Diabetes is a chronic illness with potentially severe complications. While controlling blood sugar, lipids, and blood pressure can reduce the risk of these complications, control requires both clinical management and sustained effort from patients. Ideally, health care providers help patients with self-management through regular communication and problem-solving. From 2006 to 2009, our team conducted a clinical intervention study to encourage patients with diabetes to set and maintain self-care goals. While we mandated documenting self-care goals, it was inconsistently done (24.5% of visits in the first 6 months of the project and 7.0% in the final 6 months).

This led us to question whether and how often patients discuss self-care with their health care providers. We therefore conducted this follow-up study to determine how often diabetes self-care was discussed during follow-up office visits and the duration of these discussions.

Methods
Ethical Considerations
The Health Sciences Institutional Review Board at the University of Missouri approved this study. Participating nurses and physicians provided informed consent. Overall, five physicians, one nurse practitioner, and three nurse care coordinators participated. All participating physicians and nurses each provided care at only one clinic. Patients who agreed to participate signed a waiver of consent. Patients were informed that they were free to turn off the recorder at any time. All participants were aware that the study focused on discussions between patients with diabetes and their health care providers but were not aware of specific study objectives. An arbitrary study identification number was used in place of personal identifiers on all study materials.
Participants
We identified five family medicine clinics that varied in size, number of physicians, rural location, academic or private practice, and presence of nurse care coordinators (full-time nurses whose main duty was diabetes education and coordinating care for complex patients). All clinics agreed to participate; we recruited a convenience sample of patients from each clinic. One nurse in each clinic approached the first available patients with follow-up diabetes visits on participating providers’ schedules. Recruitment occurred between April 10 and September 1, 2009. The nurse described the study and asked them if they were willing to have their visit audio recorded.

Data Collection and Analysis
A digital recorder was left running in the examination room for the duration of the visit, usually also recording patients’ discussions with nurses. The total time spent by a patient with all providers was considered one encounter.

Recordings were imported into NVivo software for analysis (Version 8, QSR International). Time devoted to discussing each self-care activity (blood sugar testing, diet, exercise, foot and eye care) was directly coded on the recordings. We earmarked any discussion of these activities as self-care talk, determined the duration from the start to end of each instance, and determined who initiated each discussion. For each encounter we calculated total time spent with each type of provider, the total time spent discussing each self-care activity, and the total time engaged in all self-care talk. Time spent in self-care talk was the total for all providers seen during an encounter. We determined the frequency with which each type of self-care was discussed over all encounters as well as median time spent with providers and median time engaged in self-care talk.

The nurse who recruited patients in each clinic printed out participants’ latest diabetes measures (eg, hemoglobin A1c, blood pressure, body mass index, cholesterol), either from the clinic’s electronic medical record or from a specialized database for tracking diabetes measures. The nurse replaced patient identifiers with the study identification number. We determined Pearson correlation coefficients between clinical measurements and time devoted to discussing self-care using SAS for Windows (Version 9.2, SAS Institute, Inc.). In addition, we compared discussion length by who initiated the discussion (patient or provider) using a t test.

Results
Three clinics were located in rural communities, and four had academic affiliations. Clinics had from one to five attending physicians and zero to eight resident physicians (no residents participated). One clinic had a nurse practitioner, and three had nurse care coordinators. The providers typically seen by patients in each clinic are shown in Table 1. Patients saw only a physician in two clinics. In the other three clinics, patients usually also saw a nurse care coordinator in addition to their physician or nurse practitioner. We recorded 28 encounters for 19 women and nine men. Patients were from 32 to 84 years old; 16 were age 60 years or older.

Encounter Times
The total time spent in an encounter varied from 13 to 55 minutes per patient, with a median encounter of 22.3 minutes (Table 1). There was considerable variation between clinics, with median encounter times ranging from 19.8 to 37.6 minutes. Variation in median time spent with physicians was lower (11.7 to 21.4 minutes) than median time spent with nurse care coordinators (6.5 to 37.6 minutes).

