

- Pirkanmaa Hospital District
- South Ostrobothnia Hospital District
- North Ostrobothnia Hospital District
- Northern Savo Hospital District
- Central Finland Hospital District
- National Public Health Institute
- Finnish Diabetes Association

Implementation of Type 2 Diabetes Prevention Plan

Project Plan 2003–2007

FIN-D2D Project

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Implementation of the Type 2 Diabetes Prevention Plan in Pirkanmaa, South Ostrobothnia, North Ostrobothnia, Northern Savo and Central Finland Hospital Districts

Project Plan 2003–2007

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Summary

Implementation of the Type 2 Diabetes Prevention Plan 2003–2007 (FIN-D2D), which is associated with Finland's national diabetes programme DEHKO, is halfway towards its goal.

FIN-D2D is the first national, large-scale type 2 diabetes prevention programme in the world. It is based on strong scientific evidence that type 2 diabetes can be prevented by lifestyle modifications. A goal of the project is to determine if this scientific evidence can be put to practical use in primary and employer-provided health care and, moreover, would steps taken produce any measurable effect. Another key element of the project is to assess its effectiveness.

Project planning, arranging financing, drawing up the project plan, creating new action models, building the organization, setting up a data collection system, and starting the prevention activities themselves were all challenging tasks. At the time of writing, the project is on schedule and type 2 diabetes preventive measures have been implemented in all participating hospital districts. We believe the project is proceeding well even though prevention activity by primary health care providers (be they public or employer-provided) is often conducted without proper funding and in addition to the normal work load.

Even after achieving project implementation goals, it will take some time before the results become available. Data collection on high risk individuals is ongoing, and the amount of information currently available is scant at best. Risk group screening, however, has proceeded better than expected. Furthermore, there has been a sharp increase in the number of diagnostic investigations (e.g. the oral glucose tolerance test) performed for assessment of diabetes and pre-diabetes in the participating areas. The care pathway for diabetes prevention has been created, and more and more individuals with high risk for type 2 diabetes are being referred to it. Employer-provided health care participation in the project is growing steadily. New tools for type 2 diabetes prevention as well as new action models for the prevention and early treatment of cardiovascular diseases have been developed and integrated into primary health care. Even parties outside the project have begun to adopt the project's action models. Project visibility is high and implementation of the Population Strategy is well under way.

At present there are insufficient data available to assess project effectiveness and management. Data collection on high risk individuals has begun more slowly than expected, due partly to inadequate data systems. Nevertheless, we already have enough information to state that there are more people with pre-diabetes and occult type 2 diabetes than we originally expected, and that fewer

men than women are participating in the screening activity. Primary health care nurses are clearly key players in the project, but in the assessment of high risk individuals, it has been suggested that the present low profile role of doctors may indeed be too modest.

While screening has identified more high risk individuals than expected, the actual number of individuals (especially men) referred to intervention has fallen below expectations. Some of the employer-provided health care units in the participating areas have yet to join the project, and even some public health care providers, while committed on paper, have only recently begun to integrate diabetes prevention activity into their daily routines. These observations may imply the existence of general start-up problems associated with any new project or they may be due to under funding. In any case these observations indicate a need for careful follow-up and process management in the future.

According to its goals, the project supports FIN-D2D's Population Strategy, which is at present an issue of great interest in the participating areas. The main goal of FIN-D2D however, is to identify individuals with high risk for type 2 diabetes and refer them to care.

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Introduction

Occult (i.e. asymptomatic, previously undiagnosed) diabetes, pre-diabetes, and increased prevalence of risk factors for cardiovascular disease (CVD) are all commonplace in the Finnish population. The prevalence of type 2 diabetes (T2D) is increasing at an alarming rate, while the average patient age at time of diagnosis is falling. Diabetes is the most common diagnosis among patients entered into the Finnish Kidney Register, the most significant cause of visual impairment, and the chief underlying cause for most of the therapeutic amputations performed in the country today. The risk for heart disease in an otherwise healthy person with diabetes is equal to that of a person who has already suffered a myocardial infarction. Even marginally elevated blood glucose levels lead to increased risk for cardiovascular disease.

The Finnish Diabetes Prevention Study (DPS) and many later studies have shown that the onset of diabetes can be delayed and even avoided altogether among middle aged individuals with Impaired Glucose Tolerance (IGT). The dietary and physical exercise related lifestyle modifications necessary for the prevention and care of type 2 diabetes are relatively modest, and the positive effects have been shown to last for at least ten years. The Development Programme for the Prevention and Care of Diabetes (DEHKO 2000–2010) was adopted as a national health initiative in the year 2000. Impetus was provided by the Finnish Diabetes Association, under whose sponsorship experts were gathered to create the programme. One of DEHKO 2000–2010's main objectives is to prevent T2D. Working towards this goal, the Finnish Diabetes Association published the Programme for the Prevention of Type 2 Diabetes 2003–2010 in the year 2003. In order to realize this programme and assess its effectiveness, the Type 2 Diabetes Prevention Plan 2003–2007 (FIN-D2D) was initiated. Five hospital districts with some 1.5 million inhabitants are participating, which is both a respectable and representative figure in a country with a population of only 5.2 million.

A central goal of the FIN-D2D is to reduce the incidence of T2D. Primary health care providers, both public and employer-provided, will implement the project in cooperation with municipal authorities, non-governmental organizations and other players who can provide support (e.g. leisure time physical activity, health education, etc). The aim is to integrate measures that will reduce the risk for T2D and CVD into the daily routines of the primary health care network. In order to achieve this objective, existing action models that support population health must be further developed and new ones created. The effectiveness of FIN-D2D will be evaluated systematically in all of the participating hospital districts and the information generated will be used to prepare a diabetes prevention programme that will eventually serve the entire country.

The first stage of the project involves screening the general population for individuals with high risk for T2D. The Finnish Diabetes Risk Score (FINDRISC, (www.diabetes.fi/english), a short questionnaire for T2D risk evaluation, is used. Additionally, individuals with previous gestational diabetes, known cardiovascular disease, impaired fasting glucose (IFG), or IGT are sought out. Occult diabetes and pre-diabetes manifestations such as IFG and IGT are best diagnosed using the oral glucose tolerance test (OGTT). High risk individuals and those with pre-diabetes (IFG or IGT) are referred for preventive health care. Individuals with newly diagnosed occult diabetes are referred for standard treatment.

Under the FIN-D2D model, nurses assume primary responsibility for population screening and identifying glucose metabolism disorders with doctors and other health care professionals serving in supportive roles. The implication is no less than the introduction of an entirely new practice where primary health care focuses considerably more attention on the prevention of diabetes and cardiovascular disease and where individuals at risk are systematically referred to intervention for lifestyle counseling. Due to financial constraints, group counseling is the default method. Cooperation with organizations involved with weight reduction and physical recreation can help to keep costs down and get more resources into prevention. Although the lifestyle changes necessary to prevent T2D are modest in theory, they are often difficult to achieve in practice. It is, therefore, important for reasons of motivation that the referred individuals actively participate in planning the measures to be implemented for risk reduction. Diabetes prevention is also a formidable task for health care professionals, imposing considerable demands on skill and knowledge.

Large amounts of data must be collected and analyzed. Preventive activities in primary health care must be evaluated and further developed. Only then can a cost effectiveness be demonstrated that may influence decision makers in the future. The project provides the necessary logistical support to ensure that its implementers' (health care professionals and other players) prevention work is systematic, well coordinated, and tangible. Curbing the diabetes epidemic will require prompt intervention; failure to do so will only lead to the exacerbation of an already overwhelming problem in just a few short years.

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1. Project definition

1.1 Project name

The name of the project is “Implementation of the Type 2 Diabetes Prevention Programme 2003–2007” (FIN-D2D). It will be implemented over a five year period in five hospital districts (see Appendix 1, page 27). Participants include public primary health care centers and employer-provided health care units.

1.2 Background information

During the last two decades the prevalence of diabetes has risen sharply both in Finland and abroad. New strategies must be developed quickly in order to combat this threatening epidemic.

Various methods are available for screening the population for high risk individuals. The glucose metabolism of a high risk individual can be evaluated reliably using the two-hour OGTT. Diabetes, IFG, and IGT can all be easily and accurately diagnosed.

Certain studies (e.g. The Finnish Diabetes Prevention Study – DPS, The Diabetes Prevention Program – DPP, and The Da Qing IGT and Diabetes Study) have shown that T2D can be avoided or at least its onset delayed through preventive measures in individuals with IGT. All of these studies were based on intervention in the form of either lifestyle modification or drug therapy.

Intervention studies have uniformly and irrefutably demonstrated the beneficial effects of lifestyle modification in the prevention of T2D. It must be noted, however, that the recruitment criteria varied from study to study.

If the integration of intervention activity into everyday primary health care is to succeed, then the methods used must be simple, clear, and cost-effective. They also must work in different population groups and in different health care systems. We still do not know how readily lifestyle changes can be affected in the population at large within the framework of the present primary health care system.

In a broader sense, the prevention of T2D is also the prevention of CVD and other diabetic complications including retinopathy, nephropathy, and neuropathy. Some 90% of persons with diabetes, and approximately 75% of persons with IGT also present with Metabolic Syndrome, whose symptoms include upper abdominal obesity, insulin resistance, elevated blood pressure, glucose metabolism disorders, lipid metabolism disorders, and hypercoagulation of the blood. Several prominent health organizations around the world have published slightly different versions of diagnostic criteria for Metabolic Syndrome, so some country to country variance in which ones are used can be expected.

In the process of identifying individuals with high risk for T2D, the OGTT sometimes reveals occult diabetes. For these individuals intervention is also indicated, but now the goals are undelayed treatment of diabetes and the prevention of diabetic complications. As in the case of high risk individuals, intervention for persons with diabetes is initially conservative; concentrating on weight reduction to correct glucose and lipid metabolism disorders and lowering blood pressure. Drug therapy may become necessary to manage risk factors.

1.3 Scope

Participation in FIN-D2D is limited to public primary health care and employer-provided health care providers in the Pirkanmaa, South Ostrobothnia, Central Finland, Northern Ostrobothnia, and Northern Savo hospital districts. The project will focus on two of the three strategies described in the Programme for the Prevention of Type 2 Diabetes in Finland:

- The High Risk Strategy
- The Strategy of Early Diagnosis and Treatment

Measures supporting the Population Strategy, which focuses on the entire population instead of just target groups, will also be implemented as resources allow. FIN-D2D, therefore, also supports the Population Strategy.

The Finnish Diabetes Association, the Finnish Heart Association, and certain other health related organizations have pledged functional support for the project, especially with respect to measures supporting the Population Strategy. Pharmacies have also joined the cause in accordance with the Association of Finnish Pharmacies' diabetes program, which is the result of a joint effort with the Finnish Diabetes Association and the DEHKO programme.

1.4 Project environment

Residents of Finland enjoy universal primary health care, which by law is provided by the municipality in which they live. Of Finland's 431 municipalities, 191 maintain their own primary health care centers. The rest (often small) have formed alliances (65 in all) with other municipalities in order to fulfill this costly obligation.

Each municipality belongs to one of the nation's 20 hospital districts, whose populations vary from some 65,000 to over 1,400,000. The number of municipalities per district ranges from 6 to 56. The hospital districts maintain a combined total of 54 hospitals including five university hospitals. The public health care system is complemented by an increasing number of private hospitals and clinics. University hospitals serve as centers of expertise for the diagnosis and treatment of both rare and the more demanding medical and surgical afflictions. They are also responsible for the training of doctors and the supervision of medical research.

Most Finnish municipalities have adopted a system in which each of their residents is assigned his own doctor. A doctor in this system is usually an employee of the municipality, and assumes primary responsibility for the primary health care of approximately 2000 residents. This system is complemented by employer-provided health care services, private primary health care clinics, and independent practitioners. Employers are required by law to provide preventive care for their employees while treatment for illnesses is optional.

The population of Finland is presently 5,300,000 (2006) and there are 48,000 nurses and 14,500 doctors practicing in the country. Health care expenditures accounted for 7% of Finland's GNP.

The total population of the FIN-D2D area is 1,500,000. Statistics on demography, diabetes prevalence, and project participation for individual hospital districts can be seen in Appendixes 2 and 3 (pages 28 and 29).

1.5 Project goals.

The goals of the project are as follows:

1.

To reduce the incidence of type 2 diabetes and to reduce the prevalence of type 2 diabetes and the prevalence of cardiovascular risk factors.

2.

To identify individuals with occult type 2 diabetes.

3.

To generate regional and local models for the prevention of type 2 diabetes.

4.

To evaluate the effectiveness, feasibility and the cost-effectiveness of the project.

5.

To increase awareness of type 2 diabetes and its risk factors among the population, and to support the Population Strategy of the diabetes prevention programme.

1.6 Lifespan of the project

The lifespan of the project runs from 2003 to 2007 with a final report to be published in 2008.

1.7 Financing

FIN-D2D total expenses for the year 2005 were €1,500,000. The annual contribution of each participating hospital district is €100,000. The Ministry of Social Affairs and Health provides an additional grant of approximately €500,000 annually from the National Health Project's allocation funds. The Pirkanmaa hospital district applies for this grant on behalf of all the participating hospital districts. In 2005 the Finnish Diabetes Association received grants totaling €424,000 from the Finland's Slot Machine Association and from the health promotion allocations fund managed by the Ministry of Social Affairs and Health. This sum was earmarked to pay project coordinators' salaries. Costs arising from the analysis of project effectiveness totaled €140,000 in 2005, and were paid for by the National Public Health Institute. See Appendix 4 (page 30).

