



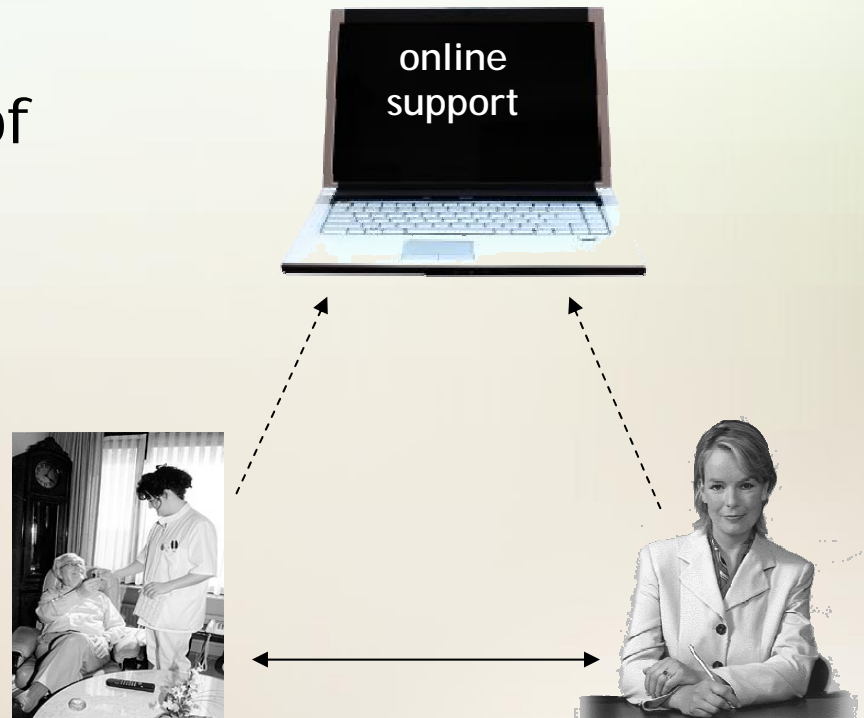
Experiences of patients and nurses with an interactive Web-based diabetes support program



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The Diabetescoach

Web-based disease management
program to
support the care of
diabetic patients



Objectives diabetescoach


- Changes in lifestyle of patients by means of a diabetes self-management **education** program
- Optimizing metabolic control through **e-monitoring** with interactive feedback
- Improvement of patient-physician communication by means of secure message exchange: **e-contact**



Diabetescoach patient view

[Contact](#) | [Disclaimer](#) | [Home](#) | [Logout](#)

Menu → My data

 [print overzicht](#)

[My data](#)

[Test results](#)

[Q&A](#)

[More info](#)

[Calendar](#)



Welcome A de Vries

Welcome to your personal Diabetes coach.

My Diabetes coach

Your diabetes treatment consists of several items. Depending on your personal situation, your nurse has set up an individual programme. She will be your personal consultant.

Last logged on: **10-8-2006**

Under treatment since: **1-8-2006**

Last D.I.E.P. chapter worked on: **Hoge bloedglucosewaarden**

[View](#)

→ [Your personal lifestyle coach](#)



Sportsselector

This test helps you select the sport that suits you best. Answer ten easy questions about your personal preferences and find out which sport fits you

[Do the test](#)

Measurements, weight

Menu → Test results print overzicht

Blood glucose | Blood pressure | **Weight** | Cholesterol

Weight

Do I have a healthy weight? The Body Mass Index is a commonly used measure for a healthy weight. The waist girth is also a good predictor of a healthy weight.