There were 287 discrete conversations involving self-care topics in 28 encounters. Self-care was discussed in all encounters (Table 1). Testing blood sugar was discussed in all 28 encounters, with less frequent discussions of diet (25), eye examinations (25), exercise (24), and foot care (21). Median discussion time devoted to all self-care activities was 5.2 minutes (range 1.0 to 17.2 minutes), representing 23.5% of total time for an encounter of median length. The proportion of encounter time spent discussing self-care with all providers varied from 4.8% (1 minute) to 43.9% (over 17 minutes).

Self-care talk was usually initiated by providers (78%). In particular, eye and foot exam discussions were initiated by providers (97% and 93%, respectively), with providers initiating somewhat fewer discussions of diet (68%), exercise (70%), and blood sugar monitoring (73%). Discussions initiated by patients did not differ in mean length from those initiated by providers (27 and 33 seconds, respectively, P=.19). None of the clinical measures were statistically significantly correlated with total time spent discussing self-care. Age was inversely correlated with the proportion of time devoted to self-care discussion (r=-0.39, P=.04). No other correlations were statistically significant.

Discussion
Discussions of self-care occurred in all of the encounters we observed. While the amount of time devoted to discussing self-care varied widely from 1 to 17 minutes, on average these discussions took up almost 25% of the total encounter. Blood sugar testing was discussed longer than the other activities. Eye and foot examinations took the least time. Because eye examinations were conducted by a different provider, these discussions were often limited to asking patients when their last examination occurred. Just over 75% of self-care discussions were initiated by providers. Discussion length did not differ by whether the patient or provider initiated the discussion. We found no association between the amount of encounter time devoted to self-care discussions and clinical outcomes.
Yawn observed 227 visits for diabetes to family physicians, finding an average visit length of 11 minutes. Tai-Seale analyzed 392 videotaped encounters of older adults with primary care physicians; median visit length was 15.7 minutes. Mean visit time for 211 encounters for patients with diabetes observed by Parchman was 17.0 minutes. Our finding of 16.5 minutes median face-to-face time with physicians was quite comparable. Mean visit length for family and general physicians who participated in the 2006 National Ambulatory Medical Care Survey (NAMCS) was longer (19.5 minutes), though this was based on post-visit physician estimates rather than observation.

Yawn found that 6.4% of visit time was spent on nutrition advice and 2.8% on exercise, representing 0.7 and 0.3 minutes, respectively. For patients with hemoglobin A1c above 7 whose medication was changed during the encounter, Parchman reported that 5.2% and 1.5% of the encounter was devoted to discussing diet and exercise, respectively. Consistent with these findings, patients and providers in our sample discussed both diet and exercise for 0.7 minutes. Eaton found that nutrition counseling occurred in 45.4% of visits to family physicians for diabetes, compared with 24% of all patient visits. Diet was mentioned in 89% of visits that we observed.

The small sample used in our study limits generalizability. However, the length of patient-physician interactions we observed was consistent with previous observational studies, suggesting that our sample was not unusual. Because our study is cross-sectional, the extent of variation between visits for any given patient is unknown. A longitudinal study of patient-provider interactions regarding diabetes self-care would provide a more accurate estimate of time devoted to this topic on an ongoing basis.

**Conclusions**

Patients with diabetes regularly discussed self-care activities with their health care providers during follow-up visits at family medicine clinics. The time spent discussing self-care varied 1 to 17 minutes, with some encounters barely touching on self-care and others including extensive discussions. Of the major aspects of self-care (checking blood glucose, diet, exercise, vision, and foot care), foot care was the least frequently discussed (75%), and monitoring blood glucose was discussed in all encounters.
Practice Implications
Consistent with prior studies, we found that providers in family medicine practices devote a substantial proportion of visit time to preventive care. High variability in this measure suggests that providers vary in their capacity to engage in support and problem-solving about self-care. Future research should explore reasons for this variation, including individual provider and system factors. Because incorporating self-care discussions into routine medical care for patients with diabetes is essential to helping patients meet diabetes-related behavioral goals, interventions are needed to help incorporate goal-setting and documentation into workflow.

Engaging patients in problem-solving is at the heart of both patient-centered care and the “meaningful use” concept. Providers’ abilities to generate incentives and avoid penalties by meeting Medicare Meaningful Use criteria will be contingent on documenting care processes and patient outcomes, at which providers in our study were decidedly remiss. Given these factors, improving documentation of patients’ self-care goals and their progress on those goals should be the focus of future research.

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