1.8 Agreements

It is the duty of the participating hospital district's Regional Expert Committee to secure agreements with both the public primary and the employer-provided health care services operating in their districts. Such agreements may be in the form of written contracts, where the duties and responsibilities of all the parties are specified in detail. Alternatively, a written Declaration of Participation may be used since the FIN-D2D Project Plan is a public document (see Appendix 5, page 31).

2. Project organization (see Appendix 6, page 32)

2.1 Steering Committee

The role of the Steering committee to ensure that the project proceeds according to schedule. It is also responsible for making key project decisions. The committee is comprised of eight members; one from each of the participating hospital districts, one from the National Public Health Institute, one from the Finnish Diabetes Association, and one general practitioner representing primary health care.

2.2 National Advisory Board

This body is made up of representatives from the participating hospital districts, prominent public health officials, and experts from the associations of various health care professionals and other organizations involved with the promotion of public health.

2.3 Regional Expert Committees in hospital districts

Each participating hospital district has its own Regional Expert Committee. Members include representatives from specialized, primary, and employer-provided health care as well as experts in the fields of medicine, nursing, nutrition, and physical education. Regional Expert Committees are responsible for the implementation of the project in their respective hospital districts.

2.4 National Coordinator and his Advisory Board

The National Coordinator coordinates and plans the project together with various work

groups and regional coordinators. Duties include monitoring the progress of the project, budget control, and sharing with the steering committee responsibility for successful implementation of FIN-D2D. The Advisory Board of the National coordinator is a panel of diabetes experts, whose task is to advise the National Coordinator as needed.

2.5 Regional Coordinators in hospital districts

Each participation hospital district has its own regional coordinator. Salaried by the Finnish Diabetes Association, their duties are to initiate, coordinate, monitor, and report on the project in their respective areas. They are to maintain active contact with their respective area's participating health care units through liaisons designated for this purpose.

2.6 Primary and employer-provided health care unit liaisons

The board of directors of each participating primary or employer-provided health care unit shall designate a liaison or liaison group for the project.

2.7 Local project workers

Initially, local project workers survey their areas' existing nutrition and physical education counseling resources for adequacy and potential. Later, they focus on supporting primary health care in the task of realizing project goals.

3. FIN-D2D schedule 2003–2007

2003

Updating of the project plan, building infrastructure and organization of the project, assembling the Steering Committee and Advisory Board, finalizing agreements, staff recruitment, preparation of the media plan, planning of staff training, preparation and acquisition of materials, survey of existing nutrition, physical education, and lifestyle counseling resources within primary and employer-provided health care and the development of a plan addressing any shortcomings, creation of a data collection system, data collection using forms, population surveys, initiation of the project in all four participating hospital districts (the Northern Savo hospital district will join later).

By the end of the year it is estimated that 5000 people will have been assessed for diabetes risk and 2000 will have been referred for intervention.

2004

Beginning cooperation with local organizations and other players, initiation of subprojects and project related studies and surveys, initiation of health cost study, continuation of data collection with forms until the computer based system becomes available, initiation of the computer based data collection system.

Since the beginning of the project, it is estimated that 30,000 people will have been assessed for diabetes risk and 15,000 will have been referred for intervention.

2005

Intermediate project evaluation, review of project plan and restructuring if necessary, Northern Savo hospital district joins the project.

Since the beginning of the project, it is estimated that 50,000 people will have been assessed for diabetes risk and 25,000 will have been referred for intervention.

2006

Partial reports, project changes as necessary based on these reports.

Since the beginning of the project it is estimated that 80,000 people will have been assessed for diabetes risk and 40,000 will have been referred for intervention.

2007

Project ends. Project reports.

Since the beginning of the project it is estimated that 100,000 people will have been assessed for diabetes risk and 50,000 will have been referred for intervention.

2008

Publication of final report and conclusions. Continuation of preventive activities in primary health care and employer-provided health care in the whole of the country

4. Risk management

RISK	AVOIDANCE STRATEGY
Eligible health care units and/or their staffs fail to join the project	Intensive cooperation and partnership efforts from the beginning of the project, staff empowerment with respect to goals and actions, careful pre-planning and regular feedback
Insufficient knowledge and/or skills to implement the project	Adequate staff training, continuous availability of logistical support, common project criteria throughout the project area to facilitate inter-area comparison
Failed data collection, either insufficient or unsuitable for analysis	Careful planning of the data collection system.
Support for the project in primary health care fails at the management level	Board of Health resolutions, management's contractual commitment, cooperation, effective communication and feedback
Unforeseen financial problems	Steering Committee and National Advisory Board
Personal conflicts	Ensuring key players are committed to the project plan, clear job descriptions, leadership
Project expands uncontrollably	Clear yet flexible project plan, central goals well defined, communication, pre-planning, Steering Committee work, sensitivity to feedback
High risk individuals refuse intervention	Communication, cooperation, dialogue, emphasize common goals
Unclear division of responsibilities	Detailed job descriptions incorporated into the project plan
Insufficient resources	Resource planning
Problems with permits, contracts and agreements	Pre-planning
Medicalization of intervenees	Pragmatic, empathetic counseling

5. Dissemination of information

The aims of FIN-D2D information dissemination include gaining exposure for the project and T2D prevention (media exposure), securing the flow of information between project players (internal communication), and providing quality education material for high risk individuals (target-group communication).

According to project guidelines, responsibility for dissemination of information at the national level rests with DEHKO's Communications Department. Communications within the participating hospital districts are the responsibility of the regional coordinators, together with project workers recruited by hospital districts and local work groups.

Media publicity

- National and regional press conferences
- Public awareness campaigns for T2D prevention
- Exposure in the Finnish Diabetes Association's own publications.

Internal communication

- National newsletters to project participants
- Local newsletters to project participants
- Regional coordinators' personal contacts with participating health care providers
- Training of health care personnel participating in the project
- Project website www.diabetes.fi/english

Target-group communication

- Educational material for high risk individuals from the Finnish Diabetes Association
- Locally prepared educational material for high risk individuals
- Visibility at public events where high risk individuals are likely to be found

6. Plan of Action

The resources at the disposal of the various health care providers are not uniform, so some variance in how screening and intervention are conducted can be expected. This does not, however, jeopardize the value of the project, provided the clinical and laboratory investigation protocols are strictly adhered to.

6.1 Identifying individuals with high risk for T2D

FIN-D2D locates high risk individuals by targeting the following risk groups:

- Individuals who score ≥ 15 on the risk test
- Women who have had gestational diabetes
- Individuals who have suffered a myocardial infarction or other ischemic event
- Individuals with known IFG or IGT

6.1.1 Screening with FINDRISC

The Finnish Diabetes Risk Score (FINDRISC) test is used (see Appendix 7, pages 33–34 or the online version at www.diabetes.fi/english).

The FINDRISC test is intended for use in the evaluation of risk for T2D in individuals aged 25 years or more. The test can be self administered, or given by a health care provider in connection with a normal office visit. The FINDRISC test can also be integrated into routine physicals. The test form is available at pharmacies and is distributed at selected public events. The Finnish Broadcasting Company occasionally offers a digital version of the FINDRISC test to its Channel 2 viewers who have Multimedia Home Platform (MHP) digital receivers.

6.1.2. Gestational diabetes

Any woman with a history of gestational diabetes belongs to the risk group. All are referred for OGTT, regardless of how long it has been since they had the condition.

If a maternity hospital refers a woman who has recently delivered for OGTT, a suitable testing time would be just prior to her child's one year check up. As the child is the actual patient at this check up, there is a possibility that the mother's OGTT results will go unnoticed. In order to avoid this potential problem, it is advisable the mother's own doctor assumes final responsibility for interpretation of OGTT results.

As is the case with other risk groups, all women with a history of gestational diabetes are also referred for intervention. Women diagnosed with IFG and IGT are referred to a nurse on an accelerated time schedule, i.e. within 3 months.

6.1.3 Individuals with history of myocardial infarction or other ischemic event

All individuals in this risk group are referred directly for OGTT and to a nurse for intervention within 3 months.

6.1.4 Individuals with history of IFG or IGT

All individuals in this risk group are referred directly for OGTT and to a nurse for intervention within 3 months.

6.1.5 The importance of OGTT

Modern consensus holds that IFG and IGT should no longer be considered merely as risk factors for T2D, but rather early manifestations of overt T2D. OGTT is the only reliable method for identifying IFG, IGT and occult diabetes. The test requires the collection of two blood samples over a two hour period (see Appendixes 8 and 9, pages 35–36).

Interpretation of FINDRISC results

Guidelines for intervention referral based on FINDRISC results are shown in Table 1

Table 1. Interpretation of FINDRISC results

FINDRISC points	Percentage of 35-65 year olds with similar score	Risk for developing T2D over next 10 years	Recommended action
< 7 points	27.3%	Low: 1%	No action
7–14 points	58.6%	Moderate: 3–17%	Referral to health care assistant for retesting within 3 months. If risk for T2D is still elevated then background information on these individuals is entered into the data base. Pamphlets on health promoting lifestyles, diet, and exercise are given, as well as concrete information about local organizations whose services can help reduce risk for T2D. Examples of suitable printed material include publications by The Finnish Heart Association and The Finnish Diabetes Association and schedules of local events promoting physical activity. Health care providers acquire and distribute the material using project allocation funds. The following websites also provide useful information: www.diabetes.fi , www.sydanliitto.fi , www.kki.likes.fi , www.pienipaatospaivassa.net
15-20 points	12.5%	High 33%	Referral to a nurse or doctor within 3 months for further testing and interventions.
> 20 points	1.5%	Very high 50%	Referral to a nurse or doctor within 1 month for further testing and intervention

The sensitivity of the fasting blood glucose test alone is inadequate for glucose metabolism diagnostics. The DECODE study has shown that over 30% of persons with known diabetes may test normal when only the fasting blood glucose level is measured. Without OGTT, many individuals who have been identified as having high risk for T2D and even occult diabetes will test normal, remain undiagnosed, and fail to receive the treatment they need.

6.2 Intervention

All high risk individuals are referred to intervention during their first visit with the nurse. A flowchart showing the proper course of action based on FINDRISC and OGTT results is shown in Table 1 and Figures 1, 2 and 3 (pages 55–59).

6.2.1 First visit with nurse

30–60 minutes of time is allotted

Before the visit

The individual is asked to complete a basic questionnaire providing information about family illnesses, personal lifestyle, diet, exercise habits, and general well being. This information is used to assess the individual's total risk for T2D and is useful in the planning of intervention measures.

During the visit

- The FINDRISC test results are rechecked
- The T2D prevention programme and intervention alternatives are discussed
- The individual's medical history and any present use of medication are confirmed; the patient is asked to show any prescriptions he may have
- The measurements (height, weight, etc.) shown in the flowchart are taken and findings discussed
- Motivation building, evaluating and increasing the individual's present understanding of T2D prevention
- Discussion of the FINDRISC results, especially questions that gave the highest points
- Measurements (height, weight, etc.) are entered into the individual's medical records and/or into the data collection system
- Referral to a two-hour OGTT, unless one has been performed within the previous 12 months
- Referral to a blood lipid test, unless one been performed within the previous 12 months. Exception: if the individual has made significant lifestyle changes or lost weight during this period; then the test should be repeated
- Short counseling on lifestyle modification, as needed, to reduce total risk

for T2D based on FINDRISC results

- Emphasis is placed on the importance of the treatment of high blood pressure and lipid disorders. Patients on medications are advised to take them regularly; prescriptions may be checked to verify that the medication has been purchased
- Pamphlets on diabetes prevention are issued
- The next nurse's visit is scheduled

6.2.2 Second visit with nurse

30–60 minutes of time is allotted

During the visit

- Laboratory results are checked and entered into a pocket log which the individual is allowed to keep.
- The status of the individual's glucose metabolism is preliminarily diagnosed using the fasting and 2 hour blood glucose values provided by OGTT. The diagnostic ranges for blood glucose levels can be found in Appendix 9 (page 36).

Individuals with fasting blood glucose levels < 8mmol/l are referred for intervention.

Individuals with fasting blood glucose levels \geq 8mmol/l have diabetes. They may be in need of medication and should be referred to a doctor. They are also referred to intervention for persons with diabetes.

