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From treatment to prevention in diabetes care

Diabeter has made strides in type 1 diabetes care with its VBHC model. Co-founder Henk-Jan Aanstoot shares its keys to success.



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At Diabeter, founded in 2006 by myself and Dr. Henk Veeze, our value-based care model specialises in providing comprehensive and personalised care for children and young adults with type 1 diabetes (T1D). We incorporate technological advancements and a transformed care system that adapts to continuous changes and relates to patient needs. With more than 2000 patients in five locations across the Netherlands, we are now one of the largest T1D clinics in Europe, will extend our care to patients of all ages, and are dedicated to extending our network through collaboration.

Transforming care delivery: the Diabeter model

We realised that we should not base care on traditional clinic visits while the disease is about home care, which is where contact is needed. We went from an airport model, where planes are landing, to a cloud model, where we try to keep the planes in the air. A cornerstone of value-based healthcare is that it helps to maintain good health rather than struggle to fix poor health, and technological advancements make this possible.

The most important difference between the Diabeter model and other models is that it incorporates an integrated practice unit (IPU). If you don't have the decision power in your team, if you don't have the funds for payment around that model, if you don't have the data which you share with each other and with patients, then it's not working. We have an integrated practitioner for everything, focused on each patient's problem. The possibility to change and adapt fast is important.

At Diabeter, we are regularly finding new ways to maintain good health, and this includes helping patients to take control of their condition. Psychology and diabetes—especially in type 1—are closely linked. In T1D anxiety disorders, depression, and fatigue take their toll. Once a patient can't manage the disease

there is a snowball effect. New technology can prevent that kind of problem, but we need to invest in evaluating these. Technology works fine if the technology works perfectly with the patient, but diabetes technology still asks a lot of the patient. In perfect control in T1D, which we call an A1C measurement control under 7%, people had to do at least seven measurements of glucose a day and at least seven adjustments. We call it triple 7. As long as the technology asks so much, it will be a burden, which presents a risk of psychological problems.

An important development in T1D diabetes treatment is the hybrid closed-loop insulin pump, which can adjust glucose values automatically. Through a wireless link between an insulin pump and glucose monitor, the system modulates insulin delivery based on glucose sensor readings measured every five minutes. We expect such technology to require another transformation of our care in order to adjust to these developments and make it possible to implement them with maximum value-addition for patients and at similar or lower costs.

Peer-to-peer contacts are a very important step and a driver of shared information and helping patients to stay healthy. Patients talk to each other in the different forums—there are various ways to do that. Patients learn much more and much faster through their peers about what's possible. That also drives our care, because we have to change at the same pace and help get patients on the right care path for them.

There's still a lot to be improved, including asking more about the patient-related outcome. This includes asking questions like: how is school going? How is work going? We know that a third of the parents of children with T1D up to the age of 12 have either diminished their working hours or have even quit doing work altogether. However, to progress, we still need to assess, measure and see if we really add to the patient's life and value. Rather than just looking at the medical outcome, we should go into patient outcomes



Diabeter clinic waiting room in Rotterdam



Diabeter centre in Schiphol

in other domains, such as school, work, income, social health and so on. Quality of life outcome measurement and other patient related outcomes (PROs) are now an integral part of our VBHC contracts with health insurers.

Value based healthcare is evolving

Our value based healthcare (VBHC) is an evolving model. In the past year we have seen a switch in the Dutch, and maybe also in the Western European attitude of payers and patient organisations. There's much more emphasis on patient-related outcome, and even patient-related experience. Healthcare should fit with patients' lives. In the past, we would ask the patient to adjust to the system.

By initiating 'cloud care', care provision is becoming more efficient. With >95% of patients uploading their glucose, pumps and insulin data to the cloud, we can create additional contacts and create a continuum. In the past, we would just open a system and tell the patient that this is the care they will receive. Now, we are entering an era where we make a service-level agreement with the patient. We collect all kinds of

data, and ask the patient whether they want us to help them deal with it or if they are taking care of it themselves: Do you want us to check your data at an interval? Do you want us to alert you on certain trends? We are entering an era of shared decision-making in healthcare, and that is a new dimension for us as well as for the patients.

