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12-2015

## Diabetes and Hemoglobin A1C [2015]

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### Repository Citation

Adams, Ingrid, "Diabetes and Hemoglobin A1C [2015]" (2015). *Family and Consumer Sciences Publications*. 87.

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# Diabetes and Hemoglobin A1C

Ingrid Adams, Dietetics and Human Nutrition

**D**iabetes is often called a “silent disease” because it can cause serious complications without symptoms. A person with diabetes may feel healthy and still have too high a level of blood glucose. It is important to know how well you are managing your blood glucose level. Hemoglobin A1C is a measure of your average blood glucose levels that helps your health provider see how well you are managing your diabetes over time.

If you can keep your A1C within the target range set by your doctor, you may reduce your risk of developing the following diabetes complications:

- Heart disease
- Stroke
- Kidney disease
- Blindness
- Amputations

## What is A1C?

- A1C is also called hemoglobin A1C or glycosylated hemoglobin.
- It is the primary test used for diabetes management.
- The A1C test allows you and your doctor to see how well you controlled your blood glucose level over the previous three months. It also helps your doctor decide the type and amount of medicine you need.

## Daily Home Glucose Testing vs. A1C

- When you perform daily home blood glucose testing, the result shows the amount of glucose in your blood at that moment.
- Your blood glucose level changes from hour to hour and from day to day.
- As a result, it is sometimes difficult to get an overall view of how well you are controlling your blood glucose level over time.

## How does the A1C test work?

- When there is too much glucose in your blood, the excess glucose attaches to a part of your red blood cells called hemoglobin.
- The more glucose in the blood (or the less your diabetes is controlled), the more glucose will be attached to the hemoglobin.
- The hemoglobin keeps a memory of the amount of glucose in the blood, even as the level of glucose increases and decreases each day.
- The memory is kept for the life of the red blood cell, which is about three months.
- The A1C test provides an average or overall view of your blood glucose levels over the previous three months.

Level of control	A1C test result
Normal	6 or less
Goal	Less than 7
Take action	7 or more

The A1C goal for many people with diabetes is less than 7 (Table 1). However, you should work with your doctor to decide the A1C goal that is right for you.

The higher your A1C level, the less control you have of your blood glucose (Table 2). An A1C test of less than 7 shows that your blood glucose level is around 170 mg/dL and lower.

*Diabetes is often called a “silent disease” because it can cause serious complications without symptoms.*

**Table 2. How A1C corresponds with glucose levels.**

A1C Level	Average self-test glucose numbers (plasma)
12	345
11	310
10	275
9	240
8	205
7	170
6	135

## Why is it important to know your A1C test result?

- Your A1C result tells you and your doctor how well you are managing your blood glucose over time.
- Keeping your blood glucose level close to normal significantly reduces your chances of having eye, kidney, or nerve problems.

## Things to remember about A1C

- The A1C test lets your doctor know how well your treatment plan is working.
- The higher the amount of glucose in your blood, the higher your A1C test result will be.
- A high A1C test result will increase your chances for diabetes complications.
- You should talk to your doctor about your A1C goals and your self-monitoring blood glucose goals.

- Ask for an A1C test at least twice per year. Your doctor may recommend you have the test done more often if you use insulin and if you have problems keeping your blood glucose within your target range.
- Ask your doctor what your A1C result is, what it means, what it should be, and what you need to do to reach your A1C goal.
- The A1C test does not replace the daily blood glucose testing you do at home.
- The A1C does not monitor your blood glucose level on a day-by-day basis nor can it be used to adjust your insulin.

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Revised 12-2015