- The individual is told the result of the OGTT, which is either normal, IFG, IGT, or diabetes.
- The individual is told the result of the blood lipid test and how it compares to target levels
- Prescriptions are inspected to confirm what medications are in use

- There is a check to determine if the individual has received a Physical Activity Prescription from a doctor and whether the recommendations have been realistic and adhered to, and if not, why not? If the individual has yet to receive a Physical Activity Prescription, the matter should be addressed during a later visit
- Responses to the basic questionnaire are reviewed and individuals are encouraged to discuss their own lifestyles and to report on possible earlier attempts at lifestyle modification
- Continuation of the process of furthering the individual's understanding of type 2 diabetes and its prevention
Useful discussion topics include:
 - the gains of avoiding diabetes
 - what is normal in terms of weight, blood pressure, blood sugar, and blood lipids
 - cardiovascular disease
 - coronary artery disease and myocardial infarction
 - stroke
 - vascular disorders of the lower extremities and amputation
 - healthy diet and physical activity
 - exercise and weight control groups
 - smoking, nicotine replacement therapy, and support groups
 - obesity: medical treatment and other alternatives
- The individual is encouraged to evaluate his own potential for lifestyle modification and is aided in the process of setting goals that are both meaningful and attainable
- The amount of support needed to achieve the necessary lifestyle changes is jointly assessed
- The individual's expectations and experiences related to health care are considered

- Objective assessment of the individual's readiness to participate in intervention.
- Selection of the most suitable form of intervention and scheduling of follow-up visits
- Targets, commitments, and plans are recorded
- Information entered into the data collection system

Timing of the visit with the doctor

- all intervenees are to be seen by a doctor for confirmation of preliminary diagnosis. Initiation of any needed medical treatment, and issuing a Physical Activity Prescription, if necessary
- for intervenees not being seen by a doctor for other reasons, a separate appointment should be scheduled as local resources allow
- referral priority is based on blood pressure and laboratory findings in accordance with the following guidelines:
 - immediate referral: fasting plasma glucose ≥ 15 mmol/l or ketones in the urine or blood pressure $\geq 200/120$ mmHg
 - within two weeks: fasting plasma glucose 10–14.9 mmol/l or blood pressure 180–199/110–119 mmHg or plasma triglyceride > 10 mmol/l; examinations to be repeated prior to doctor's visit
 - within one month: fasting plasma glucose 8–9.9 mmol/l or blood pressure 160–179/100–109 mmHg or plasma triglyceride 5–10 mmol/l or LDL-cholesterol > 4.5 mmol/l
 - within six months: fasting plasma glucose 7–7.9 mmol/l or OGTT 2-hour value ≥ 11.1 mmol/l or blood pressure 140–159/90–99 or plasma triglyceride 1.7–4.9 mmol/l or LDL-cholesterol 2.6–4.5 mmol/l

6.2.3 Visit with doctor

The doctor confirms the nurse's preliminary glucose metabolism diagnoses and initiates treatment as necessary to reduce risk factors for T2D and cardiovascular disease. Drugs to lower blood pressure, correct glucose and lipid disorders, treat hypercoagulation of the blood, manage weight, and/or help quit smoking may all be needed.

The doctor writes a Physical Activity Prescription, which is used as a tool to increase the individual's physical activity on a regular basis.

6.2.4 Intervention alternatives

Individuals found to be at high risk for T2D are referred to intervention according to the flow chart in Figure 4 (page 60).

Group intervention

The default model for facilitating lifestyle modification is group counseling. A group consists of 8–10 high risk subjects identified over the course of a few weeks. Such a group may meet weekly or bi-weekly for four sessions with a fifth follow-up session about a month after the fourth. Intervenees and group leader/leaders (nurse, doctor, nutritionist, physiotherapist, and/or psychologist) plan the content of the counseling jointly. The skill and experience of the group leader weighs heavily in this type of intervention, which is based on accurate client orientation and the principles of empowerment.

Figure 5 (page 60) shows an example of a group intervention model.

If resources permit, the group sessions can be supplemented with public health forums. Such a forum consists of an informal public presentation of a diabetes related topic by a doctor or other health care professional. Intervenees are asked to attend these forums, and the topics presented, including any practical applications in terms of T2D prevention, can be discussed in detail in the group sessions. If forums are not arranged, it is recommended that a doctor attend the first or second session of an intervention group, as this tends to increase motivation among the intervenees.

Regardless of the topics discussed, the goal is always the same: to encourage participants to identify risk factors in their own lifestyles and eliminate or reduce them as much as possible.

In group sessions each participant creates his own personal plan for lifestyle modification. This plan is based on his own assessment of his present situation and what goals he intends to realize. Motivation to achieve goals comes from peer support in the form of experience sharing, mutual encouragement, and positive feedback. The goal is to reduce T2D risk through the adoption of a series of small yet permanent lifestyle changes.

Topic suggestions for group sessions:

1. Medical aspects (presented by a doctor)
 - The Metabolic Syndrome and upper abdominal fat
 - T2D
 - CVD
 - Importance of healthy diet, exercise, weight control and not smoking in the prevention of T2D and CVD
 - Drug therapy: when are drugs needed to treat obesity, high blood pressure, glucose and lipid disorders and prevent clogging of the arteries
2. Dietary aspects (to be presented by a nurse and/or nutritionist)
 - The importance of weight control. “What is my ideal weight?”
 - Healthy diet, saturated vs. unsaturated fats, reducing fat intake, increasing fiber intake, “How much should I eat?”
 - Eating and weight control, timing of meals, recognizing snacking patterns, binge eating etc.
 - Dealing with high energy foods, “favorite” foods, alcohol, high pressure situations
 - Awareness of what one eats (e.g. keeping a food diary)
3. Physiological aspects
 - The importance of exercise in keeping fit, both mentally and physically
 - Personal exercise habits, potential for improvement, future goals
 - Positive reinforcement through exercise
4. Psychological aspects (presented by a psychologist)
 - Lifestyle changes – bridges and barriers
 - Attitude
 - Stress management

Individual intervention

Although group counseling is the intervention method of choice in FIN-D2D, there are situations where individual counseling is the only viable alternative. The content is similar to that used in group counseling, only relatively more emphasis is placed on encouraging the intervenee to utilize the services of other local organizations providing support with weight control, physical recreation, and other activities associated with T2D prevention.

Lifestyle modification for the highly motivated individual

These intervenees need only be informed about local networks and organizations involved with T2D prevention. They are capable of seeking out all the help they need and making all the necessary lifestyle modifications without peer support.

Other forms on intervention

Some intervenees may already be participating in other formal diabetes prevention activities outside FIN-D2D. When this is the

case, continued participation in these other activities is encouraged. These individuals are not offered FIN-D2D interventions, but they are asked to participate in follow-up examinations.

Cooperation with other players

The health promoting activities of local organizations, both public and private, can serve to complement or be directly integrated into FIN-D2D intervention measures. Cooperative activity could involve weight management, physical recreation, quit smoking campaigns, cooking courses, etc. One example is the training provided by the “One Small Decision a Day” (PPP) project for leaders of weight control groups. This project and the training it provides are the result of a joint effort by the Finnish Diabetes Association and the Finnish Heart Association.

The services required to fulfill counseling obligations can also be contracted out (private nutrition counselors, Weight Watchers) and/or similar counseling services can be created within the existing primary and/or employer-provided health care systems, either independently or jointly.

Local branches of both the Finnish Diabetes Association and the Finnish Heart Association organize various health promoting peer group activities. The state sponsored Fit For Life (KKI) programme provides financial support for physical fitness promoting activities, nation-wide, directed at persons over age 40.

Individuals uncommitted to intervention

An individual who can not or will not participate in intervention is encouraged to continue any present activities which promote health and reduce the risk for T2D. Failure to recognize the need for lifestyle

modification may be due to unpleasant previous experiences or other barriers. In such cases, the individual’s psychosocial situation should be evaluated and depression sought out and treated if found. Contacts with health care personnel related to other matters continue normally. Uncommitted individuals are, however, asked to participate in annual follow-up examinations during which intervention measures can be reconsidered.

The Doctor’s role

The doctor’s duty to treat high risk patients for other illness is unaffected by intervention. As mentioned in connection with uncommitted intervention candidates, doctors’ visits for other reasons continue normally.

Annual follow-up visits

All intervenees are invited for annual follow-up visits. The same measurements and laboratory examinations (weight, BMI, waist circumference, blood pressure, OGTT, blood lipid analysis) performed in the beginning of the intervention stage are repeated.

6.2.5 Intervention and follow-up for individuals with recently diagnosed occult diabetes

Individuals diagnosed with occult diabetes incidental to the screening process are referred to a doctor according to standard treatment protocols. Their intervention counseling and annual follow-up procedures are similar to those of high risk individuals, except that the OGTT is not repeated.

Management of diabetes requires the use of many laboratory and clinical investigations including GHb-A1c, urine microalbumin measurement, and retina

scans. Results of these investigations are not entered into the project's data collection system, but rather into patient's normal medical records, from which they can be retrieved later if necessary. Follow-up for these patients is also conducted using other monitoring systems already in place.

6.2.6 Further education for health care personnel

All health care personnel participating in FIN-D2D will require additional training in order to be successful in the tasks of identifying high risk individuals, preventing T2D, and facilitating the timely treatment of occult T2D. Information is not enough. New skills in patient motivation, attitude changes among staff members, as well as a functioning model for evaluation and improving work protocols are all needed.

The goals of FIN-D2D staff training are as follows:

- To provide project workers with a solid understanding of the current views on T2D prevention and treatment
- To provide skills in screening for high risk individuals and identifying risk group members
- To develop both individual and group counseling skills
- To improve the quality of early care for T2D patients in primary health care
- To provide cooperation skills that facilitate interaction between workers from different disciplines
- To teach self-evaluation and self-development skills
- To keep workers up to date with all aspects of the project

The training curriculum varies from area to area and is tailored to complement the existing skills of workers, as determined by local surveys for this purpose. The curriculum may and should be changed if new needs arise, and the preferences and expectations of the workers should also be considered.

Training is provided by local players, including adult education experts, group counseling consultants, vocational schools, and universities. Coordination of these activities is the joint responsibility of the Regional Expert Committee and the Regional Coordinator.

6.3 The data collection system

In support of both The High Risk Strategy and The Early Diagnosis and Treatment Strategy FIN-D2D gathers comprehensive data on individuals with high risk for T2D (See Appendix 10 - data collection forms, pages 37–52). This data serves as a tool for defining diabetes and pre-diabetes, facilitates risk factor evaluation and intervention planning, and provides benchmark and end-point information for project evaluation purposes. Data on patients with moderate (7–14 points with FINDRISC) risk for T2D are also collected, though to a lesser extent (see Appendix 11, page 53). Data will be recorded on paper until the computer-based ProWellness data collection system becomes fully operational.

The National Public Health Institute assembles process information from each participating hospital district on an annual basis.

7. Project evaluation

Responsibility for evaluation of the effectiveness of FIN-D2D rests with the National Public Health Institute. The evaluation criteria have been approved by the project's Steering Committee. The primary goal of project evaluation is to determine the effectiveness of lifestyle counseling with respect to risk reduction for T2D among high risk individuals. Another goal is to compare any eventual changes in the

prevalence of diabetes and/or risk factors for diabetes in the project area with the control group (i.e. the FINRISK 2002 population survey area – see Figure 6, page 61). Reference studies and surveys used in the FIN-D2D evaluation process are shown in Table 2 and their lifespans relative to FIN-D2D are shown in Figure 7 (page 62). Research plans for these studies and surveys are available separately.

Table 2. References used in the evaluation of FIN-D2D

- FINRISK 2002 population survey
- FIN-D2D benchmark study on public awareness for T2D risk factors (2003)
- FIN-D2D population survey (2004)
- FIN-D2D high risk cohort study and follow-up (2004–2007)
- Local process information analysis (2004–2007)*
- Local process information and cost-effectiveness subsample analysis (2005–2007)*
- Health Behaviour among the Finnish Adult Population study (awareness of the FIN-D2D) (2004–2007)*
- FIN-D2D population survey (2007)
- FINRISK 2007 population survey
- FIN-D2D benchmark study on public awareness for T2D risk factors (2007)
- FINRISK 2002 high risk cohort study follow-up (2007)
- Public register information – The Finnish National Health Institute and the National Research and Development Center for Welfare and Health's online statistics archive (2007)

* repeated annually

Specific goals of FIN-D2D evaluation:

1. To monitor the incidence of T2D in high risk individuals

In FIN-D2D areas data are collected on the incidence of T2D and the less severe glucose metabolism disorders IGT and IFG among high risk individuals. High risk individuals are identified and referred to

the primary health care system for intervention in the form of lifestyle modification counseling (based on the methods used in the Finnish Diabetes Prevention Study) with the aim of reducing their risk for diabetes. High risk individuals consenting to intervention form a cohort which will be

followed until the year 2007. Their annual OGTT results will be used to determine the incidence of glucose metabolism disorders during the follow-up period.

Participants from the FINRISK 2002 survey will serve as the control group. These were 45–74 years of age at the time of their OGTT, and the test will be repeated on the same individuals in 2007. Thus it is possible to compare the incidence of T2D in FIN-D2D areas with the incidence of T2D in non-participating areas. Additionally, persons with diabetes are entitled to subsidized diabetes medication, so by checking drug reimbursement records from the Social Insurance Institute, it is possible to geographically monitor the initiation of medical treatment for diabetes throughout the entire country.

2. To monitor change in the prevalence of T2D and IGT

Benchmark prevalence of T2D and IGT can be ascertained from the subsample OGTT results of the FINRISK 2002 survey and from the FIN-D2D population survey OGTT results from 2004–2005. As OGTT will be repeated on a new independent random sample in connection with the FINRISK 2007 survey, it will be possible to determine any change in the prevalence of T2D and the less severe glucose metabolism disorders IGT and IFG.

3. To monitor change in the prevalence of occult diabetes.

FIN-D2D seeks to identify individuals with occult diabetes. In the process of screening the population for high risk individuals, previously undiagnosed asymptomatic diabetes is occasionally encountered and these individuals are referred to their own inter-

vention programme. Using the data from the FINRISK and FIN-D2D population surveys, it is possible to compare changes in the prevalence of occult diabetes between project and control areas.

4. Changes in the prevalence of the most important risk factors for diabetes and public awareness of them.

As both the FINRISK and the FIN-D2D population surveys provide comprehensive data on T2D risk factors, the prevalence of these factors can be monitored. The annual Health Behaviour among the Finnish Adult Population study gathers self reported information on weight, height, physical activity, and eating habits, together with information about public awareness for the FIN-D2D project. Combined with the results of the FIN-D2D benchmark study on public awareness for T2D risk factors (2003) and its follow-up survey in 2007, it will be possible to assess change in public awareness for T2D risk factors over the lifespan of the project.

