stroke, the providers get better, or worse, at promptly intensifying therapy in the face of hyperglycemia. The result: a 1-year delay in response translates into an 8% increase in the incidence of neuropathy, 7% in retinopathy, 16% in nephropathy, and 25% in death from cardiovascular diseases, with some effects more pronounced in older, non-Hispanic White patients.

Obviously, there are some kinds of questions that a computer simulation cannot answer—it needs the results of real-world studies to define its parameters. We do not, however, have a magic wand that can, in real life, suddenly change the behavior of San Antonio's medical providers, which makes the question asked here an intriguing use of this new technology. And like other newly developed technologies, computer simulations can probably help to answer a lot of other previously unanswered questions. But like other new scientific tools, this one too needs to be carefully interrogated. Are race and ethnicity, for instance, simply modifiers of disease incidence or do they interact with clinician choice in a more complex way? Further research, in and out of the computer lab, is needed to answer this type of question.

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Published online January 4, 2019