COMMENTARY

Guest Family Physician Commentaries

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Glycemic Control and Renal Function

Real-world patients with chronic diseases, including diabetes or hypertension, frequently differ from those in more perfect clinical trial settings. Cummings et al[1] describe an innovative approach to measuring glucose control over time by using statistical calculations to measure the area under the curve (AUC) for fluctuations in glycosylated hemoglobin (HbA1c) from the ideal ≤7% (see Figure 1). Though an observational study such as this over 6 to 10 years is less than an ideal design, it observes patients in their environment, including times of varying adherence to lifestyle changes and medication, and removes the Hawthorne effect (patients do better while being observed during a clinical trial). It may also indirectly measure clinical inertia and the response of the health care system to elevated values.

The authors take 10 different perspectives of the HbA1c, ranging from the AUC above HbA1c >7% over time, to sophisticated statistical analysis including "root mean square." The end point was renal function over time using estimated glomerular filtration rate (eGFR) calculated by the Modification of Diet in Renal Disease equation.

A strength of the study is the large number of African-American patients. The more rapid decline in this ethnic group irrespective of sex compared with white patients was striking (Figure 2). Yet the determining factors accounting for 27.3% of the variance in the decrease in renal function over time were age, mean systolic blood pressure, initial HbA1c, initial eGFR, and number of HbA1c measurements, not race or sex. Although various HbA1c measurements accounted for 4.9% of the variance in decline of eGFR, the following 5 measures accounted for 4.5% of the variance: AUC above 7%, AUC approximately 7%, HbA1c decrease, HbA1c standard deviation, and HbA1c root mean square approximately 7%.

Although this study has important methodologic limitations, it also has important methodologic value: What do we really know about the importance of fluctuations in HbA1c in routine patient care? and What are the best methods for characterizing this variability? Although other studies have looked at single-point or mean HbA1c measurements, this study has taken numerous statistical approaches to characterize HbA1c variation in routine practice over time and has attempted to relate that variability to an important diabetes endpoint. Though this study suggests a relatively smaller role of HbA1c variability compared with other predictors, it was stimulating to follow the sophisticated thought processes.

Home Blood Pressure Monitoring

Hypertension is the main contributor to cardiovascular disease, the leading cause of death in the United States and other industrialized nations. Patient engagement and motivation is a key component to improving blood pressure control. The article by Huff et al[2] identifies barriers to home blood pressure (HBP) monitoring. Aims of this qualitative study were (1) to measure cuff use, (2) to identify barriers to participation, and (3) to increase reporting through motivational patient education.

Questionnaires were sent out and those responding more often were older and women, raising the question of whether retired older or homemaker female subjects were easier to reach during business hours. However, calls were made in the evenings as well as during business hours, and work and cell phone numbers were utilized, minimizing this bias.

Language was the only significant factor for nonuse of HBP cuffs. It would be interesting to

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further identify what aspects of language—for example, communication style, culture, or other factors—would improve this. Though personal factors, particularly language, were responsible for not using HBP cuffs, clinical factors were responsible for not sharing HBP values, in particular, providers not asking about HBP values during visits or not doing anything about abnormal HBP readings.

This study is a wake-up call to providers to review HBP recordings and give feedback to patients and either adjust medications if blood pressure control is poor or decrease the frequency of patients' HBP checks. The survey increased the use of HBP cuffs 3-fold compared with patients who were not surveyed. It would be interesting to see if providers' queries about HBP readings also increased compliance, awareness, then blood pressure control, and ultimately patient-oriented outcomes.

Metabolic Syndrome

Metabolic syndrome (MetS) is an increasingly common disorder in industrialized nations, with a prevalence of more than 25% in the United States. It is identified by the presence of central obesity; low high-density lipoprotein cholesterol; and elevated triglycerides, fasting glucose levels, and blood pressure. Liver damage is a complication of MetS and can range from elevated transaminases through nonalcoholic fatty liver disease to cirrhosis.

This study by Hsu et al[3] compares the ability of abnormal echogenicity on liver ultrasound to elevated alanine aminotransferase in predicting MetS. This study found ultrasound more sensitive in diagnosing MetS.

The study excluded 48% of elderly with the diagnosis of or medications for diabetes, hypertension, or hyperlipidemia, but still this study identified MetS in 23.3% of the study population compared with the overall Taiwanese prevalence of 16.4%. The older age of the study population may contribute to this finding. However, there was no difference in age between patients who were identified with MetS and the normal subjects in the study. Though sex differences in the prevalence of MetS were found in the National Health and Nutrition Examination Survey study,[4] these differences varied by ethnicity, and it is unknown if male sex is more predictive of MetS among the Taiwanese population. The implications for the even higher rate of MetS in the US population are great.

Though lifestyle changes are part of the treatment for MetS,[5] patient motivation is often a problem. It would be interesting to see if an abnormal liver function test or abnormal liver anatomy on ultrasound would be motivating factors leading to improvement in patient-oriented outcomes. Ultrasound showing liver damage at a higher rate may be a better way to prove end-organ damage to patients. The use of ultrasound for this purpose may be more applicable in other industrialized countries where primary care providers commonly use this technique. In the United States, this would require radiology or gastroenterology referral and subsequently greater cost and possible disconnect of the impact for the patient.

Restless Legs Syndrome

Restless legs syndrome (RLS) is a common problem in family medicine, impairing the quality of life of our patients and increasing with age. Yet the treatments often have side effects and may be costly. Treatment of concomitant depression with serotonin selective reuptake inhibitors may exacerbate restless leg symptoms.[6] This study by Bayard et al[7] examines this common problem that affects approximately 10% of our patients. It also addresses the quandary practitioners face when treating concomitant depression with an antidepressant.

The study finds a treatment benefit at 3 weeks that was no longer significant at 6 weeks, possibly because of a type II error (false negative, or benefit not shown although it may have been there) from the smaller-than-planned sample size and inability to titrate up the dose of bupropion because of limited funding, as well as limited completion rate of 77%. The authors appropriately used an intention to treat analysis, yet it might be interesting to see a subanalysis of patients who completed the regimen. Because iron deficiency may contribute to RLS,[8] it would have been interesting to know if iron levels had been obtained and deficiency corrected in the study participants. This study contributes greatly to our knowledge despite of its negative findings and educates us about the options when treating our patients with this common disorder. Though advertising through the media focuses on the costlier dopamine agonist, carbidopa/levodopa is an inexpensive generic alternative to keep in mind. Bupropion, however, adds the antidepressant benefit so often needed.

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