Diabetes Referrals at a Veterans Administration Tertiary Facility

Who are the patients and why are they referred?

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Diabetes affects ~20% of the 4.2 million veterans that receive health care through the Veterans Health Administration, a prevalence rate approximately three times greater than the general population rate of 6.3% (1,2). The purpose of this study is to characterize patients with diabetes that are referred to an endocrinology service at a Veterans Administration (VA) tertiary facility and to determine the reasons for referral.

RESEARCH DESIGN AND METHODS — The medical records of all patients referred to the Nashville VA endocrinology service during a 6-month period were reviewed. The consultation requests, which were electronically submitted through the Computerized Patient Record System, were received from inpatient and outpatient clinics at the Nashville VA Medical Center and from the regional care centers that it serves. Each consultation request contained specific data fields that identified the referring provider, service submitting the request, provisional diagnosis, and reason for request. From the codes entered, it was determined if the referral came from an outpatient or inpatient clinic, from a primary care or specialty clinic, and from a physician (ie., MD, DO) or midlevel provider (NP, PA, or PharmD).

The "reason for request" field allowed significant flexibility for the referring provider to include pertinent patient information and history of care to support the need for the endocrinology consult. More than 40 unique, diabetes-related reasons for referral were identified and were aggregated into six broad categories: *1*) poor glycemic control, *2*) medication-related questions, *3*) patient noncompliance, *4*) request for a follow-up appointment, *5*) questionable appropriateness of referral request, and *6*) all other diabetes-related reasons. Many referrals specified multiple diabetes-related reasons for referral and were classified under more than one general category. Thus, the sum of the percentages of referrals in each category exceeds 100%.

RESULTS — During the 6-month period studied, there were 368 referrals submitted to the endocrinology service at the Nashville VA. Further data analysis in this report is limited to the 175 (47.6%) patients with diabetes referred from outpatient clinics specifically for the management of their diabetes. Patients were overwhelmingly male (95.4%), with a mean age of 60 years, an HbA_{1c} of 9.0%, and a BMI of 31.3 kg/m^2. These patients also presented with comorbidities, including inadequately controlled hypertension (71.3% have systolic blood pressure >130 mmHg and/or diastolic blood pressure >80 mmHg), hyperlipidemia (59.2% have LDL >100 mg/dl), and microalbuminuria (45.4% with ≥30 μg/mg). Further breakdown of the lipid profile revealed an average HDL of 40.8 mg/dl and a mean triglycerides of 284.0 mg/dl. Approximately two-thirds (65.7%) of these patients were on insulin at the time of referral.

The most common reason for referral cited was poor glycemic control (76.6%, 134 of 175). Of these 134 patients, 64.2% had already begun an insulin regimen at the time of referral. A request for a follow-up appointment was the second most commonly identified reason for referral (10.3%), followed by medication-related reasons (9.7%), patient noncompliance (5.7%), other reasons (5.7%), and questionable appropriateness of referral (5.1%). The mean HbA_{1c} for each of these six categories were 9.6% (poor glycemic control), 7.5% (medication related), 10.7% (patient noncompliance), 8.8% (request for a follow-up appointment), 9.5% (questionable appropriateness of referral), and 9.8% (other reasons). One-way ANOVA testing indicated that the difference in the mean HbA_{1c} between these categories is statistically significant ($P < 0.01$).

Primary care clinics referred 81.7% ($n = 143$) of the population studied, and the remaining 18.3% (32) were referred from specialty clinics. Referrals from physicians and midlevel providers accounted for 43.4% (76) and 56.6% (99) of the referrals, respectively. Patients referred from primary care clinics had higher mean HbA_{1c} ($P < 0.01$) and total cholesterol ($P = 0.01$) values than patients referred from specialty clinics (9.2 vs. 7.4% and 211.70 vs. 173.68 mg/dl, respectively). There were no statistically significant differences between patients referred by physicians versus midlevel providers and patients on insulin versus patients not on insulin.

CONCLUSIONS — Poor glycemic control was the predominant reason for

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Abbreviations: VA, Veterans Administration.