Measurement of **19 - 04 - 2007**

Height (in cm) 185

* Weight **Calculate**

Your BMI is 23.3

You have a healthy weight

* Waist girth



23.3

Show diagram **Restore data** **Save data**

Measurements, blood glucose

Menu → Test results Print overzicht

Blood glucose | Blood pressure | Weight | Cholesterol

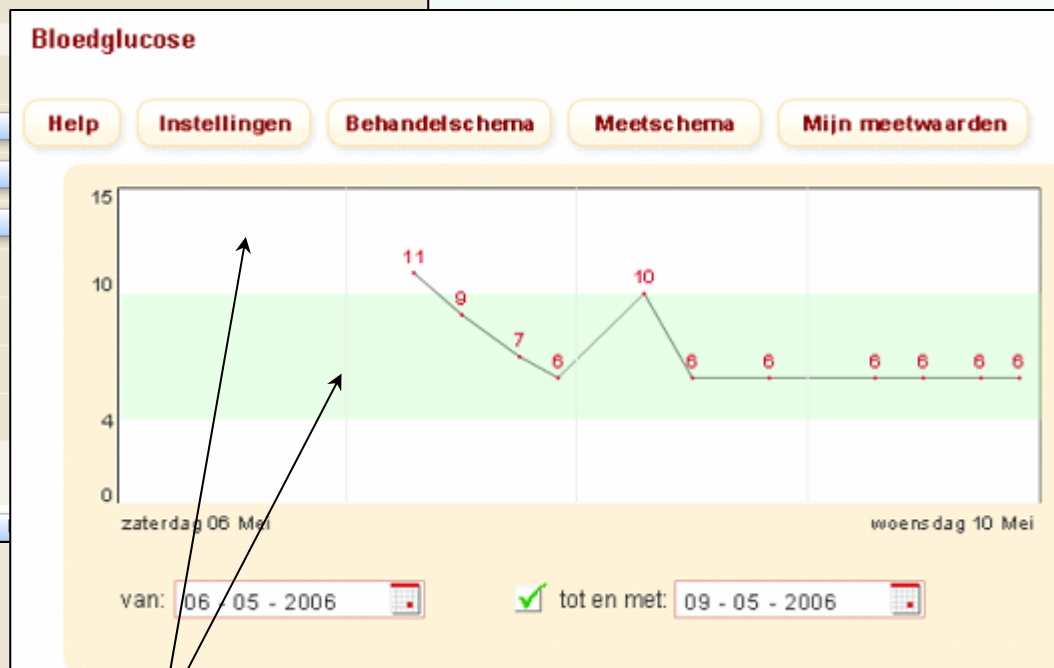
Blood glucose

On this page you can keep record of your blood glucose levels. Click on the button 'save data' when you have filled in the page to store your information. If you click on 'restore data' the information will not be saved and the earlier data will be restored.

Measurement of **16 - 12 - 2006**

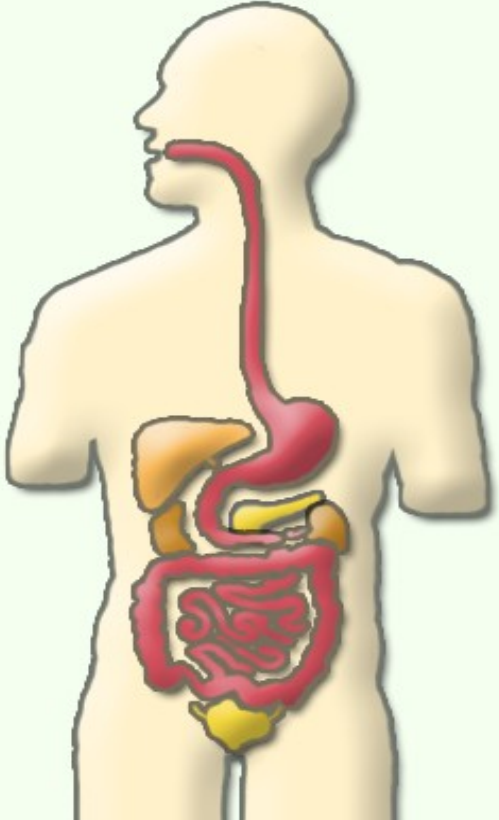






Fasting	<input type="text"/>	mmol/l	
After breakfast	<input type="text" value="7.7"/>	mmol/l	! Details
Before lunch	<input type="text" value="5.3"/>	mmol/l	! Details
After lunch	<input type="text" value="4.3"/>	mmol/l	! Details
Before dinner	<input type="text"/>	mmol/l	
After dinner	<input type="text"/>	mmol/l	
At bedtime	<input type="text"/>	mmol/l	
At night	<input type="text"/>	mmol/l	

[Show diagram](#)