5. Process evaluation

All project-related diabetes prevention activity is systematically monitored. The evaluation process involves area-specific information on the availability and use of the various forms of intervention, the priority status the project enjoys in relation to other activities, local project resource information, and staff training matters both in-house and outside. Additionally, any project related changes in organization of primary health care or its resource allocations are considered. Data collection is carried out using structured process evaluation forms, which are completed by regional coordinators, health care units, and chief doctors.

6. Cost effectiveness

Costs incurred in the process of identifying high risk individuals and the intervention activities are calculated on the basis of a sample from the FIN-D2D area, which is followed for the entire lifespan of the project. In this instance the parameter of life quality will be used. A questionnaire

survey will be used to collect comparable data from the FINRISK 2002 OGTT cohort with high risk for T2D. The cost effectiveness analysis will be carried out in collaboration with the University of Helsinki.

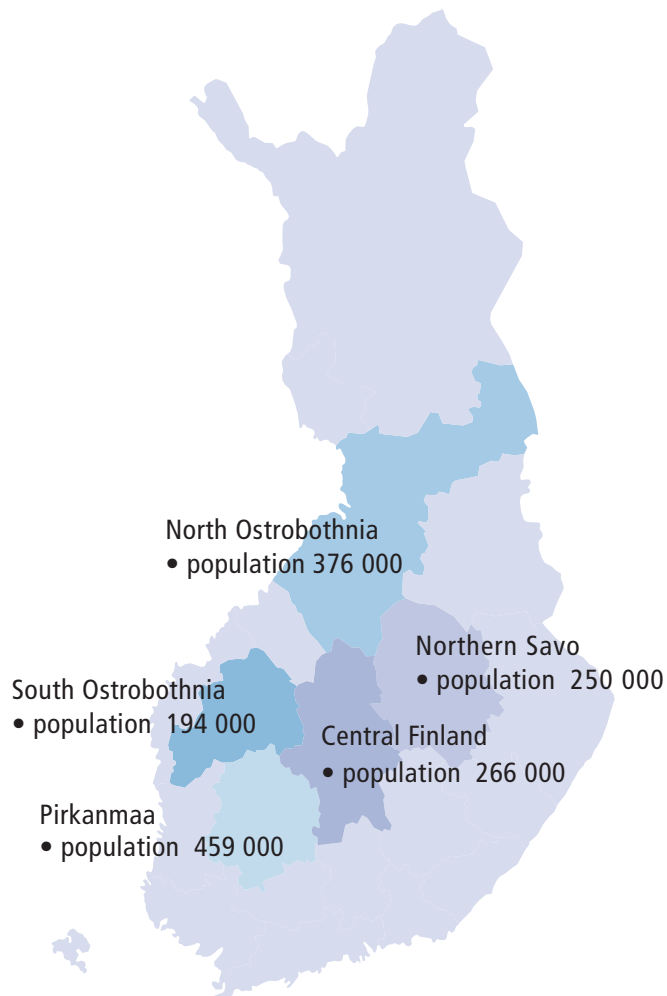
Bibliography

1. Decode study group. Age- and sex-specific prevalences of diabetes and impaired glucose regulation in 13 European cohorts. *Diabetes Care* 2003; 26:61–69
2. Pan XR, Li GW, Hu YH, et al. Effects of diet and exercise in preventing NIDDM in people with impaired glucose tolerance. The Da Qing IGT and Diabetes Study. *Diabetes Care* 1997; 20: 537–544
3. Tuomilehto J, Lindström J, Eriksson JG, et al. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *N Engl J Med* 2001; 344:1343–1350
4. Knowler WC, Barret-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med* 2002; 346:393–403
5. Finnish Diabetes Association. Development Programme for the Prevention and Care of Diabetes in Finland 2000–2010, Finnish Diabetes Association 2001
6. Finnish Diabetes Association. Programme for the Prevention of Type 2 Diabetes in Finland 2003–2010, Finnish Diabetes Association 2003
7. Lindström J, Tuomilehto J. The diabetes risk score: a practical tool to predict type 2 diabetes risk. *Diabetes Care* 2003; 26:725–731
8. World Health Organization. Definition, diagnosis and classification of diabetes mellitus and its complications. Part 1: Diagnosis and classification of diabetes mellitus, Geneva, WHO, 1999
9. Funnell MM, Anderson RM, Arnold MS, et al. Empowerment: an idea whose time has come in diabetes education. *Diabetes Educ* 1991; 17:37–41
10. Timonen M, Laakso M, Jokelainen J, et al. Insulin resistance and depression: cross sectional analysis. *BMJ* 2005;330:17–18
11. Decode Study Group. Glucose tolerance and mortality: comparison of WHO and American Diabetes Association diagnostic criteria. The DECODE study group. European Diabetes Epidemiology Group. *Diabetes Epidemiology: Collaborative analysis of Diagnostic criteria in Europe*. *Lancet* 1999;354:617–621
12. Decode Study Group. Glucose tolerance and cardiovascular mortality: comparison of fasting and 2-hour diagnostic criteria. *Arch Intern Med* 2001;161:397–405
13. Britt E, Hudson SM, Blampied NM. Motivational interviewing in health settings: a review. *Patient Educ Couns* 2004; 53:147–155
14. Aittasalo M, Miilunpalo S, Kukkonen-Harjula K, et al. A randomized intervention of physical activity promotion and patients self-monitoring in primary health care. *Prev Med* 2006; 42: 40–6

Appendixes

Appendix 1

FIN-D2D participating hospital districts



Appendix 2

Demographies and the prevalence of drug treated type 2 diabetes

FIN-D2D project areas in year 2004. Data on population are from Statistics Finland, and data on medication reimbursement are from the Social Insurance Institution of Finland.

Hospital district	Population	Women %	0–14 years %	15–64 years %	≥ 64 years %	Reimbursement for T2D medication	
						n	Prevalence
Pirkanmaa	462,766	51,2	16,9	66,8	16,2	14 576	3,1
Central Finland	267,182	50,8	17,3	66,2	16,5	9 038	3,4
South Ostrobothnia	194,589	50,4	18,1	63,4	18,5	7 659	3,9
North Ostrobothnia	378,679	49,7	20,8	65,7	13,4	11 604	3,1
Northern Savo	249,501	50,8	16,7	65,4	17,8	8 932	3,6
Whole country	5 236,611	51,1	17,5	66,7	15,9	161 305	3,1

Appendix 3

Project participation by hospital district in the FIN-D2D

Hospital district	Single municipality health care center	Joint municipality health care center	Employer-provided health care centers (public)	Employer-provided health care centers (private)	Participation rates in FIN-D2D (%)		
					Municipalities and joint municipalities	Employer-provided health care (public)	Employer-provided health care (private)
Pirkanmaa	23	4	26	29	85	81	21
Central Finland	30	7	20	22	100	100	100
South Ostrobothnia	11	5	22	11	100	100	100
North Ostrobothnia	25	4	25	16	100	100	50
Northern Savo	23	5	20	24	91	85	50
Total	112	25	113	102	95,2	93,2	64,2

Appendix 4

Incurred costs 2003–2006 in the FIN-D2D

EUR 1 000	HD 2003	DA 2003	NPHI 2003	HD 2004	DA 2004	NPHI 2004	HD 2005	DA 2005	NPHI 2005	HD 2006 proposed	DA 2006 proposed	NPHI 2006 proposed
Personnel costs	199,3	109,9	15,1	608,7	314,7	29,8	501,1	367,1	54,9	589	391	105,8
Other expenses	144,6	46,0		359,9	62,5	113,6	525,9	65,3	69,0	771	84	65,9
Total expenditures	343,9	155,9	15,1	968,6	1 377,2	143,4	1 027,0	432,4	123,9	1 360	475	171,7
Financing 2003–2006 EUR 1 000												
Hospital Districts/own contribution	174,4			477,3			486,2			710		
Hospital Districts/MSAH funding	169,5			491,3			540,8			650		
Diabetes Association/FCHP funding		50,0			48,0			50,0			50	
Diabetes Association/FSMA funding		105,4			324,3			373,8			425	
National Public Health Institute				15,1			105,0		88,8			152,6
Other sources					1,2	38,4		7,4	35,2			19,2
Total	343,9	155,4	15,1	968,6	373,5	143,4	1 027,0	431,2	124,0	1 360	475	171,7

HD 2003–2004: Pirkanmaa, Central Finland, South Ostrobothnia, North Ostrobothnia

HD 2005–2006: Pirkanmaa, Central Finland, South Ostrobothnia, North Ostrobothnia, Northern Savo

HD Hospital Districts
DA Finnish Diabetes Association
NPHI National Public Health Institute
MSAH Ministry of Social Affairs and Health
FCHP Finnish Centre for Health Promotion
FSMA Finland's Slot Machine Association

Appendix 5

Declaration of Participation in the type 2 diabetes prevention programme

Name of participating health care provider

*will participate in the FIN-D2D Type 2 Diabetes
Prevention Programme 2003–2007 coordinated
by the Finnish Diabetes Association*

Signature

Signature

Type or use block letters

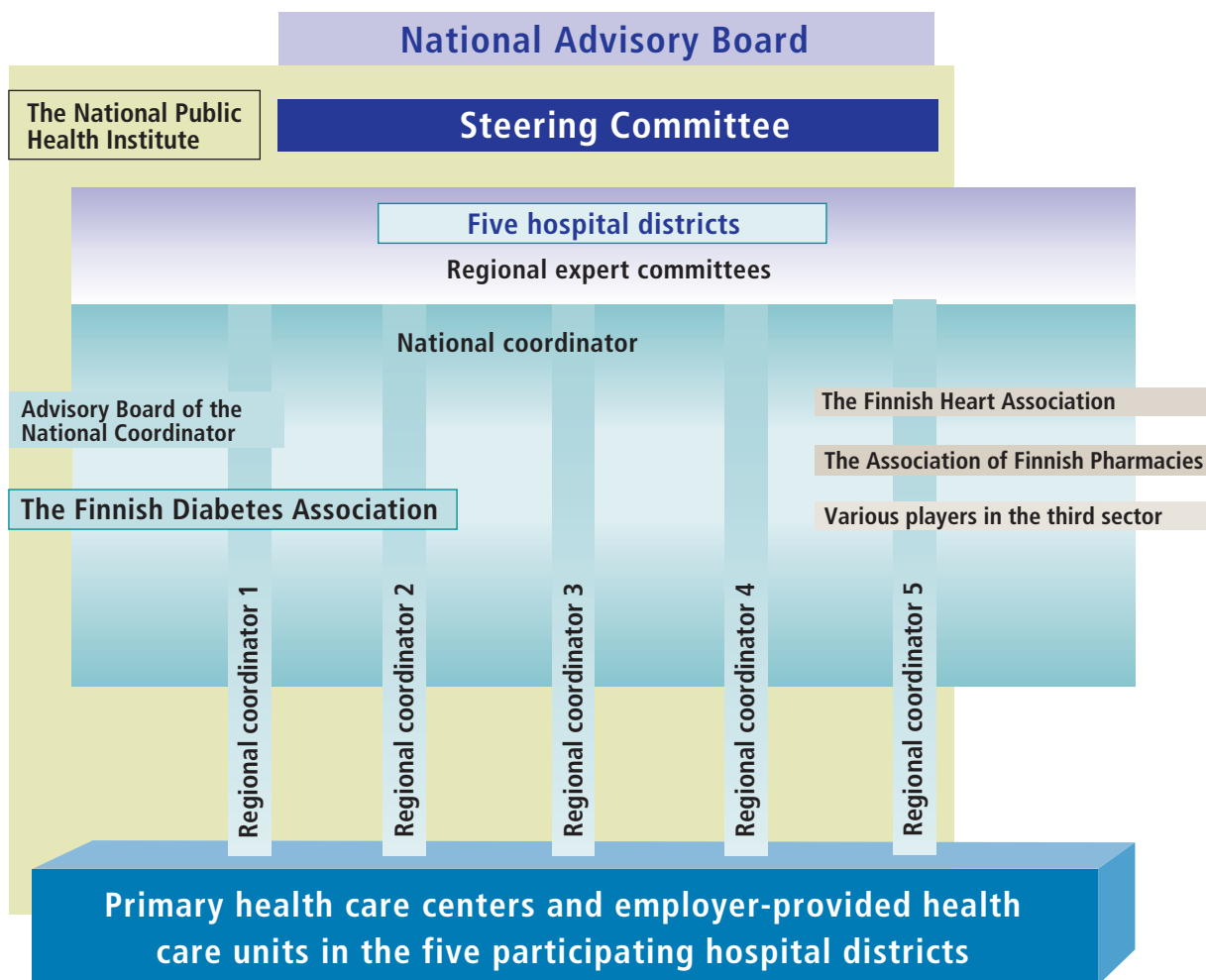
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Place and date

Place and date

Appendix 6

Project organization



Appendix 7



TYPE 2 DIABETES RISK ASSESSMENT FORM

Circle the right alternative and add up your points.

