

### University Hospital Carl Gustav Carus Dresden



## Expert testimony: Translation of major trial evidence into practice across Europe

**Prof. Peter Schwarz** 

Department for Prevention and Care University Hospital "Carl Gustav Carus" Dresden





17.5.2011 in Manchester



## We know that the prevention of diabetes mellitus is effective, feasible, evaluated but difficult, time consuming, challenging

## How to get it to practice



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We need

Plan Concept Action



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## Plan

### Development of an Global Action Plan -Diabetes Prevention

The action plan should identify essential activities and available resources for diabetes prevention and spell out the responsibilities of each stakeholder and their involvement. In addition, the plan should recommend and outline action steps specific to each involved cohort - (e.g. families, friends, health care providers, the media, health insurance providers, employers, researchers, professional educators, ethnic and cultural groups to name but a few).



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## Concept

## **3 Steps of a Diabetes prevention program**

Detection of increased diabetes risk

Timely limited intervention to prevent diabetes

Continuous intervention and quality management



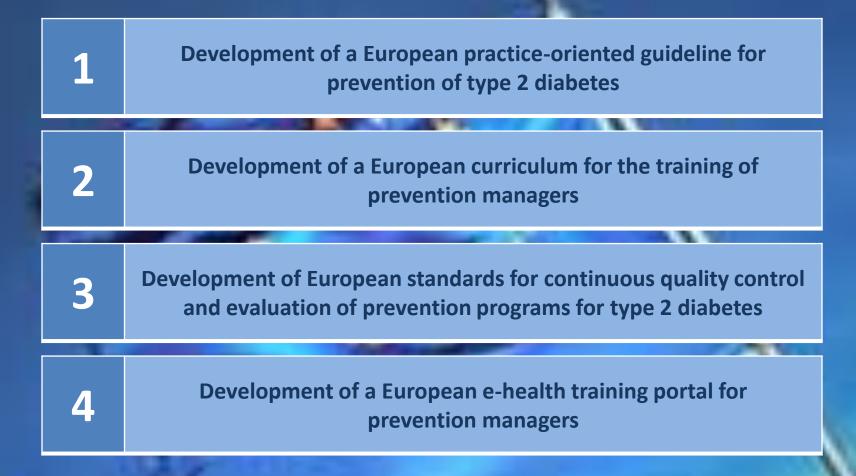
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## **Developing a prevention strategy**

- find people where they are setting approach
- focus on the individual empowerment
- involve regular contact with individuals with prediabetes
- recruit educated lifestyle managers
- continuously evaluate the success of prevention strategies
- use screening tools that are applicable in a population setting
- include quality management prevention management

## **Specific objectives**



=> European standards applicable in all member states will help to reduce inequalities in health

## The IMAGE project – Partners involved

Thank you very much







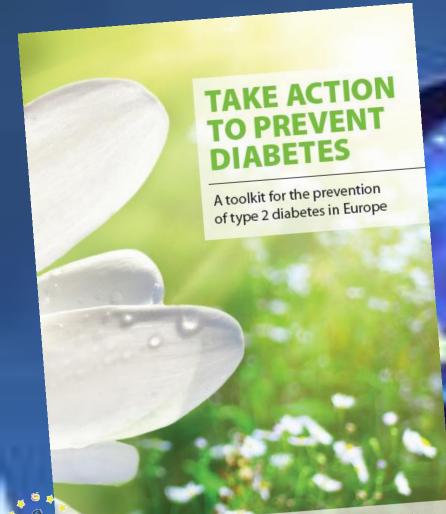
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## **Take Action to prevent Diabetes**

## A toolkit for the prevention of type 2 diabetes 💦 🗳 🐛

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Improving Diabetes Prevention



#### Take Action to Prevent Diabetes – The IMAGE Toolkit for the Prevention of Type 2 Diabetes in Europe

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Bibliography

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DOI http://dx.doi.org/

10.1055/s 0029-1240975

Horn Metab Res 2010;42

(Suppl. 1): \$37-\$55 @ Georg

Thieme Verlag KG Stuttgart

New York - ISSN 0018-5043

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- B. Galinetti, K. Gotz, E. Gotz, S. Dacesarec, Y. Dimiterencorectory, P. Obrogenic, J. Barn, A. Ho, Hellon, M. Haller, C. Galindi Andre, A. Glin-Januarenka, M. Goldhacht, J. L. Comer, C. J. Creaves, M. Hall, U. Hande, H. Haune, J. Helb et, N. Hermanns, L. Hernehugh, C. Habe, U. Höhmer, J. Hutturen, A. Joric, Z. Kamenov, S. Karadetiz, N. Kabilamboo, A. Hermanns, L. Hernehugh, C. Habe, U. Höhmer, J. Hutturen, A. Joric, Z. Kamenov, S. Karadetiz, N. Kabilamboo, A. Hermanns, L. Hernehugh, C. Habe, G. Höger, D. Höhmer, J. Hutturen, A. Joric, Z. Kamenov, S. Karadetiz, N. Kabilamboo, A. Kabilamboo, A. Karadetiz, N. Kabilamboo, A. Hermanns, L. Hernehugh, C. Habe, G. Höhmer, J. Hutturen, A. Joric, Z. Kamenov, S. Karadetiz, N. Kabilamboo, A. Kabilamboo, A

- n, nemann, L. Perensing, L. Shallet, U. Honner, J. Portuner, N. Jone, Z. Mallenov, S. Karakenz, N. Naturantovi, M. Khalangot, K. Kosimova Slubshir, D. Köhler, V. Kopp, P. Kombin, B. Kulser, D. Kyne Czebalski, K. Lale, N. Lalic, R. Landgat, Y. H. Lee-Barley, S. Latis, J. Undström, K. Malerlaisis, C. Mcintovh, M. Wotker, A. C. Mesquta, D. Mária, F. Mayfe, A. Neumann, C. L. Ward, P. Jacken, J. Kondon, K. Bastraten, L. Microson, N. Mickel, A. C. Medgard, D. Misha, F. Muyler, A. Ne A. C. Pata, P. Polanon, B. Paulandeer, M. Pelbonen, L. Rerrenoud, A. Pierlier, A. Pólónen, S. Publ, F. Rapono, T. Reinber, A. Risanen, C. Robbison, M. Roden, U. Roche, T. Saarisbo, J. Scholl, P. E. Schwarz, K. E. Sheppard, S. Spier, T. Stemper,
- A. Rassman, L. Koomina, M. Rober, O. Kome, T. Skamon, J. Status, K. E. Stranko, K. E. Singura, S. Spers, T. Skemper, S. Skamon, S. Sandhan, J. Sandhood, Z. Stybinski, T. Tarkova, V. Tellerijelski, C. Terry, D. Tolic, F. Tott, J. Tuomiehto, A. Undeutsch, C. Hadar, and Sandhan, S. Sandhan, Sandhan, Sandhan, Sandhan, Sandhan, Sandhan, Sandhan, Sandhan, is, Senamaring, F. Saenarbeea, J., Seyonsky, F., Fancova, V., Ienerspenser, G., Ferr C. Valadas, P. Valensi, D. Velickiene, P. Vermunt, R. Weiss, J. Wens, T. Vilmaz The affiliations are listed at the end of the article

Abbreviations

DPS:

IGT:

OGTT:

T2DM:

Executive Summary

When we ask people what they value most, health is usually top of the list. While effective care is available for many chronic diseases, the fact remains that for the patient, the tax payer and the whole of society: Prevention is Better

Diabetes and its complications are a serious threat to the survival and well-being of an increasing number of people. It is predicted that one in ten Europeans aged 20-79 will have developed diabetes by 2030. Once a disease of old age, diabetes is now common among adults of all ages and is beginning to affect adolescents and even children. Diabetes accounts for up to 18% of total healthcare expenditure in Europe.

The Good News is That Diabetes is Preventable. Compelling evidence shows that the onset of diabetes can be prevented or delayed greatly in individuals at high risk (people with impaired glucose regulation). Clinical research has shown a reduction in risk of developing diabetes of over 50% following relatively modest changes in lifestyle that include adopting a healthy diet, increasing physi-

Finnish Diabetes Prevention Study

FINDRISC: Finnish Diabetes Risk Score

Impaired fasting glucose

Impaired glucose tolerance

Oral glucose tolerance test

Type 2 diabetes mellitus

cal activity, and maintaining a healthy body weight. These results have since been reproduced

in real-world prevention programmes. Even a delay of a few years in the progression to diabetes is expected to reduce diabetes-related complications, such as heart, kidney and eye disease and, consequently, to reduce the cost to society.

Guidelines S37

A comprehensive approach to diabetes prevention should combine population based primary prevention with programmes targeted at those who are at high risk. This approach should take account of the local circumstances and diversity within modern society (e.g. social inequalities). The challenge goes beyond the healthcare system. We need to encourage collaboration across many different sectors: education providers, non-governmental organisations, the food industry, the media, urban planners and politicians all have a very important role to play.

Small Changes in Lifestyle Will Bring Big Changes in Health, Through Joint Efforts, More People Will be Reached. The Time to Act is Now.

Why is it Time to Act?

- The alarming epidemic
- In Europe, around 55 million adults have diabe-
- By 2030, this figure is estimated to rise to 66



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## General aim

- To provide a **credible**, **simplistic**, **concise**, **clear**, **pragmatic**, **accessible** document with a **positive message** about health promotion
- Grounded on the IMAGE evidence-based guideline and training curriculum for prevention managers and should preferably be used alongside them
- Target group
  - Politicians / policy makers (esp. executive summary)
  - All **service providers** in the field of health care and promotion
    - Background / education in health care basic knowledge
  - Information for "clients" will be included within the document and will be provided to them by the person delivering the intervention.