Alert values adjusted by nurse


E-contact & education

DIABETES - INTERACTIEF - EDUCATIE - PROGRAMMA							
Achtergrond van diabetes	Hoge bloedglucose waarden	Diabetes en leefstijl	Behandeling en management	Lage bloedglucose waarden	Zelfcontrole	Leven met diabetes	Adressen, links & literatuur
Wat is diabetes? 1/3 < >							
<p>Diabetes is een stofwisselingsziekte met teveel glucose in het bloed</p> <p>Het hormoon insuline speelt daarbij een sleutelrol</p> <p>Insuline wordt gemaakt in de alvleesklier</p> <p>Diabetes wordt veroorzaakt door een tekort aan insuline, al dan niet in combinatie met ongevoeligheid voor insuline</p>							
Achtergrond van diabetes							
 Intro	 Werkboek	 Info-blad	 ABC	 Tekst	 Stoppen		

Lifestyle coach

Menu → Calendar

My data Test results Q&A




Welcome A de Vries
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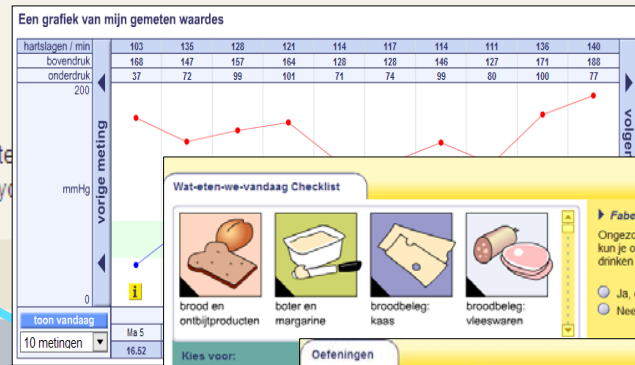
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Last logged on: 10-8-2006


→ Your personal lifestyle coach


 **Sportsselector**
This test helps you select the sport that suits you best. Answer questions about your personal preferences and find out which sports suits you


Different tools appear on demand:
e.g. healthy living test, sport selection guide, activity scale, nutrition guide, weight manager, diet guide, mobility exercises




Wat-eten-we-vandaag Checklist

 brood en ontbijtproducten

 boter en margarine

 broodbeleg: kaas

 broodbeleg: vleeswaren

Fabelgjes?
Ongezoet vruchtensap kun je onbeperkt drinken

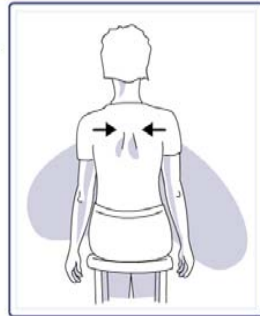
Ja, dat is waar.
 Nee, dat is niet waar.
Wat is het juiste antwoord?

Kies voor:


Oefeningen

► 1. Schouders


Ga rechtop staan of zitten en laat uw armen onspannen langs uw lichaam hangen. Trek vervolgens uw schouderbladen naar elkaar toe. Houd deze positie drie tellen vast en ontspan dan even. Herhaal deze oefening 10 keer.



hele set:















fysio tip:
Voer de oefeningen rustig en ontspannen uit. Een lichte reklijn mag bij de oefeningen optreden. Deze reklijn moet overgaan bij het beëindigen van de oefening.



Supervision by nurse

Menu →

Patient overview
This is an overview of all your patients. The red crosses indicate which patient has an abnormal test result (above or below his or her personalised level). By clicking on 'settings', you can see the individual settings and adjust them. You can also see if there are any messages.

	Blood pressu	Weight	Cholesterol	Blood glucose	Messages
Harm van der Woude	×			×	   
Francine van den Akker		×			   
Robert Jansen					   

Patients at risk →

Patients with alert values are listed for contact by the nurse



Why research?

- Prove the **added value** of the Diabetescoach
- Better understanding of **patients' needs** for telecounseling
- Better understanding of the **conditions** for telecounseling
- Directions for **improvement** of telecounseling via the Diabetescoach

Focus of the study

Implementation

- Motives for use & non-participation
- Adoption process, drop-outs
- Conditions for successful implementation

User-friendliness

- Navigation, ease of use, lay-out, instruction

Quality of care

- Efficiency and quality of patient-caregiver communication

Nijland N, van Gemert-Pijnen J, Boer H, Steehouder MF, Seydel ER. Evaluation of Internet-Based Technology for Supporting Self-Care: Problems Encountered by Patients and Caregivers When Using Self-Care Applications. *J Med Internet Res* 2008;10(2):e13.