A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

Table 1—*Reasons for referral*

	Referrals [n (%)]*	Average HbA_{1c} (%)†
Poor glycemic control	134 (76.6)	9.6
Hyperglycemia/hypoglycemic episodes		
Insulin start/insulin resistance		
Medication related	17 (9.7)	7.5
Consults regarding use of medication and/or insulin		
Requests for nonformulary drugs		
Patient noncompliance	10 (5.7)	10.7
Failure to adhere to treatment		
Failure to maintain appointments		
Request for a follow-up appointment	18 (10.3)	8.8
Lost to follow-up		
Transfer care to diabetes clinic		
Questionable appropriateness of referral	9 (5.1)	9.5
Multiple or duplicate consults for same reason		
Other reasons	10 (5.7)	9.8
Insulin pump issues		
To diagnose diabetes		

*Total exceeds 100%, as a single referral could fall into more than one category. †HbA_{1c}: one-way ANOVA, $P < 0.01$ ($\alpha = 0.05$).

referral. The number of endocrine referrals from physicians and midlevel providers is approximately equal, but the mean HbA_{1c} is significantly higher in patients referred from primary care providers (9.2%) compared with patients referred from specialists (7.4%). Several possibilities exist that may explain why patients are being referred for poor glycemic control rather than being managed in the primary care setting. Pharmacological options for diabetes have changed dramatically over the past decade, and physicians may be uncomfortable with initiating or titrating insulin therapy using these newer agents. While this may be the case for some care providers, 65.7% of the referred patients were already on insulin, suggesting that intensification of insulin therapy may be the more common problem. With the introduction of new insulin formulations that are less likely to induce hypoglycemia, it has become easier to titrate insulin more aggressively with basal/bolus regimens compared with standard regimens previously employed. Communication between primary care providers and endocrinologists that establishes better algorithms or telemedicine support for insulin titration may be effective approaches in improving glycemic control in the primary care setting (3,4). It is also possible that providers simply lacked adequate resources (e.g., dietitians, certified diabetes educators) to further intensify therapy.

Another approach to optimizing diabetes care is to improve the ability of an endocrinology practice to receive the referred patients. One option would be to employ a diabetes-trained nurse practitioner, supervised by the endocrinologist and primarily dedicated to providing patient education and modifying medications to optimize glycemic control (5–8). Similar structural changes to clinics as a bridge between primary and secondary care have demonstrated an increased capacity to see patients and received good ratings from patients and practitioners (9).

Finally, while poor glycemic control was cited as a reason for referral in >75% of the referral requests, it is also clear from this study that patients' comorbidities are not being managed adequately in the primary care setting. Appointments with endocrinologists should not be overlooked as an additional point of patient contact to manage hypertension and hyperlipidemia to delay the onset of debilitating complications.

References

1. American Diabetes Association: National diabetes fact sheet. Available from http://www.diabetes.org/diabetes-statistics/national-diabetes-fact-sheet.jsp. Accessed 8 October 2004
2. Veterans Health Administration: Fact sheet: VA accomplishments in diabetes care. Available from http://www1.va.gov/OPA/fact/pressrel/DiabtsFS.doc. Accessed 8 October 2004
3. Biermann E, Rihl J, Schenker M, Standl E: Semi-automatic generation of medical tele-expert opinion for primary care physician. *Methods Inf Med* 42:212–219, 2003
4. Abrahamian H, Schueller A, Mauler H, Prager R, Irsigler K: Transfer of knowledge from the specialist to the generalist by videoconferencing: effect on diabetes care. *J Telemed Telecare* 8:350–355, 2002
5. Yong A, Power E, Gill G: Improving glycaemic control of insulin-treated diabetic patients: a structured audit of specialist nurse intervention. *J Clin Nurs* 11:773–776, 2002
6. Kim HS, Oh JA: Adherence to diabetes control recommendations: impact of nurse telephone calls. *J Adv Nurs* 44:256–261, 2003
7. Graber AL, Elasy TA, Quinn D, Wolff K, Brown A: Improving glycemic control in adults with diabetes mellitus: shared responsibility in primary care practices. *South Med J* 95:684–690, 2002
8. Davidson MB: Effect of nurse-directed diabetes care in a minority population. *Diabetes Care* 26:2281–2287, 2003
9. Nocon A, Rhodes PJ, Wright JP, Eastham J, Williams DR, Harrison SR, Young RJ: Specialist general practitioners and diabetes clinics in primary care: a qualitative and descriptive evaluation. *Diabet Med* 21:32–38, 2003