The total number of contacts at Diabeter is increasing, but the way of communicating is completely changing. We have a whole spectrum of ways to get in touch with our patients, from traditional visits through to video consultations, email and apps, to automated contacts with pop-ups on phones and in apps. In this technology era, diabetes educators become diabetes-technologists. I believe we will still need dedicated healthcare professionals (HCPs) that not only understand the 'high tech', but still can bring the 'high touch'.

With technological advancements, deep learning and machine learning are pointing towards a fully cognitive artificial intelligence (AI) system that is able to come up with and adapt treatment paths for diabetes patients. This will really help patients to be relieved from providing the disease with constant attention. If patients always have to be careful about where and how they go, what they do, and when they do things for their care, it's debilitating to their lifestyle. It has been calculated that some people with diabetes spend two to three hours a day in total on their disease. At our clinic, we provide means with which to relieve that, via technology. For example, AI understands from the data that you're going to football

training on Friday night, and it will be able to tell you: “Listen, I see that you are going to your football training again. Last time you had a hypo. Do you want me to adjust your insulin pump?”

We are currently in talks with other clinics about introducing the VBHC model for their diabetes care. The development of an IPU, which is able to constantly measure all outcomes and is able to negotiate a bundled price, is the most difficult but most important step here. There’s definitely a tendency for a lot of hospitals in Europe—and this counts for a lot of Western European countries that we visit—to be willing to make changes. The inflexibility of payment systems in healthcare is still another hurdle.

Another hurdle is that healthcare professionals are not trained in adopting new approaches. They always first want to have evidence, publications to show that it works. That’s good, but we should realise that implementing new technologies in old structures has never worked. And complications don’t wait.

The VBHC system is helping us to start with the knowledge case of diabetes, to decide what is needed, and then to create the business case. When you see value being added, it’s not immediately necessary that you reduce costs. But we can reduce and change costs, and then shift funds to where they’re needed. Sometimes adding value will cost you money, but in the long run, and we know that from some insurance company studies conducted in collaboration with Diabeter, it will save a lot.

Diabetes is a costly disease both in terms of the patient and in terms of money. A 20-year-old with T1D lives 12 years shorter and experiences many problems particularly in the last years. What’s the future of hospitals, high-tech for healthcare? There will be disruption, so let’s disrupt this even more with VBHC and ensure that each element of care has the best chance of harmonising with one other.

Recently we started a new system that constantly evaluates our outcomes and adds other value, such as patient-related outcomes, to the equation. This VBHC system will be used for five or 10-year contracts with healthcare insurance companies. We will re-assess the progress and can adapt the contracts every two to three years. This requires full transparency on outcomes and costs, but creates the needed space to implement new technologies. In the past, we were blocked by ‘production ceilings’, as politics calls it here. The VBHC approach has convinced decision makers to change that.

With our VBHC model, we were able to change the care, free up expensive HCP time, increase their

experience and reassessed costs. There is, however, still space for further cost reductions. Between 60–70% of healthcare costs are personnel costs—nurses, doctors etc. By using technology and adopting other systems, like video conferencing with patients and automated contacts, there’s a reduction of time and costs. And the savings in the long run from fewer or less severe complications add to that.

Our patients have been very positive about our new system: more than 95% are happy with the care, see it as an improvement and recommend it to others. The most important reasons for them to move to this model are: first, the level of knowledge; second, the availability of an expert day and night; and third, surprisingly, is the fact that we are doing a lot of research and development, and that’s very important for patients who are handling the disease themselves.

Conclusion

Our message to healthcare governments and policy-makers is to adapt the funding model to modern technology and modern systems rather than try to squeeze it in; otherwise you end up paying more and more, which eventually means that people cannot use it because there is not enough money.

In my view, in the next years diabetes will fully leave the clinic and enter the cloud. There will of course still be face-to-face visits, but there will also be a lot of high-tech treatment. We are entering a new era, involving closed-loop systems, artificial pancreas systems etc. But we have to completely transform the healthcare system in chorus; otherwise, we can’t afford to make these changes successfully. ■

KEY POINTS



- ✓ A cornerstone of value-based healthcare is that it helps to maintain good health rather than struggle to fix poor health, and technological advancements enable this
- ✓ Key factors in the VBHC model are changing visit types, more ad-hoc contacts, use of technology, automated contacts and peer-to-peer interaction
- ✓ 95% of Diabeter patients have expressed they are much happier with the assistance they have received from the VBHC system
- ✓ Healthcare governments and policy makers need to adapt the funding model to modern technology and modern systems rather than the other way around