1. Age

- 0 p. Under 45 years
2 p. 45–54 years
3 p. 55–64 years
4 p. Over 64 years

2. Body-mass index

(See reverse of form)

- 0 p. Lower than 25 kg/m²
1 p. 25–30 kg/m²
3 p. Higher than 30 kg/m²

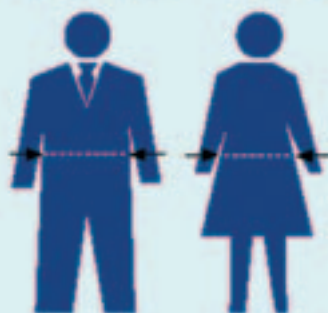
3. Waist circumference measured below the ribs (usually at the level of the navel)

MEN

- 0 p. Less than 94 cm
3 p. 94–102 cm
4 p. More than 102 cm

WOMEN

- Less than 80 cm
80–88 cm
More than 88 cm



4. Do you usually have daily at least 30 minutes of physical activity at work and/or during leisure time (including normal daily activity)?

- 0 p. Yes
2 p. No

5. How often do you eat vegetables, fruit or berries?

- 0 p. Every day
1 p. Not every day

6. Have you ever taken antihypertensive medication regularly?

- 0 p. No
2 p. Yes

7. Have you ever been found to have high blood glucose (eg in a health examination, during an illness, during pregnancy)?

- 0 p. No
5 p. Yes

8. Have any of the members of your immediate family or other relatives been diagnosed with diabetes (type 1 or type 2)?

- 0 p. No
3 p. Yes: grandparent, aunt, uncle or first cousin (but no own parent, brother, sister or child)
5 p. Yes: parent, brother, sister or own child

Total Risk Score

☐ The risk of developing type 2 diabetes within 10 years is

Lower than 7 Low: estimated 1 in 100 will develop disease

7–11 Slightly elevated: estimated 1 in 25 will develop disease

12–14 Moderate: estimated 1 in 6 will develop disease

15–20 High: estimated 1 in 3 will develop disease

Higher than 20 Very high: estimated 1 in 2 will develop disease

Please turn over



WHAT CAN YOU DO TO LOWER YOUR RISK OF DEVELOPING TYPE 2 DIABETES?

You can't do anything about your age or your genetic predisposition. On the other hand, the rest of the factors predisposing to diabetes, such as overweight, abdominal obesity, sedentary lifestyle, eating habits and smoking, are up to you. Your lifestyle choices can completely prevent type 2 diabetes or at least delay its onset until a much greater age.

If there is diabetes in your family, you should be careful not to put on weight over the years. Growth of the waistline, in particular, increases the risk of diabetes, whereas regular moderate physical activity will lower the risk. You should also pay attention to your diet: take care to eat plenty of fibre-rich cereal products and vegetables every day. Omit excess hard fats from your diet and favour soft vegetable fats.

Early stages of type 2 diabetes seldom cause any symptoms. If you scored 12–14 points in the Risk Test, you would be well advised to seriously consider your physical activity and eating habits and pay attention to your weight, to prevent yourself from developing diabetes. Please contact a public-health nurse or your own doctor for further guidance and tests.

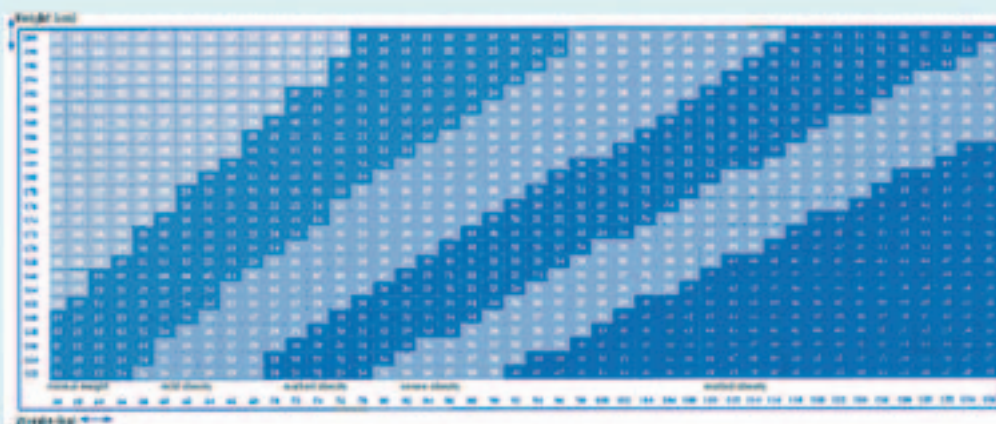
If you scored 15 points or more in the Risk Test, you should have your blood glucose measured (both fasting value and value after a dose of glucose or a meal) to determine if you have diabetes without symptoms.

BODY-MASS INDEX

The body-mass index is used to assess whether a person is normal weight or not. The index is calculated by dividing body weight (kg) by the square of body height (m). For example, if your height is 165 cm and your weight 70 kg, your body-mass index will be $70/(1.65 \times 1.65)$, or 25.7.

If your body-mass index is 25–30, you will benefit from losing weight; at least you should take care that your weight doesn't increase beyond this. If your body-mass index is higher than 30, the adverse health effects of obesity will start to show, and it will be essential to lose weight.

BODY-MASS INDEX CHART



Appendix 8

Patient instructions for the oral glucose tolerance test

Appointment date ____/____/20____ time ____:____

Please allow 2½ hours for the test.

Your blood sugar will be measured

The glucose tolerance test is used to diagnose blood sugar disorders. The test measures your body's ability to maintain a normal level of sugar in the blood after taking sugar orally.

Eating raises your blood sugar

Do not eat anything for at least 12 hours prior to testing. You may drink water during the previous evening, and a glass of water is allowed on the morning of the examination. You may not however eat anything until after the test is completed.

Avoid alcohol before testing

The use of alcohol is strictly forbidden for a full 24 hours prior to testing. Alcohol will change your blood sugar level and render test results useless.

Physical activity and testing

Avoid strenuous physical activity (that causes sweating) for a full 24 hours prior to testing. Strenuous physical activity will change your blood sugar level and render test results useless.

Usually two blood samples are taken

After the first sample, you will be given something sweet to drink. A second sample will be taken after two hours. Occasionally an additional sample is taken after the first hour. You are requested to remain in the laboratory department for the duration of the test.

Feel free to ask if you have any questions

For further information call _____.

Please use the telephone number above if you need to reschedule your appointment.

Adapted from the patient instructions used by the laboratory department of the Tampere University Hospital.

Appendix 9

Diagnostic criteria for glucose metabolism disorders

Blood glucose (mmol/l) fasting and 2 h after a 75 g oral glucose load (WHO 1999)

		Plasma venous	Plasma capillary	Whole blood venous	Whole blood capillary
Normal	fasting value 2 h value	≤ 6.0 ≤ 7.7	≤ 6.0 ≤ 8.8	≤ 5.5 ≤ 6.6	≤ 5.5 ≤ 7.7
Impaired fasting glucose (IFG)	fasting value 2 h value	6.1–6.9 < 7.8	6.1–6.9 < 8.9	5.6–6.0 < 6.7	5.6–6.0 < 7.8
Impaired glucose tolerance (IGT)	fasting value 2 h value	< 7.0 7.8–11.0	< 7.0 8.9–12.1	< 6.1 6.7–9.9	< 6.1 7.8–11.0
Diabetes mellitus	fasting value 2 h value	≥ 7.0 ≥ 11.1	≥ 7.0 ≥ 12.2	≥ 6.1 ≥ 10.0	≥ 6.1 ≥ 11.1

Appendix 10

FIN-D2D, Basic questionnaire

Location code _____

1. Name _____

2. Identity number

_____ – _____

3. Date (dd/mm/yy, e.g. 101005)

d d m m y y

4. What is your marital status?

1. married
2. cohabiting
3. single
4. separated or divorced
5. widow

5. What is your education?

1. elementary school, basic education
2. lower secondary education
3. vocational school or similar
4. upper secondary education or high school
5. non-university lower education
6. non-university higher education
7. university education

6. What kind of work do you do most of the year?

1. farming, cattle minding, forestry, farmer's wife
2. factory, mining, building or other similar work
3. office work, service profession, mental work (planning, designing, administrative, director, consultant or similar)
4. studying or going to school
5. home maker, mother at home, house wife
6. pensioner
7. unemployed

HEALTH STATUS

7. Have you ever been diagnosed with diabetes?

1. no
2. yes
3. yes, gestational diabetes

SMOKING

14. Have you ever smoked?

- ☐ no
☐ yes

15. Do you smoke now?

- ☐ not at all
☐ yes, occasionally
☐ yes, daily

16. If you smoke daily, how much you smoke per day (Use numbers)?

- ☐ cigarettes _____ per day
☐ pipe loads _____ per day
☐ cigars _____ per day

17. Do you use snuff?

- ☐ not at all
☐ yes, occasionally
☐ yes, daily
 I use _____ portions of snuff per day

18. Have you planned to quit smoking or using snuff?

1. No, I will not quit
2. Yes, I am planning to quit
3. Yes, I have tried to cut down / quit
4. I do not smoke/use snuff

EXERCISE AND OTHER PHYSICAL ACTIVITY

19. How demanding is your work physically? The activity at work is divided into four groups.
 If you do not work mark 1.

1. My work is mainly done sitting down and I do not walk much during my working hours (e.g. a clocksmith, radio mechanic and industrial seamstress, office work at a desk).
2. I walk quite much in my work, but I do not have to lift or carry heavy objects (e.g. a foreman, store assistant, light industrial worker, office work which requires walking).
3. I have to walk and lift much or to take the stairs or go uphill (e.g. a carpenter or cattle minder/dairy work, engineering shop or other heavier industrial work).
4. My work is heavy manual labor in which I have to lift or carry heavy objects, dig, shovel or split wood (e.g. forestry, heavy farm work, heavy construction or industrial work).

20. How many minutes do you spend daily walking, jogging, bicycling (or similar) to get to and from your workplace?

1. I do not work or I use only a motorised vehicle
2. Less than 15 minutes daily
3. 15 - 29 minutes daily
4. 30 - 44 minutes daily
5. 45 - 59 minutes daily
6. Over an hour daily

- 21. How much physical exercise do you get in your leisure time?** If it varies much according to different seasons, mark the alternative which best describes the average situation.
1. In my leisure time I read, watch TV, and perform household tasks which do not require much movement.
 2. In my spare time I walk, cycle or exercise otherwise at least 4 hours per week. This includes walking, fishing and hunting, light gardening etc. but excludes travel to work.
 3. In my spare time I exercise to maintain my physical condition, e.g. running, jogging, skiing, gymnastics, swimming, playing ball games or I do heavy gardening or the like for at least 3 hours per week.
 4. In my spare time I regularly exercise several times a week competitive sports such as running, orienteering, skiing, swimming, ball games or other sports.
- 22. How many times a week do you exercise in your free time so that you at least are mildly out of breath and sweaty?** (if not at all, mark 0.)

_____ times a week

23. How long does your usual leisure time activity take?

1. I do not exercise in my free time
 2. Less than 15 minutes
 3. 15 - 29 minutes
 4. 30 - 59 minutes
 5. One hour or longer
- 24. During your leisure time how many minutes do you spend daily walking, cycling or engage in a hobby that requires moving about (yard work or gardening, fixing or cleaning the house)?**
Do not count in the activity needed at work (question 19), traveling to work (question 20) or leisure time sports (questions 22 and 23).

1. Less than 15 minutes per day
2. 15-29 minutes per day
3. 30-44 minutes daily
4. 45-59 minutes daily
5. Over an hour per day

25. How do you consider your current physical condition?

1. Very good
2. Quite good
3. Fair
4. Quite poor
5. Very poor

26. Do you think that you exercise enough to maintain your current physical condition or health?

1. Yes
2. No

27. Have you increased your physical activity during the past year?

1. I have not / I will not increase in the near future
2. I have not, but I am planning to do so in the near future
3. I have tried to increase
4. I have increased
5. My physical activity level is already adequate

NUTRITION

28. How many meals and snacks in all do you eat on an average weekday? Snack is e.g. fruit, chocolate bar, sandwich, juice, beer.

1. 1-2 meals and snacks
2. 3-4 meals and snacks
3. 5-6 meals and snacks
4. 7 or more

29. How many times a week do you eat the following foods?

1. Fish _____ times (e.g. baked fish, fried Baltic herrings, fish soup, herring)
2. Sausage _____ times (e.g. baked sausage, sausage soup, sausage sauce)
3. Poultry _____ times (e.g. grilled chicken, chicken fricassee, chicken salad)
4. Beef/pork/liver dishes _____ times (e.g. meat soup, meatballs, pork chop, liver casserole, steak)
5. Vegetable dishes _____ times (e.g. vegetable soup, vegetable salad, spinach pancakes)

30. How much fastfood do you eat? One serving is e.g. hamburger, meat pie, a piece of pizza, 1 deciliter of potato chips, popcorn or salted nuts.

1. Serving or more per day
2. 4-6 servings a week
3. 1-3 servings a week
4. 1-3 servings in a month
5. Less than 1 serving in a month or none

31. What kind of fat or oil is most often used in your household when cooking? (Circle only one alternative)

1. Mostly vegetable oil
2. Margarine spread with 60-80 % fat
3. Vegetable sterol margarine (e.g. Benecol)
4. Cooking margarine
5. Butter-vegetable oil mixture
6. Butter
7. No fat at all/ there is no cooking at home

32. What kind of cream or cream-like product is most often used in your household when cooking? Circle only one alternative.

1. Cream-like product with vegetable fat or soy cream
2. Yoghurt for food preparation (6% fat)
3. Cream for food preparation, crème fraîche, cultured half cream with fat < 15%
4. Whipping cream, crème fraîche or sour cream with fat > 15%
5. None/there is no cooking at home

33. How much vegetables (such as leaf, fruit and root vegetables) do you eat? One portion is e.g. 1 deciliter of salad with carrot/swede or cooked root vegetables, 1 medium-sized carrot or 2 tomatoes.

