Epi Data Brief

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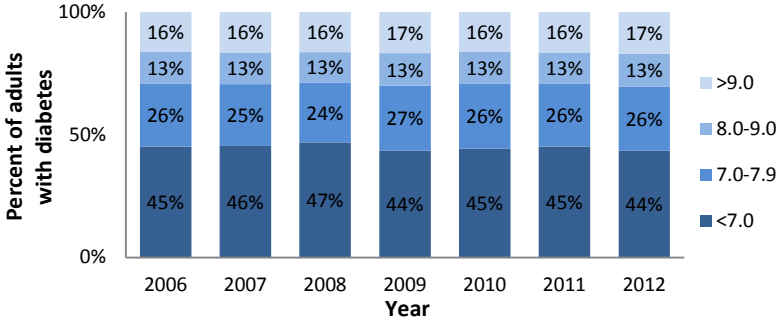
Trends in Blood Sugar Control among Adults with Diabetes in New York City, 2006-2012

Diabetes is a chronic disease that requires good control of blood sugar, blood pressure, and cholesterol. Over the long term, poor control of blood sugar in people with diabetes can result in microvascular complications including kidney failure, blindness, and nerve damage that may increase the risk of lower extremity amputation.[1] Lifestyle modification and medication management are important parts of effective diabetes management and can prevent these complications.[2]

An A1C test measures average blood sugar over the past three months.[3] Current guidelines recommend that non-pregnant adults with diabetes maintain their A1C level at less than 7%, although for some individuals a higher treatment target may be appropriate. The risk for microvascular complications rises with higher A1C levels.[2,3]

Overall, blood sugar control among adults with diabetes who are receiving medical care has changed little over time

Annual blood sugar control based on latest A1C test in adults with diabetes



Source: New York City A1C Registry, 2006-2012

- The average A1C for New York City (NYC) adults with diabetes ranged between 7.6% and 7.7% annually from 2006 through 2012.
- Less than half of adults (44% to 47%) with diabetes had good blood sugar control (A1C less than 7%) annually from 2006 through 2012.
- Nearly one in three adults with diabetes did not meet less stringent blood sugar control goals (A1C less than 8%) annually from 2006 through 2012.

Data Source: New York City A1C Registry: The NYC A1C Registry (Registry) was created in 2006 and contains A1C results of NYC residents tested by clinical laboratories via a mandatory reporting system. All data presented in this report are limited to NYC adults ages 18 and older at the time of their first reported result in the Registry and who had at least two A1C test values of 6.5% or greater at any point in time since inception of the Registry in 2006 through 2012. This definition utilizes the American Diabetes Association-recommended A1C cut-point of 6.5% to determine diabetes since the Registry does not contain diagnosis codes.

Definitions: A1C, also called the hemoglobin A1C test, is a blood test which measures average blood sugar levels over the past three months. This test is used to diagnose people with diabetes but is also used to monitor average blood sugar in people who have diabetes. An A1C level that is greater than 9% is estimated to correspond to an average blood sugar over 212 mg/dl.[2,3] The National Committee for Quality Assurance defines poor control of A1C as an A1C greater than 9%.

Neighborhood poverty is defined as: very high poverty (30% or more residents living at or below Federal Poverty Level [FPL]), high poverty (20 to <30% residents living at or below FPL), medium poverty (10 to <20% residents living at or below FPL), low poverty (0 to <10% residents living at or below FPL).

References:

1. Centers for Disease Control and Prevention. National Diabetes Statistics Report: Estimates of Diabetes and Its Burden in the United States, 2014. U.S. Department of Health and Human Services; 2014. http://www.cdc.gov/diabetes/pubs/statsreport14/national-diabetes-report-web.pdf. Accessed December 15, 2014.