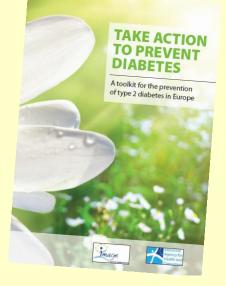


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What is necessary

SMART Goals F.I.T.T. Principles EAT CLEVER strategy







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## **Toolkit - Contents**

- Executive summary ("the problem&solution in a nutshell")
- Why is it time to act?
  - Facts and Figures; Risk factors; Large number of unknown cases; Complications through late diagnosis;
     Costs for health care system and the society; Prevention is possible: the evidence; Economic and social benefits of diabetes prevention

#### • How can I make a difference?

- Prevention as joint effort; Why and how to involve societal framework partners; Practical tips for societal support; How to build up multidisciplinary prevention team; Practical tips for networking
- How to budget and finance a prevention programme
  - Realistic budget; Possible sources of income
- How to identify people at risk
  - Diabetes risk factors; Risk assessment; Care pathway for healthcare provider; Strategy and practical tips for encouraging participation in intervention activities
- How to change behaviour
  - Elements and targets of effective lifestyle intervention programmes; Supporting behaviour change;
     Effective communication



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#### • Physical activity to prevent diabetes

- Why to increase physical activity; How to encourage to increase physical activity
- The **FITT** principle for training routine:
  - Frequency Intensity Time Type

#### Nutrition & dietary guidance to prevent diabetes

- Long-term dietary goals (in nutrient and food intake level)
- The EAT CLEVER principle for counselors
  - Estimation of the dietary pattern, Aims in the long and short run, Tools, guidance, and support, Composition of the diet, Lifestyle for the whole life, Energy, Variety, Evaluation, Risks

#### Other behaviours to consider

- Stress and depression; Smoking; Sleeping patterns
- Evaluation / quality assurance
  - Quality criteria; Risks and adverse effects

#### • Join forces to make a difference! ("positive mission statement"):



## HOW TO IDENTIFY = PEOPLE AT RISK



## **IMAGE Toolkit**



#### SCREENING SCORES FOR PREVALENT T2D

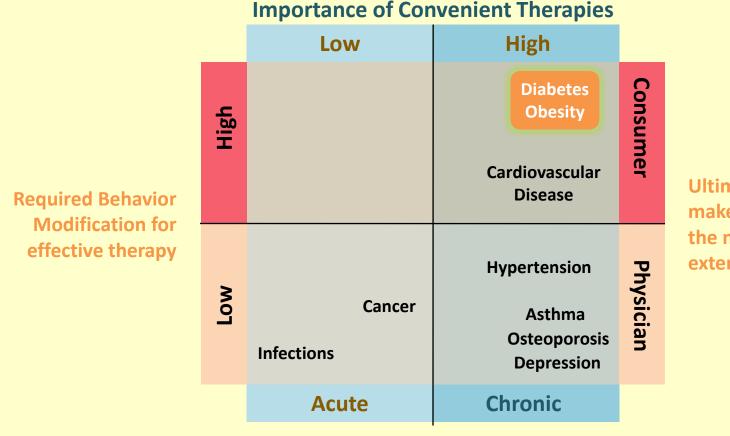
SCORE AND SOURCE	PREDICTIVE VARIABLES
The Dutch score Diabetes Care 22:213; 1999	Age, sex, BMI, presence of obesity, use of antihypertensive medication and family history of diabetes, physical activity
The Cambridge risk score Diabetic medicine 23:996; 2006	Age, sex, BMI, family history of diabetes, use of antihypertensive or steroid medication, smoking
The Danish risk score Diabetes Care 27:727-33; 2004	Age, sex, BMI, family history of diabetes, known hypertension, physical activity
The Finnish diabetes risk score FINDRISC www.diabetes.fi/english/ risktest	Age, BMI, waist circumference, use of antihypertensive therapy, history of high blood glucose, physical activity, consumption of fruit, vegetables and berries, family history of diabetes
FindRISK Germany Horm Metab Res. 2009; 41:98	Age, BMI, waist circumference, use of blood pressure medication, history of high blood glucose
Australian risk score AUSDRISK www.ausdrisk.com	Age, sex, ethnicity, family history of diabetes, history of high blood glucose, use of anti-hypertensive medication, current smoking status, consumption of vegetables or fruit, physical activity and waist circumference
The German diabetes risk score www.dife.de	Age, waist circumference, height, history of hypertension, physical activity, smoking, consumption of red meat, whole- grain bread, coffee, and alcohol
The ADA risk score Diabetes Care 18:382; 1995	Age, sex, delivery of macrosomic infant, race, education, obesity, sedentary lifestyle, family history of diabetes



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### How to change behavior ?



Nature of Illness

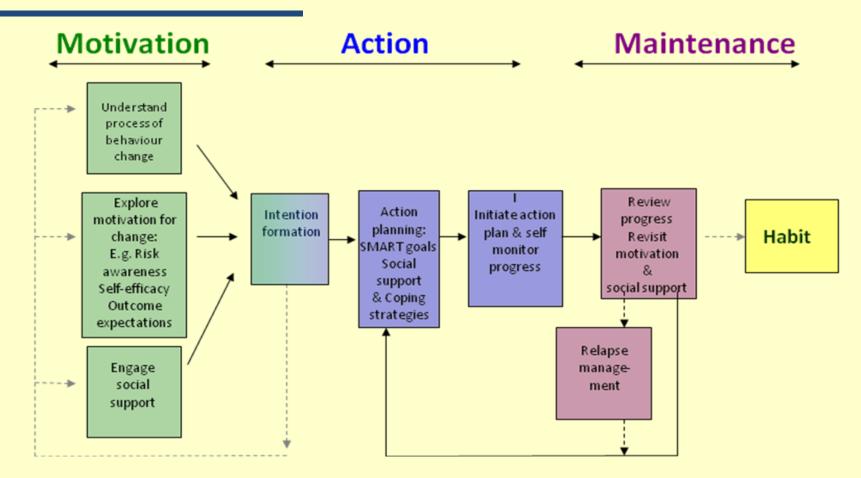
Ultimate decisionmaker concerning the nature and extent of therapy



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### Behaviour Change Model (Greaves et al, 2011)



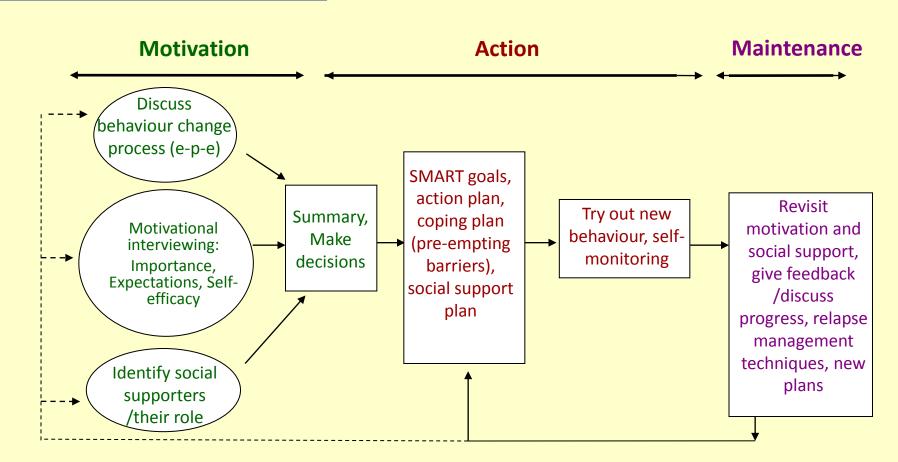
Greaves CJ et al. BMC Public Health. 2011 Feb 18;11(1):119.



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### Behaviour Change Techniques (Greaves et al, 2011)



Greaves CJ et al. BMC Public Health. 2011 Feb 18;11(1):119.



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## **TAKE ACTION TO PREVENT**

## DIABETES. YOU <u>CAN</u> DO IT NOW!



mage

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### **Prevention Practice**

 Standard technical handbook presenting different strategies for the prevention of diabetes realized in a practice setting worldwide

- summarizing experiences and future plans over the world
- issued for the WCPD

#### Diabetes Prevention in Practice



Editors: Peter Schwarz Prasuna Reddy Colin Greaves James Dunbar Jaqueline Schwarz

Dresden WCPD 2010



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### **Content of Prevention in Practice**

- 1. Diabetes Prevention urgent need in practice
- 2. Diabetes Prevention in Practice: the global panorama
- 3. The short history of diabetes prevention with lifestyle intervention
- 4. Supporting behaviour change for diabetes prevention
- 5. Implementation of prevention of type 2 diabetes Experiences from Finland
- 6. Scaling up type 2 diabetes prevention programs. National and State interventions in Australia
- 7. Training facilitators of group-based diabetes prevention programs: recommendations from a public health intervention in Australia
- 8. Scaling Up Type 2 Diabetes Prevention Programs for High Risk Persons: Progress and Challenges in the United States
- 9. Implementation of the Saxon Diabetes Prevention Program in Germany
- 10. The Learner Becomes the Teacher: A Community-Based Diabetes Prevention Training Programme for First Nations Health Workers in Northern Canada
- 11. Lets Beat Diabetes Community Partnerships in Action New Zealand
- 12. Early detection and prevention of type 2 diabetes: National Programme Serbia
- 13. Community based diabetes prevention in Austria
- 14. Feasibility of Implementing the first community-based Lifestyle Intervention Programme to Prevent Type 2 Diabetes in Greece
- 15. Screening an Prevention of Type 2 Diabetes using Lifestyle Modifications in Spain DE-PLAN Project Spain
- 16. First Diabetes Prevention Program in Bulgaria
- 17. DE-PLAN Project: diabetes prevention in Carpi e Pantelleria, Italy
- 18. The HUNT-DE-PLAN Study of Nord-Trøndelag, Norway
- 19. Walking Away from Type 2 Diabetes: development of a diabetes prevention programme for implementation within England
- 20. Towards the translation of research evidence to service provision: experience from North East England, UK
- 21. Diabetes-Free Bangkok
- 22. Prevention of Diabetes in South Asians
- 23. A cognitive behavioural programme aimed at lifestyle changes in people at high risk of cardiovascular diseases and type 2 diabetes in the Nederlands
- 24. Medical Prevention of Type 2 Diabetes Rationale and Practice





