Delay in Diagnosis of Diabetes Is Not the Patient's Fault

Lisa-Ann Fraser, Emory University
Jennifer Twombly, Emory University
Ming Zhu, Emory University
Qi Long, Emory University
John Hanfelt, Emory University
K.M. Venkat Narayan, Emory University
Peter W Wilson, Emory University
Lawrence S Phillips, Emory University

Journal Title: Diabetes Care
Volume: Volume 33, Number 1
Publisher: American Diabetes Association | 2010-01, Pages e10-e10
Type of Work: Article | Final Publisher PDF
Publisher DOI: 10.2337/dc09-1129
Permanent URL: http://pid.emory.edu/ark:/25593/fz9bp

Final published version: http://care.diabetesjournals.org/content/33/1/e10

Copyright information:
© 2010 by the American Diabetes Association.
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommerical-NoDerivs 3.0 Unported License (http://creativecommons.org/licenses/by-nc-nd/3.0/), which permits distribution, public display, and publicly performance, making multiple copies, provided the original work is properly cited. This license requires credit be given to copyright holder and/or author. This license prohibits exercising rights for commercial purposes.

Accessed July 15, 2018 7:22 AM EDT
Delay in Diagnosis of Diabetes Is Not the Patient’s Fault

Previous reports have suggested that onset of diabetes occurs 4–7 years before clinical diagnosis (1). However, it is not known whether delay in diagnosis reflects patient factors, such as lack of medical visits or glucose measurements, or provider factors, such as clinical inertia (2).

We reviewed the charts of 50 patients selected for delayed diagnosis at the Atlanta Veterans Affairs (VA) Medical Center. Date of first diabetes range hyperglycemia (D1) was defined by outpatient fasting plasma glucose (0630–1000 h) ≥126 mg/dl, random glucose (1001–1800 h) ≥200 mg/dl, 2-h post–oral glucose tolerance test (OGTT) glucose ≥200 mg/dl, or A1C ≥6.5%. Date of second diabetes range hyperglycemia (D2) was defined by having any two of these values or any value twice. The date of diagnosis was defined by initial use of ICD-9 code 250.xx at a primary care visit, any use of the code twice, and/or initial prescription of a diabetes drug—criteria establishing the disease (3).

The patients were all men, with average age 66 ± 10 years (mean ± SD). The delay between initial hyperglycemia (D1) and the diagnosis date averaged 3.7 ± 1.1 years, and the delay after D2 averaged 1.8 ± 1.7 years. During the delay from D2 to diagnosis (four patients had no D2), patients averaged 9 ± 11 outpatient plasma glucose and 2 ± 2 A1C measurements, for each patient 46% of the fasting plasma glucose values were >125 mg/dl, 20% of the random glucose values were ≥200 mg/dl, and 62% of the A1C values were ≥6.5%. During the delay after D2, patients averaged 8 ± 8 outpatient visits, of which 5 ± 4 were to primary care. Patients were seen by a wide range of various primary care physicians, nurse specialists, and physician assistants. In 60% of cases, the primary care provider’s note mentioned hyperglycemia without a diagnosis or follow-up plan, and often subsequent notes would not mention glucose again despite continued elevations; 46% of patients had glucose levels >125 mg/dl entered into the note without mention of hyperglycemia. Only two patients had OGTTs (both with normal fasting but elevated 2-h glucose levels). Only five patients (10%) were recorded as missing scheduled appointments, and there was no documentation of patients missing blood tests.

Our review reveals that delay in diagnosis of diabetes cannot be attributed to patient nonadherence as a result of missing appointments or blood tests. To the contrary, there were multiple opportunities when a diagnosis could have been made but was not made, suggesting provider factors (clinical inertia) as the cause of delay.

This review included only 50 male Atlanta VA Medical Center patients and therefore may have limited generalizability. However, the findings suggest that practitioners need to improve their response to glycemic indexes that indicate that diabetes is likely, particularly random plasma glucose ≥125 mg/dl (4) and A1C ≥6.5% (5). Although OGTTs were rare, abnormal results were followed quickly by a diagnosis, implying that elevated glucose levels may also be more likely to prompt diagnosis if tests are ordered for screening rather than routine chemistry. Further analysis of the basis for the delay in diagnosis may lead to better approaches to aid recognition of diabetes early in its natural history.

Lisa-Ann Fraser, MD
Jennifer Twombly, MD, PhD
Ming Zhu, MS
Qi Long, PhD
John J. Hanfelt, PhD
K.M. Venkat Narayan, MD, MPH
Peter W.F. Wilson, MD
Lawrence S. Phillips, MD

From the 1Division of Endocrinology and Metabolism, Department of Medicine, University of Western Ontario, London, Ontario, Canada; the 2Division of Endocrinology and Metabolism, Emory University School of Medicine, Atlanta, Georgia; and the 3Department of Biostatistics and Bioinformatics, Rollins School of Public Health, Emory University, Atlanta, Georgia; the 4Hubert Department of Global Health, Rollins School of Public Health, Emory University, Atlanta, Georgia; the 5Division of Medicine, Emory University School of Medicine, Atlanta, Georgia, the 6Division of Cardiology, Emory University School of Medicine, Atlanta, Georgia; and the 7Veterans Administration Medical Center, Decatur, Georgia.

Corresponding author: Lawrence S. Phillips, medlspl@emory.edu.

DOI: 10.2337/dc09-1129
© 2010 by the American Diabetes Association. Readers may use this article as long as the work is properly cited, the use is educational and not for profit, and the work is not altered. See http://creativecommons.org/licenses/by-nc-nd/3.0/ for details.

Acknowledgments—This work was supported in part by National Institutes of Health Award DK066204 and VA Health Services Research and Development Awards SHP 08-144 and IIR 07-138.

No potential conflicts of interest relevant to this article were reported.

We thank Christine Jasien, Johnita Byrd-Sellers, Jane Caudle, and Circe Tsui (systems and database support), as well as Martha Forrester, Jennifer Leong, Margaret Jenkins, and Jennifer Michaels (research nurse and research coordinator support) for their assistance.

References