1. 2 portions or more per day
2. 1 portion per day
3. 4-6 portions a week
4. 1-3 portions a week
5. Less than 1 portion a week or none

34. Do you usually use salad dressing?

1. No
2. A dressing based on vegetable oil
3. A dressing based on juice
4. A dressing based on cultured half cream or yogurt
- 5.

35. How much fruits or berries do you eat? One portion is 1 medium-sized fruit or 2 deciliters of berries.

1. 2 portions or more per day
2. 1 portion per day
3. 4–6 portions a week
4. 1–3 portions a week
5. less than 1 portion a week or none

36. How much liquid milk products (e.g. milks, soured milks, yogurt, cultured milks) per day do you consume? Answer in desiliters (1 glass = ca 2 deciliters, one jar = 1,25-2 deciliters).

1. Milk products with < 1 % fat: _____ deciliters
2. Milk products with 1-2 % fat: _____ deciliters
3. Milk products with 2-3 % fat: _____ deciliters
4. Milk products with >3 % fat or more: _____ deciliters
5. I do not usually use milk products

37. How much eat bread and other cereals do you usually per day? A slice of bread is about 30 gram.

1. _____ slices of rye- or crispbread
2. _____ slices of graham- or mixed grain bread or roll
3. _____ slices of white bread
4. _____ deciliters of porridge (e.g. rye-, oat- or wheat flake porridge)
5. _____ deciliters of breakfast cereals (e.g. corn flakes or rice crispies)
6. _____ deciliters of muesli
7. _____ slices of sweet bread

38. What kind of spread do you usually use on your bread? Circle only one alternative.

1. Margarine spread with 28-60% fat
2. Margarine spread with 70-80% fat
3. Vegetable sterol margarine (e.g. Benecol)
4. Butter-vegetable oil mixture
5. Butter
6. Nothing

39. How much cheese do you usually eat per day? A slice of cheese is about 10 gram.

1. _____ slices of cheese with < 20% fat
2. _____ slices of cheese with > 20% fat
3. _____ slices of cheese with vegetable fat
4. Less than a slice per day or none

40. How much cold cuts and sausages do you eat per day on average? A portion is about 10 gram.

1. _____ slices of cold cuts
2. _____ slices of sausages
3. _____ pieces of frankfurter or sausage for grilling
4. Less than a slice per day or none

- 41. How much of foods such as cakes and cookies, ice cream, puddings or chocolate do you eat daily on average?** One portion is e.g. a piece of pie, a small doughnut, 3-4 cookies, ice cream cornet, chocolate bar.
1. 2 portions or more per day
 2. 1 portion per day
 3. 4–6 portions a week
 4. 1–3 portions a week
 5. less than 1 portion a week or none
- 42. How much sugar, honey or candies do you eat?** On portion is e.g. 2 teaspoons of sugar or honey, 3 sugar lumps, 5 candies.
1. 2 portions or more per day
 2. 1 portion per day
 3. 4–6 portions a week
 4. 1–3 portions a week
 5. less than 1 portion a week or none
- 43. How much of the following beverages do you usually drink per week?** Mark "0" if none.
1. _____ cups of tea (1 cup = 2 deciliters)
 2. _____ cups of coffee (1 cup = 1 deciliters)
 3. _____ bottles of soft drink with sugar (1 bottle = 1/3 liters)
 4. _____ bottles of sugar-free soft drink (e.g. Coca Cola Light)
 5. _____ glasses of unsweetened juice (1 glass = about 2 deciliters)
 6. _____ glasses of juice with added sugar
 7. _____ bottles of beer, cider or other alcoholic beverages with similar alcohol content (<4,7 %)
 8. _____ bottles of beer, cider or other alcoholic beverages with similar alcohol content (>4,7 %)
 9. _____ glasses of wine (1 glass = 12 cl)
 10. _____ portions of spirits (e.g. vodka, whisky, gin, cognac etc. ; alcohol content 25-60%; 1 portion= 4 cl)
- 44. Have you reduced the amount of fat in your diet during the past year?** For example changed whole milk to skimmed milk, decreased the amount of spread on your bread or tried to choose foods with low-fat.
1. I have not / I will not in the near future
 2. I have not, but I intend to reduce fat intake in the near future
 3. I have tried to reduce
 4. I have reduced
 5. My diet is already low in fat
- 45. Have you changed the quality of fat used in your household cooking during the past year (saturated fat/unsaturated fat)?** For example started to use oil instead of household margarine when cooking, started to use low-fat margarine spread instead of butter on your bread or increased the amount of fish meals?
1. I have not / I will not change in the near future
 2. I have not, but I intend to change in the near future
 3. I have tried to change
 4. I have changed
 5. I have already used mainly unsaturated fat instead of saturated fat

46. Have you increased your consumption of vegetables, fruits and berries during the past year?

1. I have not / I will not increase in the near future
2. I have not, but I intend to increase in the near future
3. I have tried to increase
4. I have increased
5. I have already used a lot of vegetables, fruits and berries

47. Have you reduced your consumption of alcohol during the past year?

1. I have not / I will not reduce in the near future
2. I have not, but I intend to reduce in the near future
3. I have tried to reduce
4. I have reduced
5. I use very little alcohol or not at all

48. Have you lost weight during the past year?

1. I have not / I will not lose weight in the near future
2. I have not, but I intend to lose weight in the near future
3. I have tried to lose weight
4. I have lost weight
5. I am pleased with my present weight

49. Have you received counselling about healthy lifestyle (e.g. diet and exercise habits)?

1. No, I have not
2. Yes, I have
What kind of counselling ? _____

50. Do you need support, counselling or more information to help you achieve certain lifestyle changes (diet, exercise etc.)?

1. No
2. Yes, what kind of counselling or information? _____

FIN-D2D, DATA COLLECTION

1. Location code _____

2. Name _____

3. Identity number

_____ – _____

4. Type and date of visit (e.g. 101005)

d d m m y y

1. Visit 1:

2. Visit 2:

3. Annual examination:

4. Other visit, what:

5. Health care professionals present

1. Public health nurse
2. Nurse
3. Diabetes nurse (specialist)
4. Occupational health nurse
5. Physician
6. Someone else, who? _____

6. Diabetes Risk Test, total score:

7. Reason for referral to the FIN-D2D project:

1. Diabetes Risk Test
2. Myocardial infarction or other artery disease
3. Diagnosed earlier with impaired fasting glucose (IFG) or impaired glucose tolerance (IGT)
4. Gestational diabetes

8. Basic questionnaire has been filled in and checked

1. Yes
2. No

9. Medication

	In use
Medication for diabetes	
Acetylsalicylic acid (ASA)	
Medication to lower cholesterol	
Medication for high blood pressure	
Medication for coronary artery disease	
Medication for weight loss	
Nicotine replacement therapy	
Antidepressant	
Other medication for mental illness	

10. Height (cm, measured at visit)

11. Weight (kg, measured at visit)

_____ , _____ kg

12. BMI (kg/m2)

_____ , _____ , _____ , _____ , _____

13. Waistline (cm, measured at visit)

14. Blood pressure (mmHg, measured at visit)

1. First measurement

| | | | / | | |

2. Second measurement

_____ / _____

15. Oral glucose tolerance test (OGTT):

1. OGTT has been taken within 12 months prior to the first visit, or the person has been referred to the test. Mark down the date of OGTT and results (question 16)
2. Patient refuses the OGTT

16. Date of OGTT (dd/mm/yy, e.g. 101005), type of blood sample and OGTT values

d d m m y y

Blood sample:

venous ☐

capillary ☐

Method:

plasma ☐

whole blood ☐

serum ☐

glucose 0-h value (mmol/l)

,

glucose 2-h value (mmol/l)

,

17. Measurement of blood lipids:

1. Measurement of blood lipids has been taken within 12 month prior to the first visit, or the person has been referred to the laboratory test. Mark down the date of the test and results (question 18).
2. Patient does not want to go to the test of blood lipids.

18. Date of the measurement of blood lipids (dd/mm/yy) and results (LDL-value is calculatory).

d d m m y y

fS-Chol (mmol/l)

,

fS-HDL-Chol (mmol/l)

,

fS-Trigly (mmol/l)

,

19. Classification of glucose metabolism (based on the results of OGTT).

1. Normal
2. IFG (impaired fasting glucose)
3. IGT (impaired glucose tolerance)
4. Diabetes

20. Mapping and follow-up form for lifestyle changes

	NEED FOR CHANGE		STAGE OF READI- NESS FOR CHANGE			GOAL SETTING AND ACTION			
CRITERIA	No	Yes	Precontemplation	Contemplation	Preparation	Goal settled	Action	Maintenance	Relapse
BMI -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meal pattern -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount of dietary fat -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality of dietary fat -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salt -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fiber -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alcohol -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exercise -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smoking -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The three most essential goals (1-3 goals) set at this time (date dd/mm/yy):

1

2

3

21. Has a physical activity prescription been written earlier during a doctor visit?

1. No
2. Yes, and the physical activity prescription has been followed
3. Yes, but physical activity prescription has not been followed, why not? _____

4. Guidance has been given

22. Status of referral to the doctor

1. Person is already in a doctor's care
2. Person has been urgently referred to the doctor
3. Person has referred to the doctor within the recommended time span
4. Person refuses to see a doctor

23. Forms of intervention settled with high risk person (one or more alternatives)

1. Group intervention in public health care
2. Individual intervention in public health care
3. Independent, what? _____
4. Other intervention in public health care unit, what? _____
5. Self help group
6. Other group outside of public health care, what? _____
 (e.g. licensed dietician, Weight Watchers)
7. Other intervention, what? _____
8. Person refuses intervention
9. There is no appropriate intervention method available

24. The time of the next visit is scheduled

1. Yes
2. No
3. The person refuses to schedule a follow-up visit

FIN-D2D, DOCTOR VISIT

1. Location code

2. Name

3. Identity number

_____ - _____

4. Date of visit (d/m/y, e.g. 101005)

d d m m y y

5. Classification of glucose metabolism (based on results of OGTT)

1. Normal
2. IFG (impaired fasting glucose)
3. IGT (impaired glucose tolerance)
4. Diabetes

6. Diabetes complications (diagnosed earlier or during this visit)

	Yes
Coronary artery disease	
Cerebral artery disease	
Peripheral artery disease	
Retinopathy	
Neuropathy	
Nephropathy	
Foot problem	

7. New prescriptions during this visit

	Started during the visit
Medication for diabetes	
Acetylsalicylic acid (ASA)	
Medication to lower lipid level	
Medication for blood pressure	
Medication for coronary artery disease	
Medication for weight reduction	
Nicotine replacement therapy	
Antidepressant	

8. The time of the next visit is scheduled

1. Yes
2. No
3. The person refuses to schedule a follow-up visit

FIN-D2D, INTERVENTION VISIT

Location code _____

1. Name

2. Identity number

--	--	--	--	--	--	--

 -

--	--	--	--	--

3. Date of visit (dd/mm/yy, e.g. 101005)

d d m m y y

--	--	--	--	--	--	--

4. Intervention:

1. Group counseling

1. Weight loss group (also diet group)

2. Exercise group

3. Group for quitting smoking

4. Other, what? _____

2. Individual counseling

5. Advisor/advisors

1. Public primary health care nurse

2. Employer-provided health care nurse

3. Other nurse

4. Diabetes nurse (specialist)

5. Doctor

6. Physiotherapist

7. Dietitian

8. Psychologist

9. Other, who? _____

6. Mapping and follow-up form for lifestyle changes

	NEED FOR CHANGE		STAGE OF READI- NESS FOR CHANGE			GOAL SETTING AND ACTION			
CRITERIA	No	Yes	Precontemplation	Contemplation	Preparation	Goal settled	Action	Maintenance	Relapse
BMI -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meal pattern -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount of dietary fat -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality of dietary fat -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salt -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fiber -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alcohol -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exercise -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smoking -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The three most essential goals (1-3 goals) set at this time (date dd/mm/yy):

- 1
- 2
- 3

Appendix 11

FIN-D2D Schedule for completing data collection forms

Individuals who received 7–14 points with FINDRISC (no intervention)

Required form:

FIN-D2D short visit

- completed by nurse or assistant

Risk group individuals retired to intervention

- 15 Points with FINDRISC
- gestational diabetes
- myocardial infarction or other ischemic event
- previously diagnosed IFG or IGT

First and second visit with nurse

Required forms:

FIN-D2D basic questionnaire form

- to be completed by the interveenee before first or second visit
- oral and written information how to fill in the questionnaire

FIN-D2D data collection form

- completed by nurse during both first and second visits with nurse

Intervention sessions, group or individual within primary health care

Required form:

FIN-D2D intervention visit form

- the group leader fills in one form per participant per visit

First visit with doctor

Required form:

FIN-D2D doctor visit form

- filled in by the doctor

Annual follow up visit with nurse

Required forms:

FIN-D2D basic questionnaire form

- filled in by interveenee before visit

FIN-D2D data collection form

- filled in by nurse

Annual follow up visit with doctor If necessary

Required form:

