Commentary—Improving Diabetes Care by Combating Clinical Inertia

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Over the last 10 years, numerous clinical trials have provided consistent and strong evidence that adequate control of glycated hemoglobin (HbA1c), blood pressure (BP), and LDL-cholesterol (LDL) levels significantly reduces major macrovascular complications (Pyorala et al. 1997; Hansson et al. 1998), microvascular complications (U.K. Prospective Diabetes Study [UKPDS] Group 1998), and mortality in adults with type 2 diabetes mellitus. Clinical strategies that simultaneously control HbA1c, BP, and LDL may yield multiplicative benefits. For example, in one multifactorial diabetes clinical trial, simultaneous intensification of care across multiple clinical domains reduced major cardiovascular events by 50 percent over an 8-year period (Gaede et al. 2003).

Epidemiological data further underscore the dominance of HbA1c, BP, and LDL as predictors of significant clinical outcomes in diabetes. About 70 percent of adults with diabetes die from a heart attack or stroke (Haffner et al. 1998). Significantly fewer die of renal failure or experience blindness over the course of their diabetes (NDDG 1995). Thus, both epidemiological studies and clinical trials strongly support the hypothesis that interventions to control HbA1c, BP, and LDL have the greatest potential to extend life and sustain quality of life for adults with type 2 diabetes.

In light of this persuasive evidence, it is curious that many national diabetes care quality measures continue to emphasize preventive processes of care, rather than assessing HbA1c, BP, and LDL levels. For example, from 1994 to 1999 the principal HEDIS measure of diabetes care quality was the rate of eye exams. It was not until 2000 that HEDIS expanded its diabetes measures to include HbA1c and LDL levels. In 2005, the HEDIS comprehensive diabetes measure still do not include BP control, but continue to include measures of eye exams and nephropathy screening (HEDIS 1995, 2000, 2005). While early detection of eye and kidney problems is not unimportant, it is possible that continued emphasis on screening for these factors

may have the unintended consequence of diverting resources and attention from the clinically more productive tasks of achieving and maintaining better control of HbA1c, BP, and LDL levels (Marshall et al. 2000; Sperl-Hillen et al. 2000; Hofer, Zemencuk, and Hayward 2004).

DEFINITION AND MEASUREMENT OF CLINICAL INERTIA

With the above as context, Berlowitz et al. (2005) expand our repertoire of diabetes quality of care measures by proposing a plausible operational measure of “clinical inertia.” Clinical inertia may be simply defined as failure to intensify treatment of a patient who is not at their evidence-based HbA1c goal. In this issue of *HSR*, Berlowitz et al. (2005) demonstrate that HbA1c-related clinical inertia is widespread, and that HbA1c-related clinical inertia is related to suboptimal A1c control. The authors present a sophisticated measure of HbA1c-related clinical inertia, and suggest that measurement of HbA1c-related clinical inertia may be a potentially useful quality measure for diabetes care.

However, some technical aspects of the proposed measure of HbA1c-related clinical inertia require further attention. First, as the authors acknowledge, it is very difficult to accurately assess clinical inertia among insulin-treated patients because of poor documentation, even in EMRs, of changes in insulin doses. This is a major limitation as insulin is typically used by 25–40 percent of adults with type 2 diabetes.

Second, the authors propose that observed clinical inertia be interpreted in the context of “expected” likelihood of clinical inertia based on local practice patterns and patient characteristics. This proposed use of a normative, rather than threshold value to identify clinical inertia confers certain statistical advantages, but such a measure is more difficult to compute and more difficult to interpret as a measure of quality of care across many practice settings. For accountability purposes, a simpler threshold measure of clinical inertia would have many advantages.

Third, placing excessive emphasis on glucose control may have the unintended consequence of diverting attention from other diabetes quality measures that may be equally or more important from the clinical and population health point of view, such as BP and LDL control (O’Connor 2003c;

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Hofer et al. 2004). Fortunately, measures of clinical inertia have already been proposed for BP and LDL control (Berlowitz et al. 2003). Clinical inertia might best be measured conjointly across HbA1c, BP, and LDL, just as the proportion of patients who simultaneously meet evidence-based HbA1c, BP, and LDL goals is currently used to measure quality of diabetes care (Amundson and Arrichiello 2003).

OPPORTUNITIES FOR RESEARCH ON CLINICAL INERTIA

Clinical inertia clearly is a major barrier to better diabetes care, and also represents an obstacle to better care of patients with hypertension, lipid disorders, depression, asthma, and other chronic diseases. More attention should be devoted to understanding and ameliorating factors that contribute to clinical inertia. Several lines of investigation could be pursued.

More information is needed on the basic epidemiology of clinical inertia, including careful analysis of patient, physician, and clinic characteristics associated with clinical inertia. Clinical inertia occurred at 68 percent of 10,581 clinic visits made by VA patients with HbA1c >8 percent over 16 months (Berlowitz et al. 2005). In another study over a 16-month period, we identified A1c-related clinical inertia in 58 percent of adults with A1c $\geq$ 8 percent, and LDL-related inertia in 57 percent of those with LDL $\geq$ 100 mg/dl (Grant et al. 2004; O'Connor et al. 2005a). From early studies, patient factors that may be related to clinical inertia include the most recent HbA1c or LDL value, the pattern of change over the last several HbA1c or LDL values, frequency of office visits, and (for HbA1c) availability of home glucose test data.