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Program	Aim	National Policy	Setting	Target population	Intervention manager	Intervention program	Outcome evaluation	Quality management	Funding	Ref.
FIND2D Finland	Primary diabetes prevention	Yes – National Diabetes Plan	PHC, decentralized, community	person at risk FINDRISK >15	Diabetes nurses	1-3 sessions	Waist circ.	None	National programme	[14, 33]
GOAL-LIT Finland	diabetes prevention + healthy ageing	Yes – National Diabetes Plan	PHC, decentralized, occupational medicine	person at risk FINDRISK >12	occupational nurses	5 sessions and 1 booster session	anthr., biomarker, behaviour by physician	None	Included in occupational service	[34]
PLAN4WARD, USA	Primary diabetes prevention	National Coordinating Center in Development	YMCA	ADA risk score	nonspecialist staff at YMCA	6-month, 16-session curriculum, then monthly maintenance sessions	anthr., HbA1c, lipids	Centralized instructor training; Peer-based session fidelity checklists	National Institutes of Health	[11, 35, 36]
Reset your life Australia	People	Council of Australian Government	PHC, decentralized,	person aged 40-49 at risk AUSDRISK >12	Health professional	5 +1 sessions, Intervention facilitator	Waist and weight	None	Australian government	[14]
LIFE! Taking action on diabetes. Australia	Primary diabetes prevention	State Government of Victoria	PHC, decentralized, community	person at risk AUSDRISK >12	Health professional	5 +1 sessions, Intervention facilitator	anthr., biomarker, behaviour	Yes at facilitator and program levels	Free for most participants aged 50 or over	[14]
SDPP**, Australia	Primary diabetes prevention	NSW Department of Health	PHC, decentralized, medical GP based	person aged 50-65 years at risk AUSDRISK >15	Health professional	5 +1 sessions, GP and lifestyle officer	anthr., biomarker, behaviour	None	NSW Department of Health	[14]
SDPP*, Germany	Primary diabetes prevention	Saxony, gesundheitsziele	Public Health, paramedical, decentralized, community	person at risk FINDRISK >10	prevention manager, different professions	Structured programme 8 sessions, telephone and email support and annual follow up	BP, waist, anthr., parallel study on oGTT	Blood pressure and Waist circ.	Local health insurances reimburses prevention manager	[10, 14]
DIY Canada	Diabetes prevention and management	Local health Policy	Community, aborigines	risk factors evaluation	health workers	3 day agenda + manual	None	None	Government + private	[14]
Walking Away from Type 2 Diabetes; UK	Primary diabetes prevention	NHS Health Checks Programme	Primary care	High risk person identified using the Leicester Risk Score	Registered or non- registered healthcare professional	3.5-hour structured education programme followed by annual maintenance programme. Telephone contact every 6 months	1st = physical activity 2nd = OGTT, progression to diabetes, lipids and anthr. variables	All educators are trained and quality assured to ensure fidelity to person- centred philosophy and content	CLAHRC, National Institute for Health Research	[37, 38]
Let's Prevent Diabetes; UK	Primary diabetes prevention	NHS Health Checks Programme	Primary care	Leicester Risk Score and confirmed with OGTT	Registered healthcare professional	6-hour structured education programme followed by annual maintenance programme. Telephone contact every 3 months	1st = progression to type 2 diabetes using OGTT 2nd = physical activity, diet, lipids and anthr. variables	All educators are trained and quality assured to ensure fidelity to person- centred philosophy and content	National Institute for Health Research	[14]
LBD New Zealand	Diabetes prevention and improved management of disease	National Strategy Healthy Eating Healthy Action (HEHA)	Community,	Maori, Pacific, and South Asian with risk factors identification	At all levels from community people to health professionals	A range of different interventions are offered	waist and weight	Yes	Regional funding from Health Budget and other partner organisations	[14]
DE-PLAN, Greece	Primary diabetes prevention		PHC, occupational	person at risk FINDRISK >12	prevention manager, nurse	6 sessions, by prevention manager	BP, waist, anthr., lipids, parallel study on oGTT	Parallel to intervention	Public health + private	[16]

