



Clinical
Case Study

A Pioneering Approach to Diabetes Treatment

The Netherlands' Diabeter Treatment Program for Young Diabetic Patients

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“Thanks to Diabeter’s comprehensive-care approach, patients’ HbA1c levels decrease on average from 69 mmol/mol to 58 mmol/mol within a year. This significantly lowers the risk of long-term diabetes complications.”

Dr. Henk-Jan Aanstoot

Pediatric diabetologist and co-founder of the Diabeter program, Rotterdam, the Netherlands



Dr. Henk-Jan Aanstoot

Pediatrician Dr. Henk-Jan Aanstoot is fighting the rising tide of diabetes in children in the Netherlands with an innovative care-and-treatment program that is reducing not only long-term blood sugar levels in young diabetics but also the need for hospital visits. The pillars of Dr. Aanstoot’s Diabeter program include:

- 24/7 patient service
- Rapid and actionable HbA1c results obtained during patient visits using DCA Vantage® Analyzers from Siemens Healthcare Diagnostics
- Open channels of medical information exchange between patients and caregivers via the Internet

The Diabeter program—founded in Rotterdam in 2006 as a pediatric clinic, research group, and national referral center for children and adolescents with diabetes—has proved such a success that there are now patient clinics in Veldhoven and Deventer, with a fourth clinic due to open in Amsterdam. “We are now caring for around 1500 patients, far more than the 400 or so we first envisioned,” says Dr. Aanstoot. “More and more parents are hearing about Diabeter and prefer to have their children treated by us rather than in hospital. Hospitals are busy places where the kind of comprehensive and focused care we deliver isn’t possible.”

Answers for life.

HbA1c Testing on the DCA Vantage Analyzer Is a Key Component of the Netherlands's Diabeter Treatment Program for Young Diabetes Patients

A global—and growing—health problem in children

Diabetes has become an epidemic. It now accounts for 11.6% of all healthcare costs in the Western world. The number of people with diabetes is rising rapidly. By 2025, almost 552 million people could be affected.¹

The vast majority of diabetics have type 2 diabetes. Incidence of type 1 (autoimmune) diabetes is also on the rise. "Children with type 1 diabetes are getting younger and younger," Dr. Aanstoot points out. "We have already treated babies with type 1 diabetes, and the number of children under the age of 5 who have developed the condition has doubled over the last 5 years. Almost all of our patients have type 1 diabetes."

24/7 patient service improves glycemic control

Young diabetics in the Diabeter program receive a unique level of care. Patients are assured of 24/7 treatment and support as required from a team of dedicated professionals that includes physicians, dieticians, psychologists, social workers, and nursing staff.

"We concentrate fully on the disease and don't do anything else," explains Dr. Aanstoot. "This helps a patient to get his or her blood glucose level under control and stabilize it better, faster, and more sustainably." By learning to live with the disease, patients can delay or even completely prevent the complications that so often accompany diabetes.

The care that the Diabeter program provides is demonstrably effective: On average, a patient's blood HbA1c level (an indicator of long-term blood glucose) decreases from 69 to 58 mmol/mol within a year. In healthy individuals, HbA1c levels range between 31 and 42 mmol/mol. In diabetic patients, HbA1c can increase to over 97 mmol/mol but should be kept below 53 mmol/mol; otherwise, the risk of long-term damage from diabetes (including stroke, heart attack, blindness, and kidney disease) increases dramatically

after approximately 15 years. "Risk decreases exponentially rather than linearly with each lowered HbA1c unit," Dr. Aanstoot explains. "The average decline in HbA1c levels that we are seeing in our patients is at least halving their risk of serious damage from diabetes in years to come."

Driving glycemic control with the DCA HbA1c test

Patients visit a Diabeter clinic at least four times a year to have their HbA1c level tested and their long-term glycemic control assessed.

- Tests are run on the DCA Vantage Analyzer, a compact point-of-care device that quantitatively measures HbA1c in blood.



The DCA Vantage Analyzer helps Diabeter physicians monitor glycemic control and improve patient outcomes.

"Parents can call us even in the middle of the night. Our approach to care helps ensure that a situation does not escalate."

Dr. Henk-Jan Aanstoot

- Fast testing is a powerful patient-management tool for Diabeter physicians—immediate results support face-to-face counseling and adjustments to therapy.
- The DCA™ HbA1c test has analytical performance concordant with that of central laboratory HPLC methods.²
- Diabeter-trusted DCA HbA1c test performance is complemented by its simplicity, convenience, and in-clinic practicality.