Research methods

Usability tests

- Experiences of patients and nurses with e-care via the Diabetescoach
- Focus on implementation, user-friendliness, quality of care

Log-files

- Frequency of use of Diabetescoach
- Content analysis of patient-caregiver e-contact

Survey

- Patient characteristics
- Quality of life, self-efficacy, diabetes knowledge

Pilot participants

	N	Gender	Age
Patients	51	37 male 14 female	Average: 62 (SD = 8.5) Min: 43 Max: 80
Active users:	39 (76.5%)		
Nurses	6		

Reasons for non-participation N=226

64.6% no computer or Internet

11.0% not interested in project; no added value

10.2% not in the mood to use computer at home

4.4% not skilled enough for using computer/Internet

4.4% not in the mood to be occupied with disease

2.7% moving to another town

1.8% too busy, no time

0.9% many hospitalisations



Results usability tests 19 patients, 5 nurses

Frequently used items

- Measurements (e-monitoring)
- Question & Answer (e-contact)
- More info (education)

Diabetescoach meets expectations (N=19)

- 73.7% satisfied about Diabetescoach
- 78.9% Diabetescoach is useful
- 79.0% satisfied about lay-out
- 79.0% satisfied about instruction (meeting)
- 79.0% satisfied about user manual
- Mean score: 7,5 (range 1-10)

Improvement user-friendliness

Results log-files (July 2007 - June 2008)

E-contact

- 185 messages, 373 utterances in total
- 77 messages of patients, 147 utterances
- 108 messages of nurses, 226 utterances

Content analysis

- Roter Interaction Analysis System (Roter and Larson, 2002)
- Categorization: task-focused vs. socio-emotional exchange

Literature:

- Nelson EL, Spaulding R. Adapting the Roter interaction analysis system for telemedicine: lessons from four specialty clinics. *J Telemed Telecare* 2005;11(1):105-107.
- Miller EA, Nelson EL. Modifying the Roter Interaction Analysis System to study provider-patient communication in telemedicine: promises, pitfalls, insights, and recommendations. *Telemed J E Health* 2005;11(1):44-55.
- Roter DL, Larson S, Sands DZ, Ford D, Houston T. Can e-mail messages between patients and physicians be patient-centered. *Health Commun* 2008;23(1):80-86.

Content patients' messages

73.5% Task-focused

- Medical/therapeutic
- Lifestyle
- Psychosocial
- Social context
- Other, diabetescoach

26.5% Emotional

- Personal remarks, social talk
- Approval; showing respect, thanks
- Showing concern
- Showing optimism
- Asking for reassurance

Patients' messages

"Hello, just a question about my feet. I have got a blue toenail already after three runs. My shoes fit perfectly. Could this be an extravasation? (bruise) Is this harmful or is it normal?"

"I am very pleased with you and with...!!!"

"Lately, I am somewhat stressed and my blood sugar is high. Do I need to take precautions, like taking extra medication?"

"It has been a bad week, because.."

"I would like to reschedule our appointment"

Content nurses' messages

68.6% Task-focused

- Medical/therapeutic
- Lifestyle
- Surveillance measurements
- Administrative
- Other, diabetescoach

31.4% Emotional

- Personal remarks, social talk
- Encouragement
- Compliments
- Empathy
- Reassurance

Nurses' messages

"Today, I looked at your measurements and I saw that you have been active with self-control. Weight and blood pressure look great! Keep going on!"

"I/we will keep an eye your blood pressure"

"How are you?", "Take care"

"Best wishes for a healthy new year"

"My holiday is from ... until ..."



Summarizing...

Implementation

- All parties need to be involved, especially the end-user

User-friendliness

- Technology needs to be simple, training is essential

Quality of care

- Telecounseling is a practical and reliable way of delivering worthwhile health care service to diabetics; patient-centered care

- Verhoeven F, van Gemert-Pijnen L, Dijkstra K, Nijland N, Seydel E, Stehouder M. The Contribution of Teleconsultation and Videoconferencing to Diabetes Care: A Systematic Literature Review. *J Med Internet Res* 2007;9(5):e37.
- Roter DL, Larson S, Sands DZ, Ford D, Houston T. Can e-mail messages between patients and physicians be patient-centered. *Health Commun* 2008;23(1):80-86.



Thank you for listening!

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