#### Schwarz PE, Med Clin North Am. 2011 Mar;95(2):397-407.





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ProgrammeDrop out rateOutcomes achievedReferenceLifeT officing action on diabetesStill being evaluatedStill being evaluated3Sydney DiabetesStill being evaluatedStill being evaluated4Prevention Programme24% dropped out between baseline and 12 month measurementsChanges from baseline to 12 mths, mean weight (kg) 42.52 Systoles BP 4.101 Diastlice BP 4.21438Culturally appropriate fremet For migrant25% dropped out between weeks 0 and 12Changes from baseline to 12 mths, mean weight (kg) 42.52 Systoles BP 4.101 Diastlice BP 4.21437Culturally appropriate fremet Pokistoms25% dropped out between weeks 0 and 12Physical activity increased from 4.000 4/- 22.6 steps to 8.617.4.1.596.8 Average cholesterol reduced from 6.0.000 4/- 22.6 steps to 8.617.4.1.596.8 Average cholesterol reduced from 6.0.001/1+/-0.10 Fasting bload glucase reduced from 6.0.011.10 Fasting bload glucase reduced from 6.0.001/1+/-0.13 Fasting bload glucase reduced from 6.0.011.10 Fasting bload glucase reduced from 50.004/-10.06 Fasting bload glucase reduced from 90.004/-12.5 by 1.6.01.07 Fasting bload glucase reduced from 90.004/-12.5 by 1.6.01.07 Fasting bload glucase reduced from 90.004/-12.5 by 1.6.01.01 Fasting bload glucase reduced from 90.004/-12.5 by 1.6.01.01 Fasting bload glucase reduced from 90.004/-10.05 Tatel cholesterol reduced from 90.004/-1.0.5 by 0.6.01.01 Tatel cholesterol reduced from 90.004/-1.0.5 by 0.6.01/1 Tatel cholesterol reduced from 90.004/-1.0.5 by 0.6.01/1 Tatel cholesterol reduced from 90.004/-1.0.5 by 0.6.01/1 Ta					
didbers         understand         H           Sydny Dibbets         Still being evaluated         Still being evaluated         H           Greater Green Tringle         24% dropped out between baseline and 12 month measurements         Changes from baseline to 12 mths, mean         H           DP         bseline and 12 month measurements         Changes from baseline to 12 mths, mean         H           Culturally appropriate programme for migrant female Pakistanis         25% dropped out between weeks 0 and 12         Physical activity increased from 4.000 +/- 22.6 steps to 8.617.4 +/-596.8 Average cholesterol reduced from 6.40-0.33 to 5.90-0.33         P           De-Plan, Greece         35% dropped out between baseline and 12 months         Physical activity increased from 4.000 +/- 22.6 steps to 8.617.4 +/- 0.90 to Stating blood glucose reduced from 6.40-0.33 to 5.90-0.33         P           De-Plan, Greece         35% dropped out between baseline and 12 months         Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7         H           Waist circumference t02.9+/-10.0 cm fasting blood glucose 5.8+/- 0.68 mmol/l Total cholesterol 0.2+/- 0.08 mmol/l Total cholesterol 0.2+/- 0.08 mmol/l Total cholesterol 0.2+/- 0.08 mmol/l Total cholesterol 0.2+/- 0.08 mmol/l Total cholesterol reduced from 105.3cm+/-12.3 by 1.6cm+/-4.8 Fosting blood glucose 5.8+/- 0.8 mmol/l+/-10 by 0.1mmol/l+/-0.9         H           Montana Cardiovascular Disease and Diabetes Prevention Programme         17% drop out ni intervention arm compared to 28% in control arm         Standard advice 12-14mths % change in m		-	Drop out rate	Outcomes achieved	Reference
Sydney Diabetes Prevention Programme         Still being evaluated         Still being evaluated         Still being evaluated         Prevention Programme           Greater Freen Triangle DPP         24% dropped out between baseline and 12 month measurements         Changes from baseline to 12 mths, mean weight (kg) 42.52 BMI ± 0.93         Prevention Programme		-	Still being evaluated	Still being evaluated	13
Detextion Programme         24% dropped out between baseline and 12 month measurements         Changes from baseline to 12 mths, mean         15 %           DP         24% dropped out between baseline and 12 month measurements         Changes from baseline to 12 mths, mean         15 %           Culturally appropriate programme for migrant female Pokistanis         25% dropped out between baseline and 12         Changes from baseline to 12 mths, mean         15 %           De-Plan, Greece         35% dropped out between baseline and 12 months         Physical activity increased from 4.000 +/- 22.6 steps to 8.617.4 +/-596.8 Average cholesterol reduced from 6.3mm0/1 +/- 0.15 to 5.5mm0/1/s -/-0.10 Fasting blood glucose reduced from 6.4 +/- 0.33         19           De-Plan, Greece         35% dropped out between baseline and 12 months         Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7         18           6OAL - LIT         13% drop out between baseline and 12 months         Weight 89.0 +/- 13.4 reduced to 102.6+/- 10.6cms BMI 32.0+/- 4.3 reduced to 102.6+/- 10.6cms BMI 32.0+/- 4.3 reduced to 102.6+/- 10.6cms BMI 32.0+/- 4.5 to 0.90,3+/- 16.5 by -0.8kg-/-4.5         19.20           Montana Cardiovascular Disease and Diabetes Prevention Programme         17% drop out tate over 16 Weight reduced from 35.6mol/1-1 by 0.1mmol/1+/-17 Total cholesterol reduced from 35.8kg-/-18.8 by 1-6.0 to 20mins+/-192 at week 16         24           The DEPLOY Pilot Study         37% drop out in intervention arm compared to 28% in control arm         Standord advice 12-14mths % change in MAI 44.0 % change in MAI 44.0 % change in MAI 46.0 %					14
Greater Green Triongle DPP       24% dropped out between baseline and 12 month measurements       Changes from baseline to 12 mths, mean weight (kg) 42.52 BMT 4 0.93       15%         Culturally appropriate programme for migrant female Pakistanis       25% dropped out between weeks 0 and 12       Physical activity increased from 4.000 -/- 22.6 steps to 8.617.4 +/-596.8 Average cholesterol reduced from 6.8 mt/0.01 +/- 0.15 to 5.5mmol/l+/-0.10 Fasting blood glucose reduced from 6.4 +/- 0.33 to 5.9+/-0.33       17         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7 BMI 32.0+/- 4.3 reduced to 88.0+/- 4.7       18         6CAL - LIT       13% drop out between baseline and 12 months       Weight 69.0 +/- 13.4 reduced to 5.7+/- 0.63mm0l/l Total cholesterol 5.9+/-0.63mmol/l reduced to 5.7+/- 0.63mm0l/l Total cholesterol 5.9+/-0.63mmol/l-1.05 by 0.03kg/-4.5       19.20         Montana Cardiovascular Drevention Programme       17% drop out nate over 16 week course       BMI reduced from 90.3kg/-1.65 by 0.03kg/-4.5 BMI reduced from 90.3kg/-1.10 by 0.1mmol/l+/-0.9       19.20         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out in intervention arm compared to 28% in control arm       51.4nder advice 12-14mths       Group DP 12-14mths       22         Standard advice 12-14mths       60 pp DP 12-14mths       22       22       24		, ,	Still being evaluated	Still being evaluated	
DPP       baseline and 12 month measurements       weight (kg) 42.52         Mark 0.93       Waist circumference (cm) 44.17         Fasting plasma glucase 40.14       Total cholesterol 40.29         Systelic BP 4 1.01       Diastolic BP 4 2.14         Culturally appropriate programme for migrant female Pakistanis       Physical activity increased from 4.000 +/- 22.6 steps to 8.617.4 +/-596.8       17         Average cholesterol reduced from 6.8mmol/1+/- 0.15 to 5.5mmol/1+/-0.10       Fasting blood glucose reduced from 6.4 +/- 0.33 to 5.9+/-0.33       18         De-Plan, Greece       35% dropped out between beseline and 12 months       Weight 89.0 +/- 13.4 reduced to 80.0+/- 4.7       18         BMI 32.0+/- 4.3 reduced to 31.6+/- 4.0       Waist circumference 102.9+/-10.0 cmr educed to 37.4+/- 0.63mmol/1       17         GOAL - LIT       13% drop out between beseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.8kg+/-4.5       19.20         Montana Cardiovascular       17% drop out between beseline and 12 months       Weight reduced from 90.0kg+/- 16.5 by -0.8kg+/-1.5       19.20         Montana Cardiovascular       17% drop out between beseline and 12 months       Weight reduced from 90.0kg+/- 16.5 by -0.8kg+/-1.5       19.20         Montana Cardiovascular       17% drop out rate over 16       Weight reduced from 90.0kg+/- 16.5 by -0.8kg+/-1.5       19.20         Prevention Programme       17% drop out rate over 16			24% dranned out between	Changes from baseling to 12 with a mean	15 16
measurements       BMT 4 0.93         Waist circumference (cm) 44.17         Fasting plasma glucose 40.14         Total cholesterol 40.29         Systolic BP 4 1.01         Disatolic BP 4 2.14         Culturally appropriate programme for migrant female Pakistanis       25% dropped out between weeks 0 and 12       Physical activity increased from 4.000 +/- 22.6 steps to 8.617.4 +/-596.8       17         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7       18         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.0       102.6+/- 10.6cms         BV 13 20+/- 4.3 reduced to 102.6+/- 10.6cms       BP 133/79 reduced to 102.6+/- 10.6cms       18         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg-/- 16.6 by -0.8kg-/-4.5       1920         Montone Cardiovascular       17% drop out note over 16 week course       Weight reduced from 32.6+/- 50 by 0.3 +/-16.5       1920         Montone Cardiovascular       17% drop out note over 16 week course       Weight reduced from 35.9+/-6.5 to 33.5+/-6.3       1920         Physical activity increased from week 6.210 mis/-1.10 to 220mins/-1.92       at week 16       214       17         The DEPLOY Pilot Study       37% drop out nate over 16 week course       Weight reduced from					
Waist circumference (cm) 44.17         Fasting plasma glucose 40.14         Total cholesterol 40.29         Systolic BP 4 101         Diastolic BP 4 2.14         Culturally appropriate programme for migrant female Pakistanis       25% dropped out between week 0 and 12       Physical activity increased from 4.000 +/. 22.6 steps to 8.617.4 +/.596.8       17         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7       18         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 13.6+/- 4.0       18         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg-/- 16.6 by -0.8kg+/-4.5       19.20         Montane Cardiovascular       17% drop out rate over 16 week course       Weight reduced from 32.6+/- 50 by 0.3 +/-16.       19.20         Montane Cardiovascular       17% drop out rate over 16 week course       Weight reduced from 90.0kg-/-19.7kg to 92.6kg+/-18.8       24         Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 5.9+/-0.6.3       24         The bEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       6roup DPP 12-14mths       24         Change in HoAL 0.0       Change in NTAL       % change in MAL 4.0 <td></td> <td>DPP</td> <td></td> <td></td> <td></td>		DPP			