Siemens' DCA HbA1c test is particularly convenient for children, requiring only a small fingerstick blood sample. Patient results are available for a consultation in 6 minutes. Rapid, reliable DCA HbA1c test results allow Diabeter physicians to focus on helping patients get tighter control of their diabetes.

Checking for complications

The DCA Vantage Analyzer equips Diabeter physicians with an in-clinic albumin-to-creatinine ratio (ACR) test for early detection and monitoring of kidney disease. Quantitative, clinically relevant results from a random urine specimen are ready in 7 minutes. All Diabeter patients are tested annually for early signs of kidney disease.

Fewer and shorter hospital stays

Diabetes care is so intensive and successful that frequent hospital visits are not necessary. Annually, only 3% of all Diabetes patients suffer complications that require hospital admission. According to Dr. Aanstoot, "The incidence of admission for diabetic children who are treated by a pediatrician in a hospital is much higher, between 20 and 50%." A child diagnosed with diabetes normally must be admitted to hospital for a week for observation, and longer if treatment is deemed necessary. In contrast, the Diabetes program supports patients in the early stages of treatment with nursing care at home.

Advantages of in-clinic DCA HbA1c testing

Convenient, Cost-effective Testing Procedure	Fast and Flexible Results Reporting	Effective Patient Management
<ul style="list-style-type: none">• No phlebotomy; only 1 µL of fingerstick blood needed• No requirement for patient fasting, dietary changes, or glucose beverage ingestion before testing• No sample or reagent preparation• Simple, four-step test process does not require a lab technician• No need for expensive external laboratory tests	<ul style="list-style-type: none">• HbA1c results are available to Diabetes physicians in just 6 minutes• Dual HbA1c reporting in mmol/mol and % HbA1c• DCA HbA1c test is NGSP certified, traceable to IFCC reference materials and test methods and is CLIA-waived in the US	<ul style="list-style-type: none">• Actionable results at the time of the Diabetes patient visit• Clinical studies show that face-to-face testing along with direct physician-to-patient guidance significantly improves patient compliance³• DCA Vantage Analyzer HbA1c patient-trending graphs can be used to track a patient's progression

"Hospitals are the most expensive hotels in the world. Fewer and shorter hospital visits help make the care we provide significantly more cost-effective."

Dr. Henk-Jan Aanstoot

Sharing critical information via the Internet

Diabetes program patients use a glucose sensor to measure their own blood sugar levels as often as five times a day. They record readings in a digital file using custom software and report results to Diabetes via the Internet.

Self-monitoring is an essential element of the Diabetes program. Patients as young as 11 quickly learn how to interpret their readings. If two consecutive readings are too high, they send an email to Diabetes. "It's so easy!" exclaims Isabelle van Leeuwen. To see the data, Isabelle simply connects the glucose sensor to her computer via the instrument's USB port. Diabetes staff can also view the file using the Internet and take action if necessary.

Ninety percent of the information exchange between physicians and patients is conducted via email. "It's simply ideal," says Isabelle's mother, Annemiek van Leeuwen. "We only have to travel to Rotterdam every 3 months to determine Isabelle's HbA1c level."

"E-communication isn't just practical; it is also cost-effective," says Dr. Aanstoot. E-communication allows Diabetes patients to stay in close contact without a physical presence. One patient reports in regularly via Skype—the patient's father works for an oil company, and the family lives in Qatar.

Summary

HbA1c testing on the DCA Vantage Analyzer is integral to the success of the Diabetes program, which is helping children with diabetes to:

- Reduce and stabilize their long-term blood glucose levels
- Lower their risk of long-term complications
- Minimize the frequency and duration of their visits to hospital
- Self-monitor their condition with support via cost-effective e-communication

The success of the Diabetes program reaffirms the clinical utility of Siemens' DCA HbA1c test as an accurate and reliable aid in effective diabetes monitoring and patient management.



DCA HbA1c testing requires just 1 µL of fingerstick blood. Note: Siemens recommends utilizing proper protective equipment when running samples.

References

1. www.idf.org
2. CAP survey results on www.ngsp.org
3. Cagliero E, et al. Diabetes Care. 1999;22:1785-89.

The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

Read the original article at <http://www.healthcare.siemens.com/news-and-events/mso-comprehensive-diabetes-care>

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