FIN-D2D doctor visit form

- filled in by the doctor

Figures

Figure 1. Screening, diagnostics and interventions in FIN-D2D

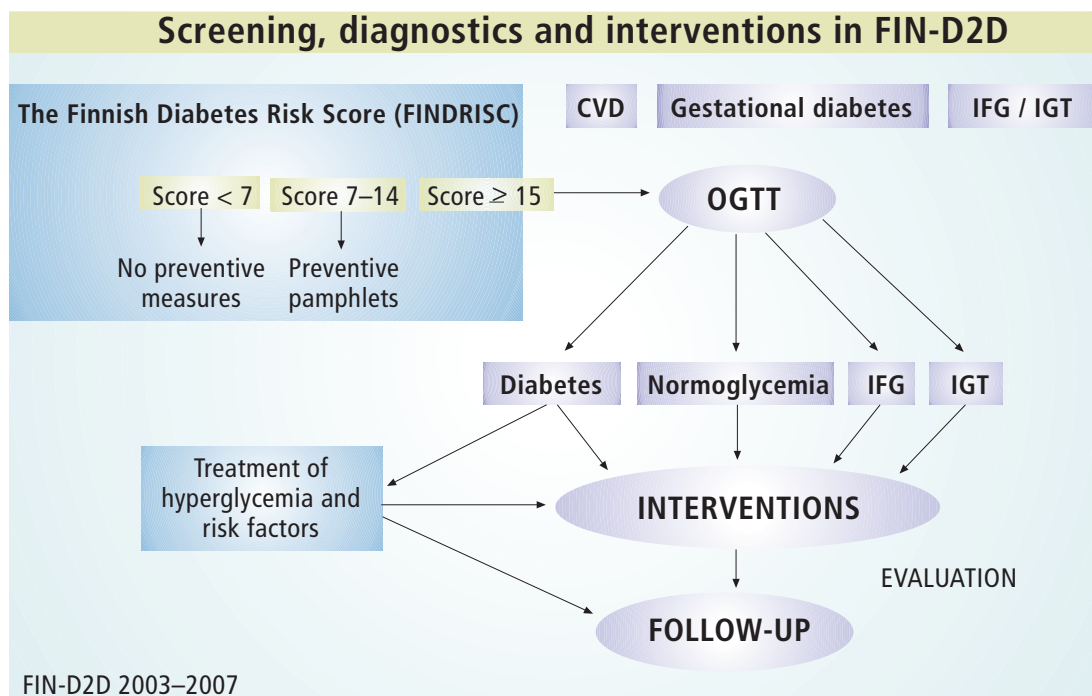
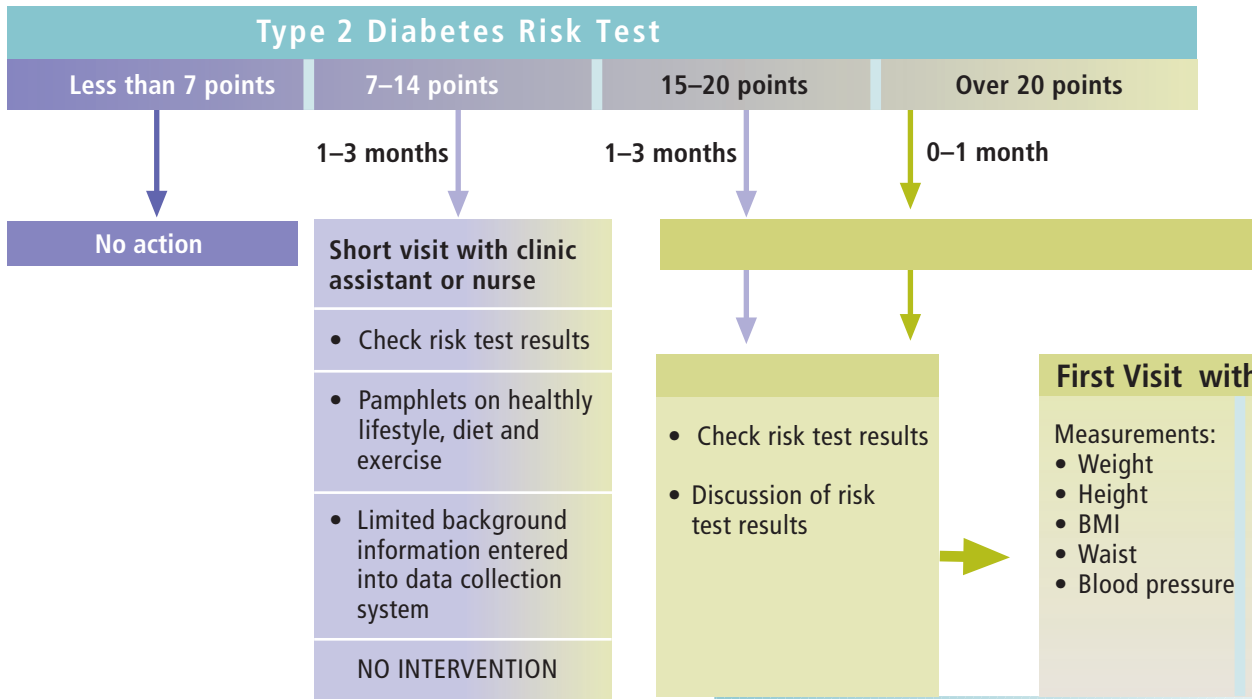


Figure 2. Intervention – first visit with nurse



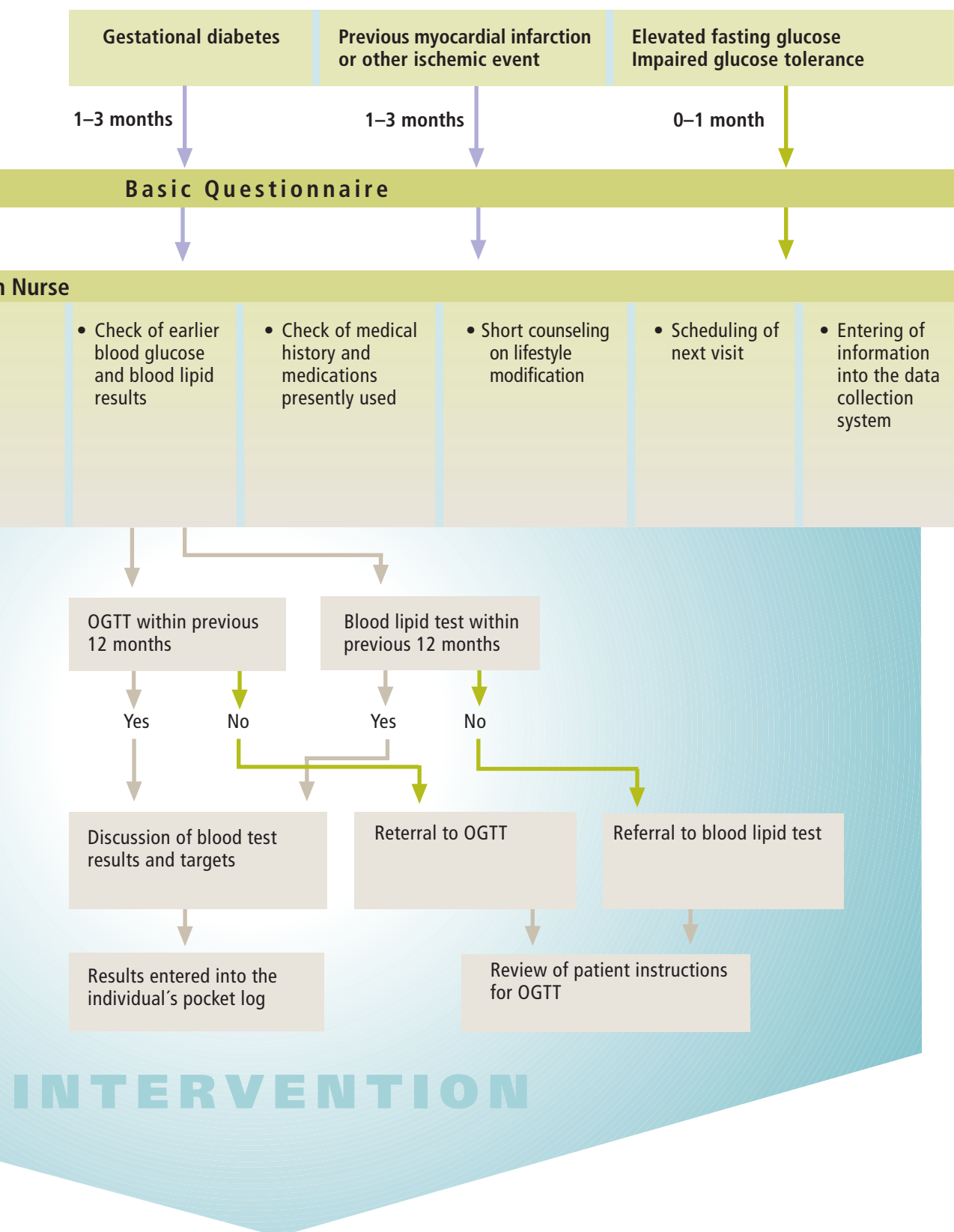
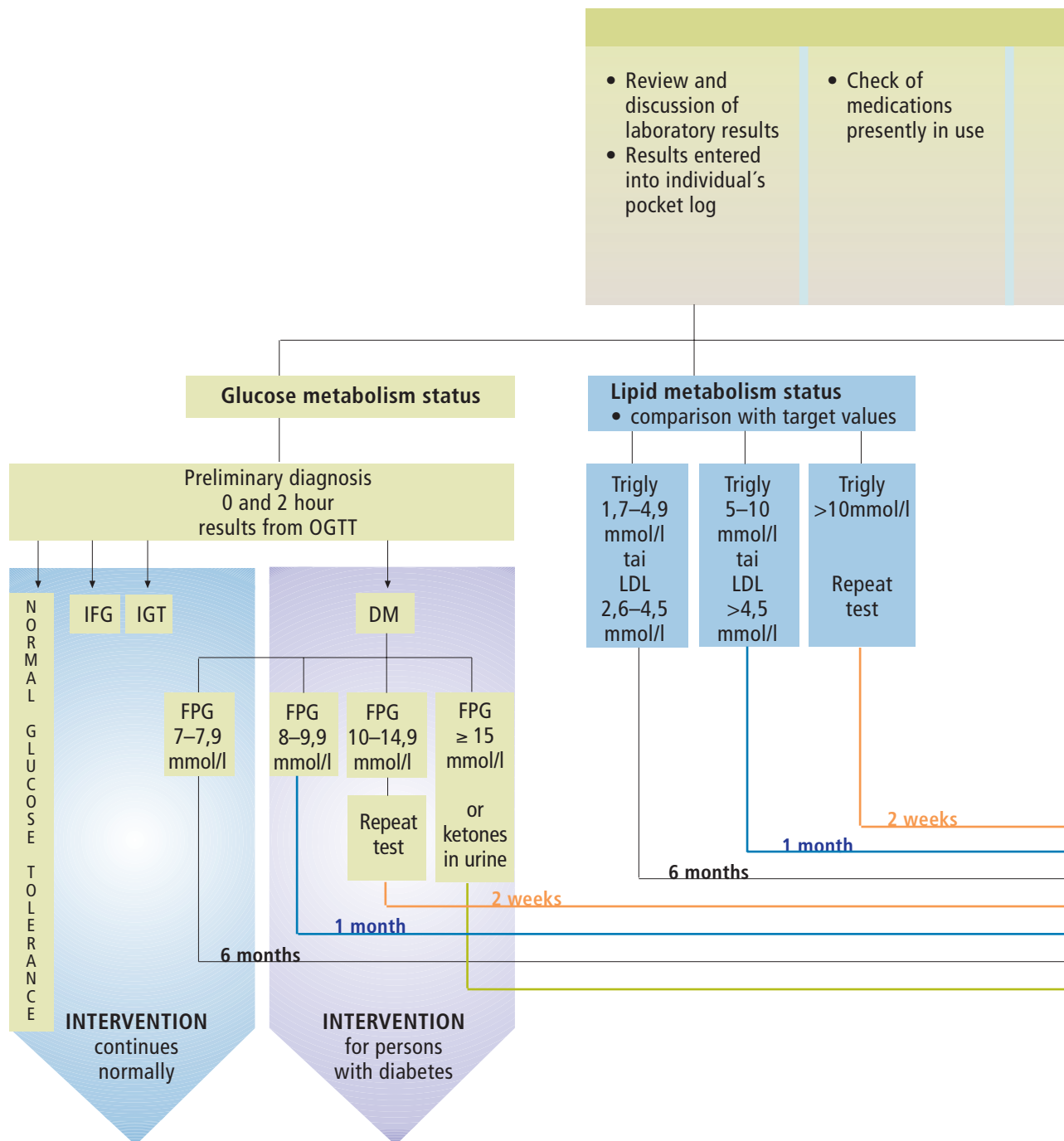


Figure 3. Intervention – 2nd visit with nurse



2nd visit with nurse

- Review of basic questionnaire
- Furthering of individual's knowledge about diabetes
- Assessment of the stage of readiness for change
- Check for physical activity prescription
- Scheduling of follow-up visits
- Writing down of targets, contracts and plans
- Entering of information into the data collection system