Fasting plasma glucose 40.14 Total cholesterol 40.29 Systolic BP 4 1.01 Disatolic BP 4 2.10 Disatolic BP 4 2.14       7         Culturally appropriate programme for migrant female Pakistanis       25% dropped out between weeks 0 and 12       Physical activity increased from 4.000 +/- 22.6 steps to 8.617.4 +/-596.8 Average cholesterol reduced from 6.8mmol/1 +/- 0.15 to 5.5mmol/1+/-0.10 Fasting blood glucose reduced from 6.4 +/- 0.33 to 5.9+/-0.33       17         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 80.0 +/- 13.4 reduced to 88.0+/- 4.7       18         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/-10 cms reduced to 5.5+/-0.63mmol/1       1920         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/-16.6 by -0.8kgr-/4.5       1920         Montana Cardiovascular       17% drop out rate over 16 week course       Weight reduced from 90.5kgr-/10.0 by 0.1mmol/1+/-0.9       1920         Montana Cardiovascular       17% drop out rate over 16 week course       Weight reduced from 95.3kgr-/17.9 by 0.1mmol/1+/-0.9       1920         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       6roup DPP 12-14mths       22         Montana Cardiovascular Disease and Diabetes Prevention Programme       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       6roup DPP 12-14mths       22			measurements		
Total cholesterol 40.29 Systolic BP 4 1.01 Distolic BP 4 2.14           Culturally appropriate programme for migrant female Pokistanis         25% dropped out between weeks 0 and 12         Physical activity increased from 4.000 +/- 22.6 steps to 8.617.4 +/-596.8 Average cholesterol reduced from 6.8mmol/1+/- 0.15 to 5.5mmol/1+/-0.00 Fasting blood glucose reduced from 6.4 +/- 0.33 to 5.9+/-0.33         17           De-Plan, Greece         35% dropped out between baseline and 12 months         Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7         18           De-Plan, Greece         35% dropped out between baseline and 12 months         Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7         18           GOAL - LIT         13% drop out between baseline and 12 months         Weight reduced from 5.0kmol/1 reduced to 5.7+/- 0.63mmol/1 Total cholesterol 5.9+/- 0.38mmol/1 reduced to 5.7+/- 0.63mmol/1 Total cholesterol 5.9+/- 0.88mmol/1 reduced to 5.7+/- 0.95mmol/1         1920           GOAL - LIT         13% drop out between baseline and 12 months         Weight reduced from 32.6+/- 5.0 by 0.3 +/-1.6 Waist circumference reduced from 105.3mm/12.3 by 1.6cm+/-4.8 Fasting blood glucose reduced from 5.5mmol/1+/-1.0 by 0.1mmol/1+/-1.7 Total cholesterol reduced from 5.9mmol/1+/-1.0 by 0.1mmol/1+/-1.9         1920           Montana Cardiovascular Disease and Diabetes Prevention Programme         17% drop out nate over 16 Weight reduced from 5.9-site/-18.0 to 290mins+/-192 at week 16         24           The DEPLOY Pilot Study         37% drop out in intervention arm compared to 28% in control arm         Standard advice 12-14mths % change in BMI 4-6.					
Systolic BP + 1:01 Diastolic BP + 2:14           Culturally appropriate programme for migrant female Pakistanis         25% dropped out between weeks 0 and 12         Physical activity increased from 6.000+/-22.6 steps to 8.617.4+/-596.8 Average cholesterol reduced from 6.4+/-0.33 to 5.9+/-0.33         17           De-Plan, Greece         35% dropped out between baseline and 12 months         Weight 89.0+/-13.4 reduced to 88.0+/-4.7         18           De-Plan, Greece         35% dropped out between baseline and 12 months         Weight 89.0+/-13.4 reduced to 101.6+/-4.0         18           GOAL - LIT         13% drop out between baseline and 12 months         Weight 9.9.4/- 0.38 mol/l Fosting blood glucose 5.8+/-0.63 mmol/l Total cholesterol 5.9+/-0.63 mmol/l Total cholesterol 5.9+/-0.63 mmol/l Total cholesterol 5.9+/-0.63 mmol/l/ reduced to 5.7+/-0.63 mmol/l         1920           Montana Cardiovascular         17% drop out tetween baseline and 12 months         Weight reduced from 5.0 by 0.3+/-16. Weight reduced from 5.5 mmol/+/-1.0 by 0.1mmol/l+/-0.9         1920           Montana Cardiovascular         17% drop out rate over 16 week course Prevention Programme         Standard advice 12-14mths % change in weight 41.8 % change in weight 41.8 % change in weight 44.6 Change in 105.1 Change in				5, 5	
Diastolic BP 4 2.14           Culturally appropriate programme for migrant female Pakistanis         25% dropped out between weeks 0 and 12         Physical activity increased from 4.000 v/- 22.6 steps to 8.617.4 +/-596.8 Average cholesterol reduced from 6.8 mm/0/1+/- 0.15 of 5.5mm/0/1+/-0.10         17           De-Plan, Greece         35% dropped out between baseline and 12 months         Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7         18           De-Plan, Greece         35% dropped out between baseline and 12 months         Weight 89.0 +/- 13.4 reduced to 13.6 +/- 4.0         18           GOAL - LIT         13% drop out between baseline and 12 months         Weight 89.0 +/- 13.4 reduced to 5.7+/- 0.63 mm/0/1         17           GOAL - LIT         13% drop out between baseline and 12 months         Weight reduced from 90.0kg+/- 16.6 by -0.8kgr/-4.5         19 20           Montana Cardiovascular Disease and Diabetes Prevention Programme         17% drop out rate over 16 week course         Weight reduced from 92.8kg+/-19.7kg to 92.6kg+/-18.8         44           The DEPLOV Pilot Study         37% drop out in intervention arm compared to 28% in control arm         Standard advice 12-14mths % change in weight 41.8 % change in weight 41.8 % change in total cholesterol         22           Change in total cholesterol         Change in thbA1c 0.0 Change in total cholesterol         Change in total cholesterol         22           Montana Cardiovascular Disease and Diabetes         37% drop out in intervention arm compared to					
Culturally appropriate programme for migrant female Pakistanis       25% dropped out between weeks 0 and 12       Physical activity increased from 4.000 +/- 22.6 steps to 8.617.4 +/-596.8       17         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7       18         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 102.6+/- 10.6cms       19         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.88mol/1 reduced to 5.5+/-0.95mmol/1       1920         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.8kg+/-4.5       1920         Montana Cardiovascular       17% drop out trate over 16       Weight reduced from 90.0kg+/- 10.0 cmmol/1+/-1.7       1920         Montana Cardiovascular       17% drop out rate over 16       Weight reduced from 99.3kg+/-19.7 kg to 2.0kg+/-18.8       24         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       6 change in Weight +0.0       22         Montana Cardiovascular       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       % change in NEI/+1.8       24         Disease and Diabetes       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14				,	
programme for migrant female Pakistanis       weeks 0 and 12       Average cholesterol reduced from 6.8mmol/l +/- 0.15 to 5.5mmol/l+/-0.10 Fasting blood glucose reduced from 6.4 +/- 0.33 to 5.9+/-0.33         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7 <sup>18</sup> MI 32.0+/- 4.3 reduced to 31.6+/- 4.0       Waist circumference 102.9+/-11.0 cms reduced to 102.6/- 10.6cms BP 133/79 reduced to 57+/- 0.63mmol/l Total cholesterol 5.5+/-0.63mmol/l reduced to 5.5+/-0.95mmol/l <sup>19</sup> 20         6OAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.8kg+/-4.5 <sup>19</sup> 20         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 95.5mmol/l+/-10 by 0.1mmol/l+/-1.7 Total cholesterol reduced from 95.9+/-6.5 to 33.5+/-6.3 <sup>44</sup> The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths % change in weight +1.8 % change in weight +0.0 Change in total cholesterol (mg/dL)+11.8 Change in total cholesterol (mg/dL)+11.8 Change in systolic BP (mmHg) <sup>22</sup> Change in systolic BP (mmHg) <sup>22</sup> Change in systolic BP (mmHg)		Culturally appropriate	25% dropped out between		17
female Pakistanis       The string blood glucose reduced from 6.4 +/- 0.33 to 5.9+/-0.33         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7       18         De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7       18         BMI 32.0+/- 4.3 reduced to 102.6+/- 10.6cms BP 133/79 reduced to 127.80       Fasting blood glucose 5.8+/-0.63 mmol/l reduced to 5.7+/- 0.63mmol/l       102.6+/- 10.6cms         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.8kg+/-15.       19.20         Montana Cardiovascular       17% drop out the over 16 week course       Weight reduced from 95.3kg+/-19.7kg to 92.6kg+/-18.8       41         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         The DEPLOY Pilot Study       37% drop out in intervention arm control arm       Standard advice 12-14mths       % change in weight 4.1 % change in BMI V6.7 Change in HbA1c 0.0       Change in total cholesterol change in systolic BP (mmHg)       22		, ,, ,			
De-Plan, Greece       35% dropped out between baseline and 12 months       Weight 89.0 +/- 13.4 reduced to 88.0+/- 4.7       18         BMI 32.0+/- 4.3 reduced to 31.6+/- 4.0       Waist circumference 102.9+/-110 cms reduced to 102.6+/- 10.6cms BP 133/79 reduced to 127/80       19         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.63mmol/I Total cholesterol 5.9+/- 0.88mmol/I reduced to 5.7+/- 0.63mmol/I       19 20         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.8kg+/-4.5       19 20         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 35.9+/-6.5 to 33.5+/-6.3 Physical activity increased from 35.9+/-16.7 to 200mins+/-192 at week 16       21         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths % change in weight V1.8 % change in BMI V1.4 % change in HbA1c 0.0 Change in HbA1c 0.0 Change in HbA1c 0.0 Change in total cholesterol (mg/dL) h1.8 Change in systolic BP (mmHg)       22				5	