Beyond these meager initial observations, the impact of other patient factors, physician factors, clinic factors, or patient-physician relationship factors that may be causally linked to clinical inertia has yet to be explored. The impact of physician specialty on clinical inertia rates is of interest, but such analyses are often confounded by complex patient selection effects. Much of the published literature hypothesizes that clinical inertia (Phillips et al. 2001; Berlowitz et al. 2003; O'Connor 2003b; O'Connor et al. 2005b) is primarily a physician problem. This hypothesis has not yet been tested. Physicians often contend that patient nonadherence to their advice, rather than physician clinical inertia, is the major obstacle to better diabetes care (O'Connor 1998; Helseth et al. 1999). Others suggest that physician perceptions of patient

nonadherence are often incorrect. Resolution of these questions is needed before physicians will accept major responsibility for clinical inertia.

Our understanding of the impact of clinical inertia on levels of HbA1c, BP, and LDL is far from complete. It seems likely that the impact of clinical inertia on LDL would be most evident, as use of statins is a powerful determinant of change in LDL level. However, for BP and especially for HbA1c, the impact of pharmacotherapy is much less predictable, in part because the impact of pharmacotherapy on HbA1c and BP control is modified by a complex web of patient factors that extend far beyond medication prescription and adherence.

INTERVENTIONS TO REDUCE CLINICAL INERTIA

From an intervention point of view, many strategies might be developed to reduce clinical inertia and its determinants. Educational or learning interventions that target cognitive barriers to medication initiation or intensification for patients with chronic disease have received some attention and initial reports show some positive effects on clinical inertia (Dutta et al. 2005). Patient activation might also decrease clinical inertia, and some previous studies have demonstrated that patient activation interventions lead to better diabetes care (Greenfield et al. 1988).

Clinical inertia might be reduced if electronic medical records (EMR) could effectively provide real-time decision support to physicians and patients at the time of an office visit. Early reports show positive effects of EMR decision support on test ordering behaviors, but thus far EMR-based decision support has failed to improve HbA1c, LDL, or BP levels in typical office practice settings (Montori et al. 2002; Meigs et al. 2003; O'Connor 2003a; Tierney et al. 2003; Murray et al. 2004). As we learn more about how to most effectively provide clinical decision support to providers, and how to use EMR technology to prioritize multiple decision support prompts, decision support interventions may reduce clinical inertia.

There are some potential risks to focusing on clinical inertia. Introducing quality measures focused on clinical inertia could increase inappropriate use of some agents to the detriment of some patients, especially fragile patients who are most vulnerable to adverse outcomes from inappropriate pharmacotherapy. Using HbA1c control as an example, the use of metformin in those with renal insufficiency, or the use of metformin or thiazolidenediones in those with uncompensated chronic heart failure may pose serious risks to patients.

Therefore, if quality measures focused on clinical inertia are introduced, it may be wise to include concomitant quality measures that monitor safe use of pharmacotherapy.

Investigation is needed to further dissect the anatomy of clinical inertia. Clinical inertia encompasses both failure to initiate therapy when indicated, and failure to titrate therapy until evidence-based clinical goals are achieved. Over 80 percent of diabetes patients are on pharmacotherapy for glucose control, and in many settings, over 70 percent of heart disease patients are on statins for LDL control. Yet, many patients on treatment are not at their evidence-based goals. This suggests that failure to uptitrate therapy may be the lion's share of clinical inertia in chronic disease care. Researchers and quality improvement leaders might consider this important issue when developing strategies to combat clinical inertia and achieve better chronic disease care.

CLINICAL INERTIA IN CONTEXT: TOWARDS AN INTEGRATED SET OF DIABETES CARE QUALITY MEASURES

There is every reason to hope that diabetes quality measures will soon evolve to a small set of mandatory "accountability measures" sharply focused on control of HbA1c, BP, and LDL levels.

Beyond this small set of "accountability measures," a larger optional set of "improvement measures" should be developed for use by health plans or medical groups that fail to perform well on mandatory accountability measures. "Improvement measures" could be designed to systematically probe office systems and processes of care to identify major barriers to excellent care so that precise interventions can then be applied to improve care (Sperl-Hillen et al. 2004).

A practical measure of clinical inertia would represent a very useful addition to the set of improvement measures suggested here. To be a useful tool for diabetes care improvement, measures of clinical inertia should focus not only on HbA1c, but also include BP and LDL. Inertia measures should be criterion based, rather than norm based, for purposes of simplicity in application and interpretation. Finally, measures of clinical inertia may usefully supplement existing improvement measures, each of which should focus on a key process that is related to levels of HbA1c, BP, and LDL. In the long march towards better diabetes care, it is time to pause and take a critical look at the role of accountability and improvement measures. We should thank

Berlowitz, Phillips, and others for broadening our arsenal of improvement measures and for emphasizing the importance of staying focused on key outcomes of diabetes care.

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