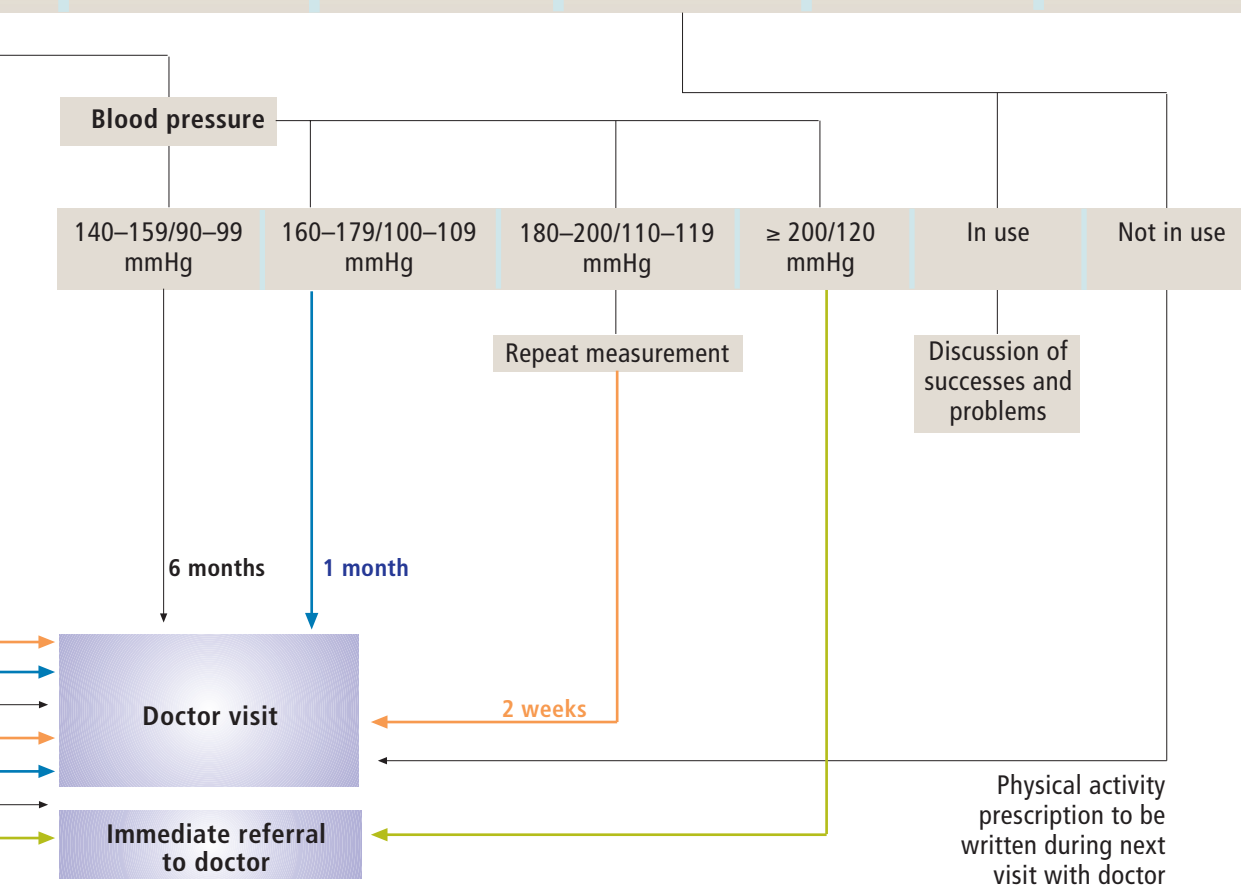


Figure 4. FIN-D2D interventions

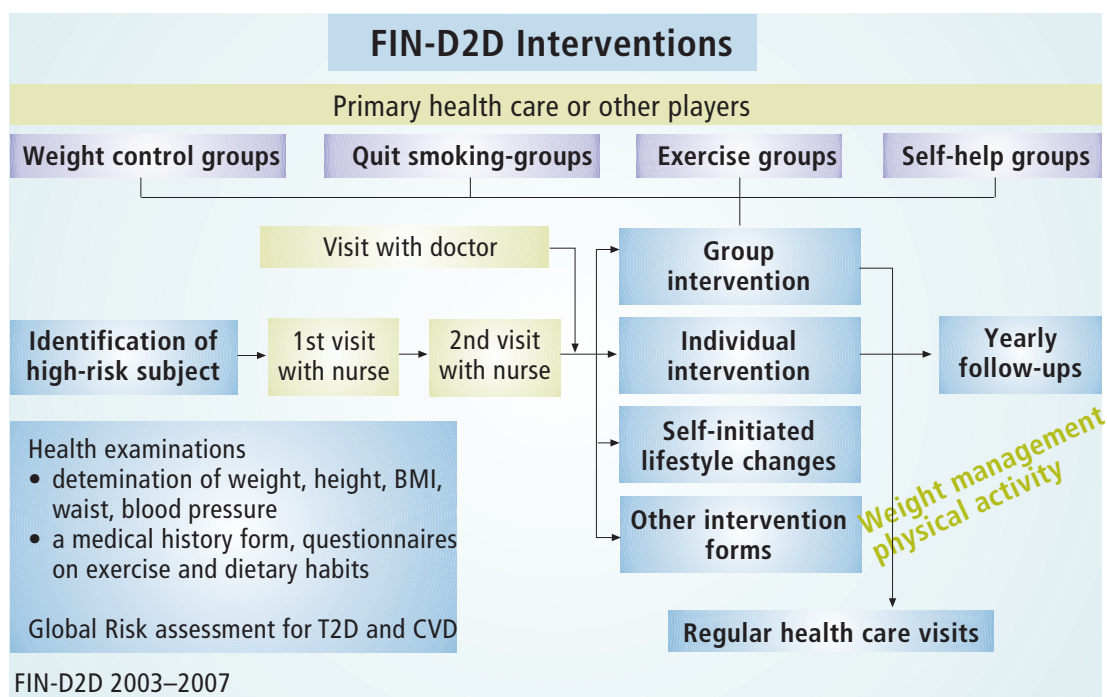


Figure 5. Group Intervention Model

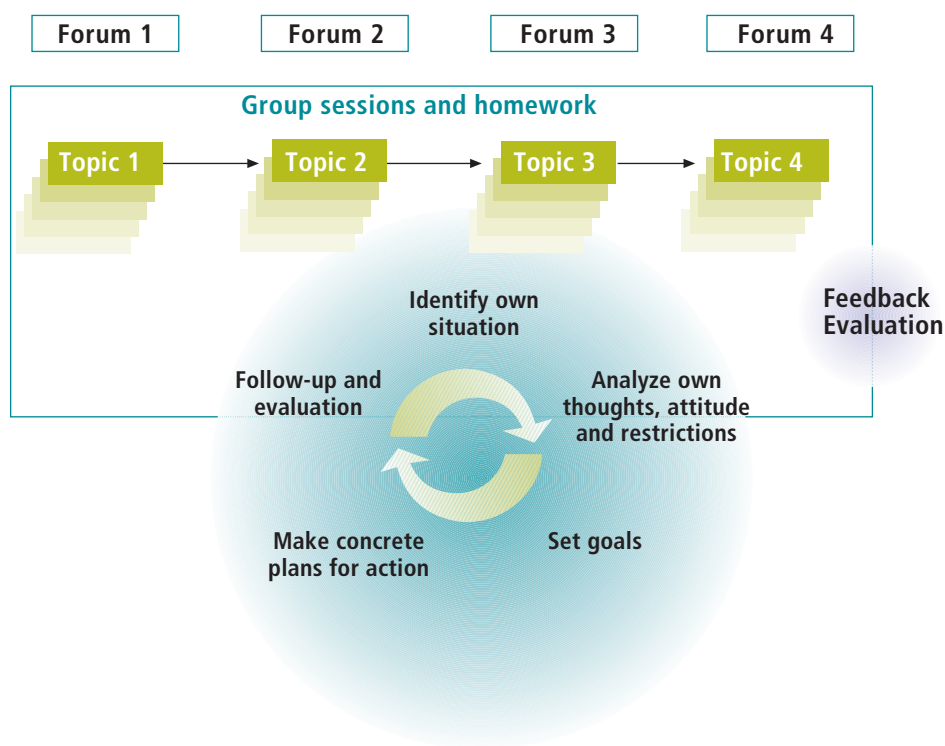


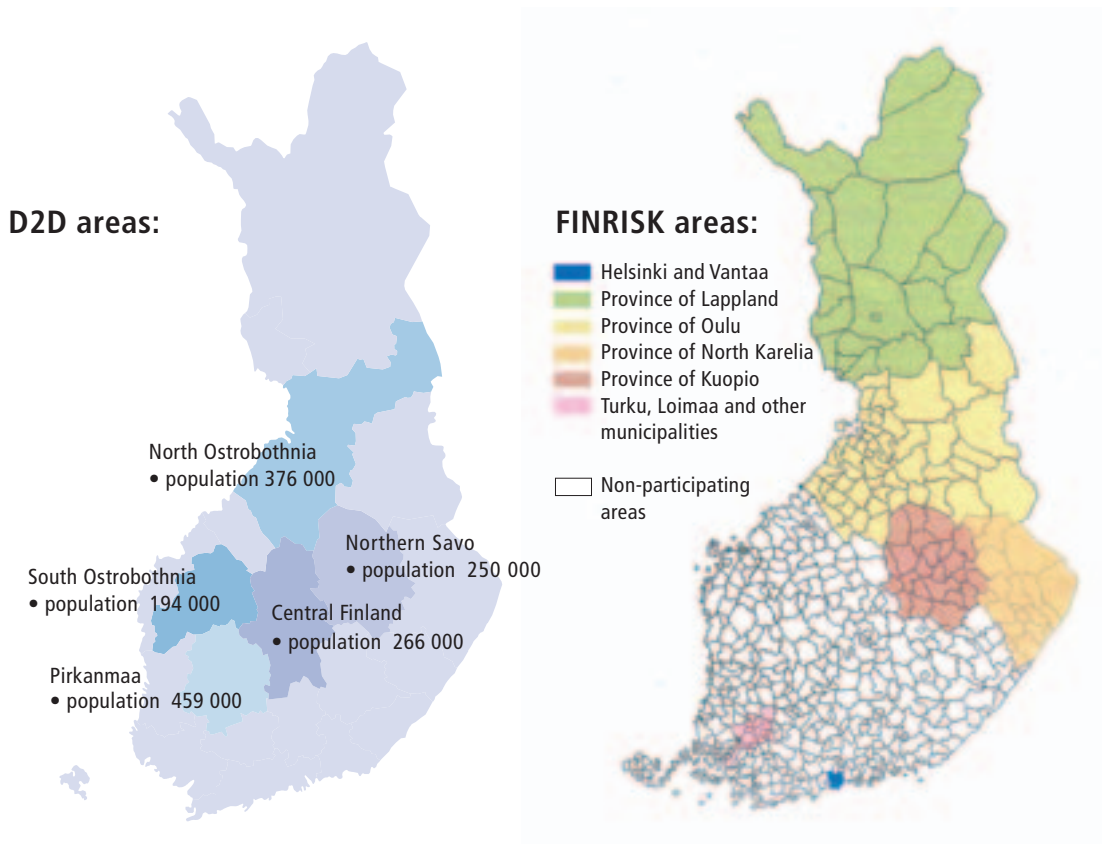
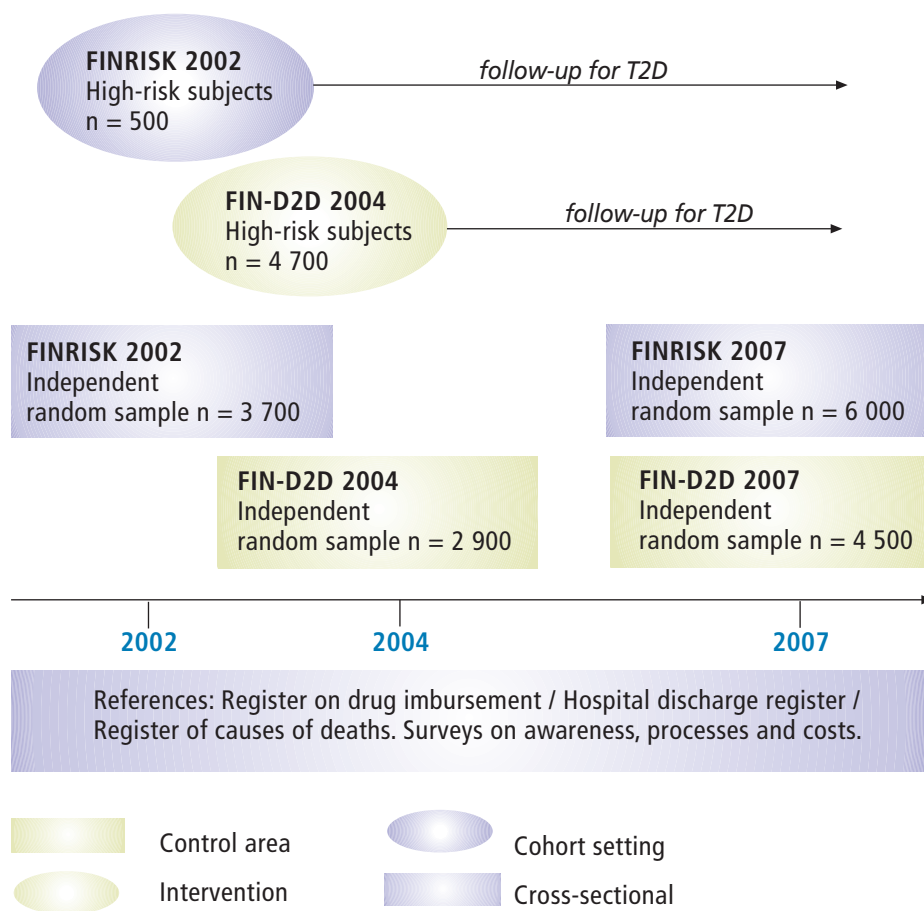
Figure 6. Locations of areas used in FIN-D2D

Figure 7. FIN-D2D evaluation schedule and reference surveys/studies



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