De-Plan, breeze       35% dropped out between baseline and 12 months       B(M) 12,0+/- 13, 4 reduced to 35,0+/- 4,0         Waist circumference 102.9+/-11.0 cms reduced to 102,6+/- 10.6cms BP 133/79 reduced to 127/80       Pasting blood glucose 5.8+/-0.63 mmol/l reduced to 5.7+/- 0.63mmol/l         60AL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.8kg+/-4.5       19 20         60AL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.8kg+/-4.5       19 20         Montana Cardiovascular       17% drop out rate over 16 week course       Weight reduced from 90.0kg+/- 10.6 by -0.8kg+/-4.5       19 20         Montana Cardiovascular       17% drop out rate over 16 week course       Weight reduced from 35.9+/-0.5 by 0.3 +/-1.6       19 20         Montana Cardiovascular       17% drop out rate over 16 week course       Weight reduced from 99.3kg+/-19.7kg to 92.6kg+/-18.8       21         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         Change in HbA1c 0.0       Change in HbA1c 40.1       Change in HbA1c 40.1       Change in total cholesterol (mg/dL)+11.5       Change in total cholesterol       Change in total cholesterol         Change in in total cholesterol       Change in total cholesterol       Change in total cholesterol       Change in systolic BP (mmHg) 41.6					
Waist circumference 102.9+/-11.0 cms reduced to 102.6+/- 10.6cms BP 133/79 reduced to 127/80 Fasting blood glucose 5.8+/-0.63 mmol/l reduced to 5.7+/- 0.63mmol/l Total cholesterol 5.9+/-0.88mmol/l reduced to 5.7+/- 0.63mmol/l         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0Kg+/- 16.6 by -0.8kg+/-4.5       19 20         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 99.3Kg+/-19.7kg to 92.6kg+/-18.8       21         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       6roup DPP 12-14mths       22         Mange in HbA1c 0.0       Change in HbA1c 0.0       Change in total cholesterol (mg/dL)/+13.5       Change in systolic BP (mmHg)       Change in systolic BP (mmHg)       Change in systolic BP (mmHg)       41.6		De-Plan, Greece		5	18
BP 133/79 reduced to 127/80         Fasting blood glucose 5.8+/-0.63 mmol/l reduced to 5.7+/- 0.63mmol/l         Total cholesterol 5.9+/- 0.83mmol/l reduced to 5.7+/- 0.95mmol/l         60AL - LIT         13% drop out between baseline and 12 months       BMI reduced from 90.0kg+/- 16.6 by -0.8kg+/-4.5       19 20         Moint colspan="2">GOAL - LIT       13% drop out between baseline and 12 months       BMI reduced from 30.64/- 5.0 by 0.3 +/-1.6         Weight reduced from 30.5er/-10.5 by 0.3 +/-1.6         Waist circumference reduced from 105.3cm+/-12.3 by 1.6cm+/-4.8         For the dist colspan="2">For the dist colspan="2"         For the dist colsp			baseline and 12 months		
Fasting blood glucose 5.8+/-0.63 mmol/l reduced to 5.7+/- 0.63mmOl/l Total cholesterol 5.9+/- 0.88mmol/l reduced to 5.5+/-0.95mmol/l       19 20         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.8kg+/-4.5       19 20         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 99.3kg+/-19.7kg to 92.6kg+/-18.8       21         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         % change in BMI \u21.4       % change in BMI \u21.4       % change in BMI \u21.5       22         (mg/dL)\u21.18       (mg/dL)\u21.18       (mg/dL)\u21.5       24					
Total cholesterol 5.9+/- 0.88mmol/l reduced to 5.5+/-0.95mmol/l         GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.8kg+/-4.5       19 20         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 5.5mmol/l+/-1.7 by 0.1mmol/l+/-0.9       21         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 5.9±/-6.5 to 33.5±/-6.3       21         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         Change in total cholesterol (mg/dL)↑11.8 Change in systolic BP (mmHg)       Change in systolic BP (mmHg) ↓1.6					
GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.8kg+/-4.5       19 20         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 90.3kg+/-10.0 by 0.1mmol/l+/-1.7 Total cholesterol reduced from 95.9kr/-6.5 to 33.5+/- 6.3       21         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         Change in HbAlc 0.0       Change in HbAlc 0.0       Change in total cholesterol (mg/dL)+11.8       Change in total cholesterol (mg/dL)+11.8       22         Change in systolic BP (mmHg)       Change in systolic BP (mmHg) \U1.6       Change in systolic BP (mmHg) \U1.6					
GOAL - LIT       13% drop out between baseline and 12 months       Weight reduced from 90.0kg+/- 16.6 by -0.0kg+/-4.5       Montana 20.0kg+/-4.5         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 99.3kg+/-19.7kg to 92.6kg+/-18.8       41         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         Change in HbA1c 0.0       Change in total cholesterol (mg/dL) ↑ 11.8       Change in systolic BP (mmHg)       Change in systolic BP (mmHg) ↓1.6					10.20
Waist circumference reduced from 105.3cm+/-12.3 by 1.6cm+/-4.8         Fasting blood glucose reduced from 6.6mmol+/-1.7 by 0.1mmol/l+/-1.7         Total cholesterol reduced from 5.5mmol/l+/-1.0 by 0.1mmol/l+/-0.9         Montana Cardiovascular       17% drop out rate over 16       Weight reduced from 99.3kg+/-19.7kg to 92.6kg+/-18.8       21         Disease and Diabetes       meek course       BMI reduced from 35.9+/-6.5 to 33.5+/-6.3       21         Prevention Programme       Yhysical activity increased from week 6, 210 mins+/- 160 to 290mins+/-192 at week 16       22         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       6roup DPP 12-14mths       22         Compared to 28% in control arm       % change in BMI \u00e91.4       % change in BMI \u00e91.4       % change in total cholesterol       22         (mg/dL)\u00e911.8       (mg/dL)\u00e911.8       (mg/dL)\u00e913.5       22		GOAL - LIT			19 20
Fasting blood glucose reduced from 6.6mmol+/-1.7 by 0.1mmol/l+/-1.7 Total cholesterol reduced from 5.5mmol/l+/-1.0 by 0.1mmol/l+/-0.9         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 99.3kg+/-19.7kg to 92.6kg+/-18.8       21         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         Change in HbA1c 0.0       Change in HbA1c 40.1       Change in HbA1c 40.1       Change in total cholesterol (mg/dL)↑11.8       Change in systolic BP (mmHg)       Change in systolic BP (mmHg) \ 41.6			baseline and 12 months		
Total cholesterol reduced from 5.5mmol/l+/-1.0 by 0.1mmol/l+/-0.9         Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 99.3kg+/-19.7kg to 92.6kg+/-18.8       21         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         Change in BMI ↓1.4       % change in weight ↓1.8       % change in BMI ↓6.7       22         Change in total cholesterol (mg/dL)↑11.8       Change in total cholesterol (mg/dL)↓13.5       Change in systolic BP (mmHg)					
Montana Cardiovascular Disease and Diabetes Prevention Programme       17% drop out rate over 16 week course       Weight reduced from 99.3kg+/-19.7kg to 92.6kg+/-18.8       21         Prevention Programme       BMI reduced from 35.9+/-6.5 to 33.5+/- 6.3       Physical activity increased from week 6, 210 mins+/- 160 to 290mins+/-192 at week 16       22         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         Change in BMI ↓1.8       % change in weight ↓1.8       % change in BMI ↓6.0       22         Change in total cholesterol (mg/dL)↑11.8       Change in total cholesterol (mg/dL)↓13.5       (mg/dL)↓13.5				· · · · · · · · · · · · · · · · · · ·	
Disease and Diabetes       week course       BMI reduced from 35.9+/-6.5 to 33.5+/-6.3         Prevention Programme       Physical activity increased from week 6, 210 mins+/-160 to 290mins+/-192 at week 16         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         Change in weight↓1.8       % change in weight↓6.0       % change in BMI ↓6.7       22         Control arm       % change in BMI ↓1.4       % change in BMI ↓6.7         Change in total cholesterol (mg/dL)↑11.8       Change in total cholesterol (mg/dL)↓13.5       (mg/dL)↓13.5         Change in systolic BP (mmHg)       Change in systolic BP (mmHg) ↓1.6       Change in systolic BP (mmHg) ↓1.6	-	Montone Condiguesculor	17% drop out nate over 14	1	21
Prevention Programme       Physical activity increased from week 6, 210 mins+/- 160 to 290mins+/-192 at week 16       22         The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths       Group DPP 12-14mths       22         Group DPP 12-14mths       % change in weight↓1.8       % change in weight↓0.0       37% drop out in intervention arm       % change in BMI↓1.4       % change in BMI ↓6.7       22         Group DPP 12-14mths       Compared to 28% in compared to 28% in control arm       % change in BMI↓1.4       % change in BMI ↓6.7       24         Change in HbA1c 0.0       Change in HbA1c 0.0       Change in total cholesterol (mg/dL)↑11.8       Change in total cholesterol (mg/dL)↓13.5       (mg/dL)↓13.5         Change in systolic BP (mmHg)       Change in systolic BP (mmHg) ↓1.6       Change in systolic BP (mmHg) ↓1.6					
The DEPLOY Pilot Study       37% drop out in intervention arm compared to 28% in control arm       Standard advice 12-14mths % change in weight↓1.8       Group DPP 12-14mths % change in weight↓6.0       22         Change in Weight↓1.8       % change in weight↓1.8       % change in weight↓6.0       24         Compared to 28% in control arm       % change in BMI↓1.4       % change in BMI↓6.7       24         Change in HbA1c 0.0       Change in HbA1c↓0.1       Change in total cholesterol (mg/dL)↑11.8       Change in total cholesterol (mg/dL)↓13.5         Change in systolic BP (mmHg)       Change in systolic BP (mmHg)       Change in systolic BP (mmHg) ↓1.6			WEEK COULSE		
The DEPLOY Pilot Study       37% drop out in intervention arm       Standard advice 12-14mths       Group DPP 12-14mths       22         The DEPLOY Pilot Study       37% drop out in intervention arm       % change in weight↓1.8       % change in weight↓6.0       28         compared to 28% in control arm       % change in BMI↓1.4       % change in BMI↓6.7       60         Change in HbA1c 0.0       Change in HbA1c↓0.1       60         Change in total cholesterol (mg/dL)↑11.8       (mg/dL)↓13.5         Change in systolic BP (mmHg)       Change in systolic BP (mmHg) ↓1.6		ri erennon er ogramme			
intervention arm % change in weight ↓1.8 % change in weight ↓6.0 compared to 28% in % change in BMI ↓1.4 % change in BMI ↓6.7 control arm Change in HbA1c 0.0 Change in HbA1c ↓0.1 Change in total cholesterol Change in total cholesterol (mg/dL)↑11.8 (mg/dL)↓13.5 Change in systolic BP (mmHg) ↓1.6		The DEPLOY Pilot Study	37% drop out in		22
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control arm Change in HbA1c 0.0 Change in HbA1c ↓0.1 Change in total cholesterol Change in total cholesterol (mg/dL)↑11.8 (mg/dL)↓13.5 Change in systolic BP (mmHg) Change in systolic BP (mmHg) ↓1.6					
Change in total cholesterol Change in total cholesterol (mg/dL)↑11.8 (mg/dL)↓13.5 Change in systolic BP (mmHg) Change in systolic BP (mmHg) ↓1.6			1		
(mg/dL)↑11.8 (mg/dL)↓13.5 Change in systolic BP (mmHg) Change in systolic BP (mmHg) ↓1.6				5	
Change in systolic BP (mmHg) Change in systolic BP (mmHg) ↓1.6				5	