2. American Diabetes Association. Standards of Medical Care in Diabetes—2014. *Diabetes Care*. 2014;37(suppl 1):S14-80.

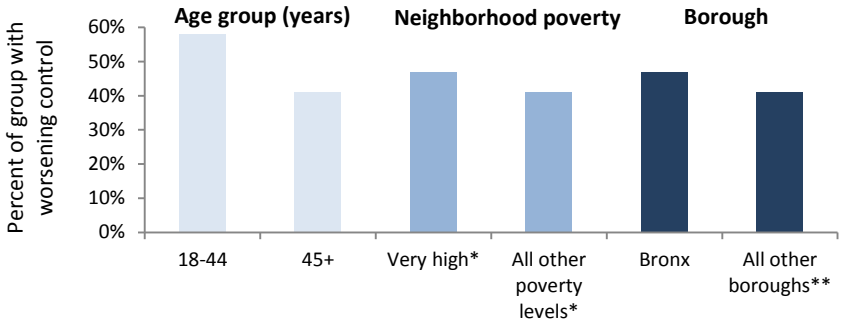
3. National Institute of Diabetes and Digestive and Kidney Diseases. U.S. Department of Health and Human Services, National Institutes of Health, NIH Publication No 14-7816, March 2014. http://diabetes.niddk.nih.gov/dm/pubs/A1CTest/A1C_Test_DM_508.pdf. Accessed December 15, 2014.

Changes in blood sugar control differ by age and neighborhood of residence

Among 132,219 adults with diabetes who entered the New York City A1C Registry between 2006 through 2008 and who had yearly A1C testing through 2012, the following trends were observed for A1C control over time (based on comparing a person's latest A1C test in 2012 with the earliest test in the Registry).

- 38% of adults 18 to 44 years old experienced a worsening of blood sugar control (A1C increase of at least 0.5%) compared with 32% of those 45 to 64 years old, and 27% of those 65 years and older.

Worsening of blood sugar control in adults entering the New York City A1C Registry with A1C less than 7%



*Very high poverty is defined as 30% or more residents living at or below Federal Poverty Level [FPL], all other poverty levels represents 0 to <30% residents living at or below FPL.
**Represents Brooklyn, Manhattan, Queens, Staten Island
Source: New York City A1C Registry, 2006-2012

- Among adults that entered the Registry with good blood sugar control (A1C less than 7%), worsening of blood sugar control (A1C change of at least 0.5%) was highest in the following groups:
  - Adults 18 to 44 (58% experienced worsening vs. 36% of adults 65 and older)
  - Residents of very high poverty neighborhoods (47% experienced worsening vs. 39% adults in low poverty neighborhoods)
  - Residents of the Bronx (47% experienced worsening vs. 39% of adults from Queens)
- However, change in blood sugar control showed no differences by borough or neighborhood poverty level among adults that entered the Registry in poor control (A1C greater than 9%).

Nearly two in three NYC adults with diabetes do not consistently maintain A1C below 8%

Blood sugar control can fluctuate in persons with diabetes. Among adults with diabetes that entered the Registry between 2006 through 2008 and who had yearly A1C testing through 2012, the following trends were observed when examining persistence of blood sugar control using a less stringent target (above an A1C level of 8% or higher, and below 8%).

- Adults 18 to 44 years old were twice as likely to have persistently high blood sugar levels (A1C of 8% or higher) compared with those 45 years and older (10% vs. 4%), and four times as likely when compared with those 65 years and older (10% vs. 2%).
- Men with diabetes were less likely to always have an A1C below 8% compared with women (33% vs. 38%).
- Adults with diabetes living in very high poverty neighborhoods were less likely to always have an A1C below 8% compared with those living in low poverty neighborhoods (28% vs. 44%).
- Adults with diabetes living in the Bronx were less likely to always have an A1C below 8% compared with persons in other boroughs (29% vs. 38%).

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- For complete tables of data prepared for this Brief, visit nyc.gov/html/doh/downloads/pdf/epi/datatable53.pdf
- Visit EpiQuery – the Health Department's online, interactive health data system at nyc.gov/health/EpiQuery

Data & Statistics at nyc.gov/health/data