A review of type 2 diabetes and CVD prevention translational research prepared for CMDHB, unpublished



17.5.2011 in Manchester



# into practice

#### **Prevention of Diabetes Self-Management** Implemantation Program (PREDIAS): Effects on Weight, **Metabolic Risk Factors, and Behavioral** Outcomes

BERNHARD KULZER, PHD<sup>1</sup> NORBERT HERMANNS, PHD<sup>1</sup> DANIELA GORGES, MA<sup>1</sup>

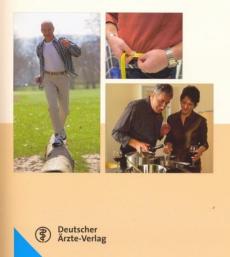
PETER SCHWARZ, MD<sup>2</sup> THOMAS HAAK, PHD<sup>1</sup>

B. Kulzer, N. Hermanns, B. Maier, D. Gorges, M. Ebert, P. Schwarz, J. Schwarz, Th. Haak

PRAEDIAS

#### Diabetes vermeiden selbst aktiv werden

Ein Leitfaden für den Alltag



	Control	PREDIAS	Between-group P-value
BMI (kg/m²)			
Baseline	$32.0 \pm 5.7$	$31.0 \pm 4.7$	
Endpoint	$31.5 \pm 5.8$	$29.7 \pm 4.7$	
Change from baseline to endpoint	$-0.5 \pm 1.4 \ (P = 0.002)^*$	$-1.3 \pm 1.7 \ (P < 0.001)^*$	0.002
Weight (kg)			
Baseline	$93.6 \pm 19.3$	$92.1 \pm 16.5$	
Endpoint	$92.2 \pm 19.4$	$88.3 \pm 15.9$	
Change from baseline to endpoint	$-1.4 \pm 4.0 \ (P = 0.002)^*$	$-3.8 \pm 5.2 \ (P < 0.001)^*$	0.001
Waist circumference (cm)			
Baseline	$106.3 \pm 13.7$	$106.8 \pm 13.7$	
Endpoint	$105.9 \pm 14.1$	$102.7 \pm 12.5$	
Change from baseline to endpoint	$-0.4 \pm 6.2 \ (P = 0.559)^*$	$-4.1 \pm 6.0 \ (P < 0.001)^*$	0.001
Fasting glucose (mg/dl)			
Baseline	$105.5 \pm 12.4$	$105.7 \pm 12.4$	
Endpoint	$107.3 \pm 14.3$	$101.4 \pm 11.3$	
Change from baseline to endpoint	$1.8 \pm 13.1 \ (P = 0.211)^*$	$-4.3 \pm 11.3 (P = 0.001)^*$	0.001
2-h postprandial OGTT (mg/dl)			
Baseline	138.5 ± 34.9	$133.1 \pm 36.2$	
Endpoint	$130.3 \pm 36.1$	$125.8 \pm 41.3$	
Change from baseline to endpoint	$-8.2 \pm 36.9 \ (P = 0.060)^*$	$-7.3 \pm 30.8 (P = 0.041)^*$	0.865

#### Kulzer B,; Diabetes Care. 2009 Jul; 32(7):1143-6



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- Diet composition:
  - Saturated and trans fat  $\psi$
  - Unsaturated fat ↑
  - Whole grains and fibre 个
  - Refined grains and sugar  $\psi$
  - Lots of vegetables and fruit
  - Energy density ↓
  - Culturally adjusted

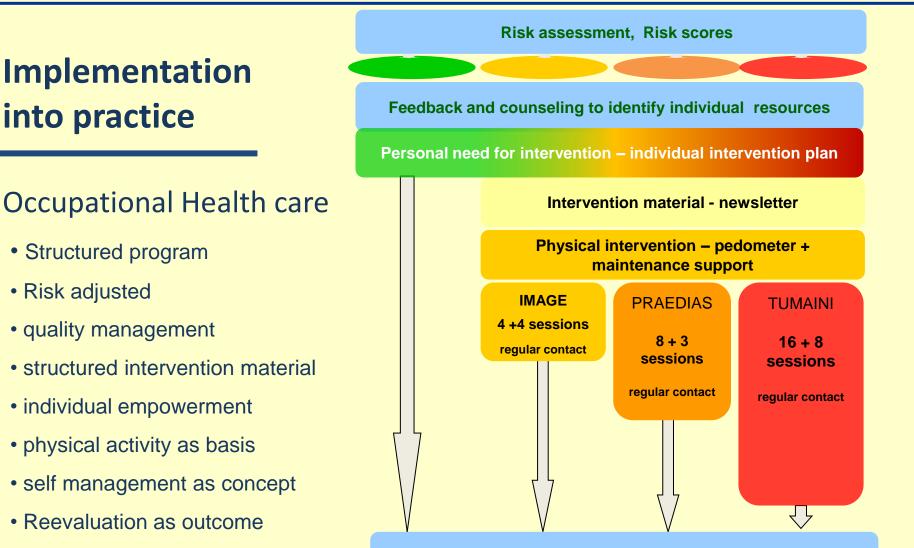
## Common features of successful prevention trials

- Frequent contacts with the intervention personnel
- Empowering:
  - Motivational interviewing
  - Self-monitoring (food diaries, measuring body weight)
  - Individualised lifestyle goals and their monitoring
- Physical activity at least 2,5 h per week
  - All exercise (aerobic, muscle strengthening) is beneficial
  - Most effective risk reduction was achieved with at least moderately strenuous exercise
- Weight reduction (if overweight)
  - Moderate sustained weight loss (5-10%) lowers the risk



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#### individual risk evaluation after 1 year, quality management



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## **Take Action to prevent Diabetes**

## A curriculum for Prevention managers for the prevention of type 2 diabetes



Improving Diabetes Prevention



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### Tasks of the Prevention Manager (PM)

#### Management:

- Communication with other players (diab. prevention and society), networks Motivation and recruitment of participants (persons at high risk)
- Motivation and recruitment of participants (persons at high risk)
- Organization of the programme (time line, dates, places, coworkers\*, reimbursement, ...)

Evaluation

#### **Counselling and Training:**

Behaviour change & Motivation

Lifestyle I – specific aspects of nutrition\*

Lifestyle II – specific aspects of physical activity\*

\*) in some countries the prevention manager will establish a "diabetes prevention <u>team</u>" assuring to integrate experienced experts of the respective prevention areas



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### **Structure of the Training Curriculum PM**<sup>T2Dm</sup>

The Training Curriculum PM<sup>T2Dm</sup> includes **8 modules** (7x face-to-face plus 1x project report)

- Module 1: Problem, Evidence, and Tasks
- Module 2:Course Organization, Recruitment, Networking, EvaluationManagement
- Modules 3 & 5: Behaviour Change I (Motivation) and Behaviour Change (II) (Action and Maintenance)
- Module 4:Specific Aspects of Physical Activity in Diabetes Prevention
- Module 6: Specific Aspects of Nutrition in Diabetes Prevention
- Modules 7 & 8: Longitudinal Project Report/Presentation of the Report



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### **Overall Structure of the PM Training**

#### Pre-course assignment

assisted selfstudies
Commented study material
Entrance examination

#### Face-to-face part

- 7-8 training modules
- skills training
- intermediate tests
- interactive
   program
   development

## Post-course supervision

IMAGE elearning platform
1 year supervision to implement prevention program

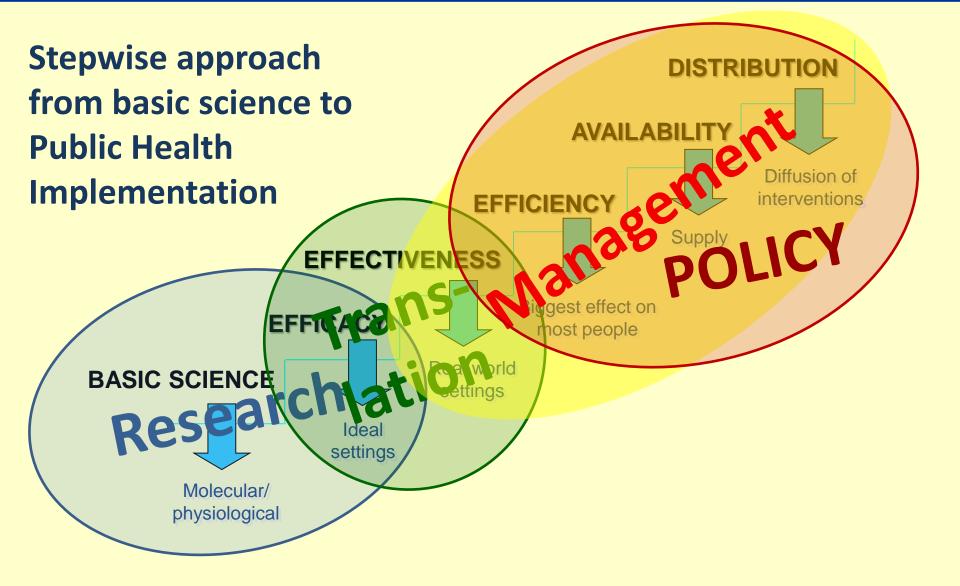
#### PM alumni network

 local national and international exchange of know how
 Quality management



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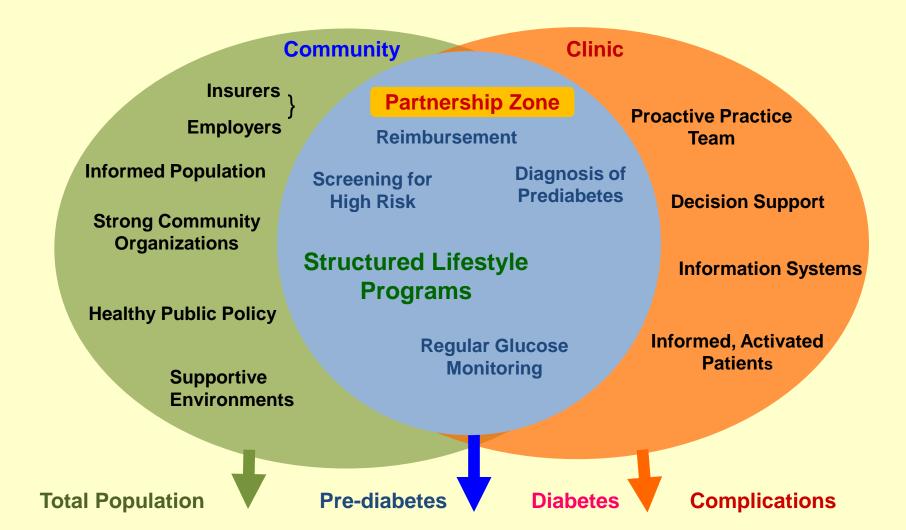




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Prevention of Type 2 Diabetes The Community – Clinic Partnership Model







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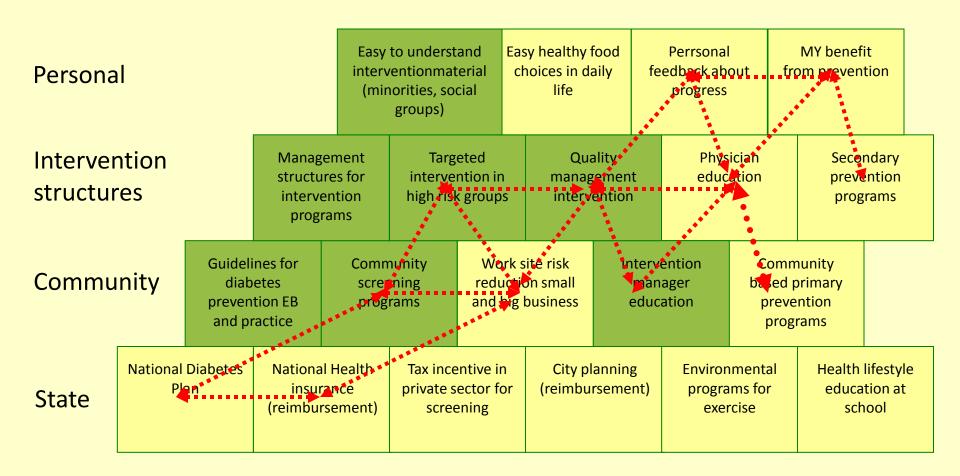
Personal					Easy to understand intervention material (minorities, social groups)		-	Easy healthy food choices in daily life		Perrsonal feedback about progress		MY benefit from prevention	
Intervention structures		Manag structu interve progr	res for ention	es for intervention high risk gro			Quality management intervention		Physician education		Secondary prevention programs		
Community diab			screening B programs		Work site risk reduction small and big business		Intervention manager education		based prev	munity primary ention grams			
State		I Diabetes National Plan insura (reimburs		ance	ce private sector fo		71 0		-		educa	lifestyle tion at ool	

Schwarz PE, Med Clin North Am. 2011 Mar;95(2):397-407.





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Schwarz PE, Med Clin North Am. 2011 Mar;95(2):397-407.



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### **Challenge Implementation**

- **1.** Evidence for diabetes prevention (guideline)
- 2. Evidence for diabetes prevention Practice (Implementation trial, Experience, practice guidelines)
- 3. Political support (Diabetes plan, Prevention plan, Educational activities, .....
- 4. Partners at different levels of care (stakeholder involvement, multidisciplinary team....)
- 5. Adequate intervention concepts and material (Exchange with others, know how transfer, networking......)
- 6. Training of the trainer (license, reimbursement, work plan prevention)
- 7. Quality management in the process (comparable QM, benchmarking)
- 8. Business plan prevention including high risk and public health approach



NICE PUBLIC HEALTH PROGRAMME GUIDANCE

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## Principles Considered in Developing the National Diabetes Prevention Program

Diabetes risk must match program cost Program must be effective Program must be economically sustainable Program must be available

## What is the situation today?

# VPC The Virtual Prevention Center



THE VIRTUAL PREVENTIONCENTER

# VPC The Virtual Prevention Center

TAKE ACTION TO PREVENT DIABETES







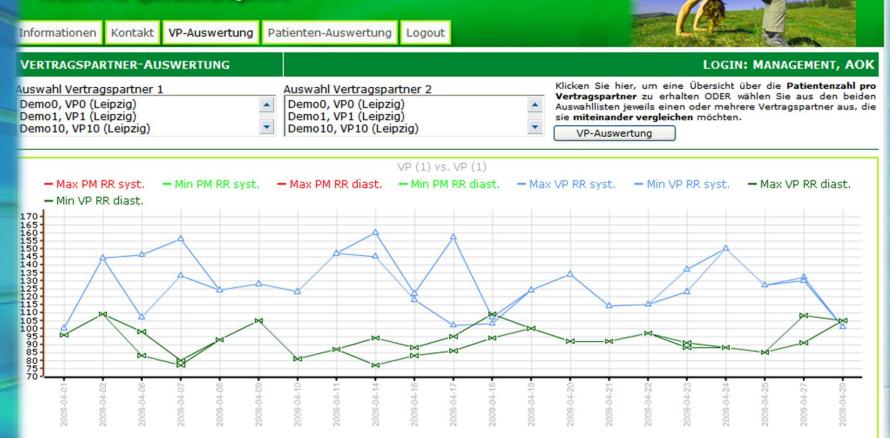
#### THE VIRTUAL PREVENTIONCENTER

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٩	Marine Marine	for diabetes This report was	on quality indicators prevention created by the European	published	Practice guidelines	1	5.7	UK 🖂	3	<b>&gt;</b>
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Pre-assessment IMAGE-Curriculum

## **Quality management in the virtual center**

#### Netzwerk für Qualitätsmanagement



The Virtual PreventionCenter

Directory - who is active in diabetes prevention

# Do you think that Diabetes Prevention is important?

Worldwide network of people active in Prevention of Diabetes

www.active-in-diabetes-prevention.com

Info@activeindiabetesprevention.com

## Number of users in the network "Active in diabetes prevention" *1 month after start* - 338



north america: 21 africa: 14 south america: 10 asia: 24 europe: 263 australia: 6

## Number of users in the network "Active in diabetes prevention" 2 months after start - 1085



north america: 247 africa: 49 south america: 60 asia: 102

europe: 583 australia: 44

### Number of users in the network "Active in diabetes prevention" 6 months after start - 2016 user

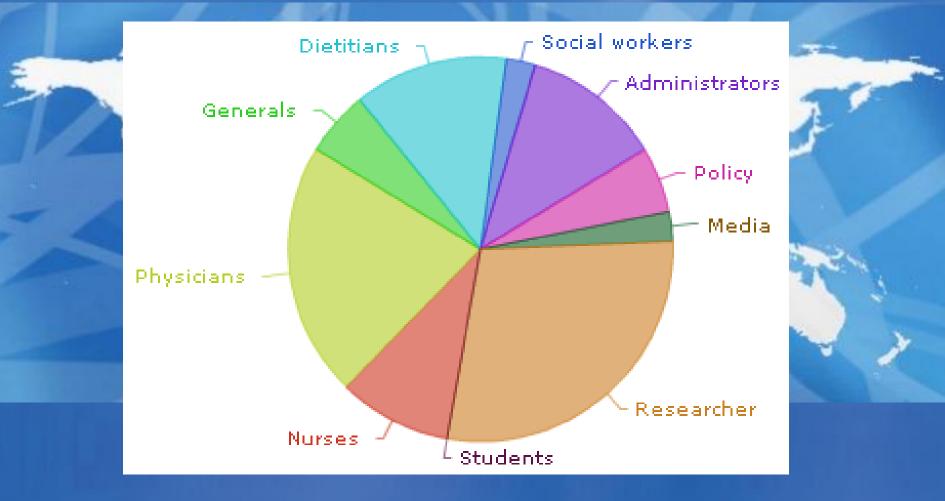


north america: 470 africa: 76

south america: 101 asia: 235 europe: 1063 australia: 71

Country ranking				llsers per country					
	RANK	COUNTRY	MEMBER	Users per country r of users in the network "Active in diabetes prevention" in the network "Active in diabetes prevention" Today - 3688 user					
	1	GER	579	Today - 3688 user					
	2	CD	328						
	3	USA	321						
	4	FIN	148						
	5	UK	143						
	6	П	122						
	7	AUS	102						
	8	SP	88						
	9	IND	85						
	10	POR	59						
	11	NIG	50						
	12	NET	48						
		VEN	46						
		SWE	36						
		PAK	35						
	16		35						
	17	FR	33	merica: 681 south america: 135 europe: 1444					
	18	BR	32	merica: 681 south america: 135 europe: 1444 130 www.astiveindiabetesprevention1com					
	19	SWI	32						
	20	AU	29						

## Distribution of members in the network "Active in diabetes prevention"



www.activeindiabetesprevention.com



#### NICE PUBLIC HEA

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## Network –

#### who are active in

#### diabetes prevention

Number of users in the network "Active in diabetes prevention" *Today - 3107 user* 



#### Network - who is active in diabetes prevention

Register Login

Velcome to the Network of Diabetes Prevention

Invitation letter Our aims

e you can find useful information about diabetes ention. Furthermore this board should be used as a munication platform between all those interested on etes prevention worldwide.



"Between the topics of interest in our Teenegers Education Programs, sport and eating habits are discussed as way to prevent diseases." Matthias Labisch – Dresden, Germany, Reg-No: 00011

urrently we have 3074 registered users from 134 countries.



#### World directory for people active in the prevention of diabetes - Register Today!

Our aim is to bring people world wide together interested in diabetes prevention. We invite everyone we is active in the prevention of diabetes and chronic diseases - medical professionals but also lay-people politicians, administrators, public health specialists, health care providers and many, many others - to become a partner in the network.

We would like to establish an online world directory for "people active in diabetes prevention" to conneindividuals who are interested and active in the field of prevention of diabetes mellitus. This should help to

- build up a network of people being active in the prevention of diabetes worldwide
- exchange information and experiences leading to successful implementation of prevention programs

With this network we would like to build a climate of understanding of success but also difficulties in the process of implementation.

If you are interested please go ahead and register with your name and Email address today. Step by ste we would like to extend the information based on your inputs and responses.

Join the network "people active in diabetes prevention" and make the prevention of diabetes mellitu become reality.

Prof. Peter Schwarz - Dresden, German

**Diabetes Prevention Forum** 

### www.activeindiabetesprevention.com