Diabetes Prevention in Practice: lessons learned

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Prof. Dr. med. habil. Peter Schwarz, MBA

• International Expert for the Prevention of Diabetes in Practice
• First Professor for Prevention and care of diabetes in Europe
• Global Executive MBA for International Business
• Coordinator of large European and Global Prevention initiatives  (IMAGE - 107 partners, MANAGE CARE - 87 part., APPways - 55 part., Global Diabetes Survey)
• President of the 6th World Congress on the Prevention of Diabetes and National meetings
• Executive Board member in national and international org.  (Global Diabetes Plan, DASG, IDF, active in diabetes prevention, Global Diabetes Survey)
• Special Focus: Knowledge transfer into practice and know how management
• Training in: Germany, USA, Tanzania, South Africa, Finland  (Germany, Spain, India, China, Brazil for the MBA)
• 152 peer reviewed publications, total impact factor of 845, Hirsch index 34, 32 book chapters, more than 170 presentations to peer-reviewed, internationally conferences
Prevention is a Good Long-Term Investment

Financial Impact

4 level Public Health Model
for the implementation of prevention programs

Stepwise approach from basic science to Public Health Implementation

National Prevention Strategy

- oGTT, Risk Score,
- Physical activity
- Anthropometry
- National Screening program,
- Guideline
- Health policy

- Prevention manager training
- Prevention management algorithms
- Guideline for diabetes education
- Quality management in diabetes prevention

- Smart health APP’s
- Mobile ehealth
- Education program based on risk
- Interventions based on behavioural change models
- Assessment strategies to identify indiv. most effective intervention
- Risk Stratification
- E-health based education
- Telemedicine support
- Individual coaching

- National Diabetes Prevention Program
- Quality management for outcome reporting
- Effect control for improved intervention
- Feedback to provider and individuals
- Continuous improvement of program components
- Guideline adaptation
- Health Policy
Continuous glucose monitoring in a healthy person

Female, 26 years old, HbA$_1^c$ 5.2%, typical snack-eater

Slides with permission from Prof. Hanefeld
Prediabetes starts with postprandial glucose peaks

Increase in fluctuation leads to increase in oxidative stress

61 years old male patient with IGT, HbA1c 5.0%

Slides with permission from Prof. Hanefeld
Type 2 Diabetes Risk – how to find?

EZSCAN Evaluation

fasting glucose

HbA1c

Insulin

2hr gluc

1hr glucose

Blood glucose

Risk score use

Normal Glucose tolerance IFG impaired Glucose tolerance Diabetes

modifiziert nach: DeFronzo RA et al., Diabetes Care 1998
IMAGE Project – what delivered?
Realistically increased the ability for the implementation of prevention programs

- Executive summary
- Why is it time to act?
- How can I make a difference?
- How to budget a prevention program
- How to identify people at risk
- How to change behavior
- Physical activity to prevent diabetes
- Nutrition guidance to prevent diabetes
- Other behavior’s to consider
- Evaluation / quality assurance
- Join forces to make a difference!


Practice

Diabetes prevention Toolkit

- 7 training units (55 to 60 hours)
- Longitudinal project report with respect to local course organization and implementation for the respective target groups (min. workload of 40 hours)
- Pre- and post-course assignments supported by the IMAGE e-learning platform (min. workload of 60 hours)
- Overall course timespan: about 6 months
- Regional or national alumni networks for subsequent quality assurance

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.

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
Toolkit – Contents II

• 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’’):
1. Organization of the course, scientific basis
2. Prevention management
3. Behaviour change: Motivation
4. Specific aspects of Physical activity
5. Behaviour change: Action and Maintainance
6. Specific aspects of Nutrition
7. Business models diabetes prevention
8. Report presentation

1 year supervision

Based in the IMAGE Curriculum
Overcoming diabetes management challenges

Importance of convenient therapies

- High
- Low

Ultimate decision-maker concerning the nature and extent of therapy

Nature of illness
- successful disease management includes patient behaviour change
**Behaviour Change Model and Techniques**

Astrid Krag, MoH Denmark
Self-management is the only way. Educational programs must support Self-management and informed decision making

Desislava Dimitrova, DMoH, Bulgari
Chronic Care Management ist the most effective way to improve Self-Management

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Individualism - strength for empowerment

SweetSmart

1. Dimension: Willingness to change
2. Dimension: Patients' preferences
3. Dimension: Stage of disease

- Maintenance
- Action
- Motivation
- Social support
- Saving of time
- All day performance
- Prevention
- Low costs
- Insulin therapy (type 1 and 2)
- Type 2 (diabetes without insulin)
Hypoglykämie
Hyperglykämie
Reisen
Familie
Schwangerschaft
Gestationsdiabetes
Diabetischer Fuß
Bewegung mit Diabetes
Partnerzusammenleben
Küchenfertigkeiten
Alkohol

Individuelles Essverhalten
Bewegung und Essen
Welche Bewegung schafft was?
Anlaufstellen, regionale Angebote
Individuelle Risikosignale
Mahlzeiten gestaltung
Was brauche ich für Ernährung?
Saisonales Essen
Was ist mein Allergen?

Keine Zeit für Bewegung?
Sportvereine
Ich trau mir das nicht zu
Selbstwirksamkeit stärken,
Ich weiß nicht, was ich machen soll!
Ich fühle mich alleingelassen

Motivation fehlt:
Selbstwirksamkeit stärken,
Ich weiß nicht, was ich machen soll!
Ich fühle mich alleingelassen

Rückfall Prophylaxe 1
Rückfall Prophylaxe 2
Rückfall Prophylaxe 3
Rückfall Prophylaxe 4

1000 Schritte mehr wöchentlich
Ich will nicht mehr
Ich kann nicht mehr

Assessment and risk stratification
Motivational Interviewing
Erfolgslehrme schaffen
Unterstützung bei Zielsetzung
Soziale Unterstützung rekrutieren

Competence Toolbox
Educational programs for diabetes prevention

- Risk assessment, Risk scores
- Feedback and counseling to identify individual resources
- Personal need for intervention – individual intervention plan
- Intervention material - newsletter
- Physical intervention – pedometer + maintenance support
- IMAGE 4 + 4 sessions, regular contact
- PRAEDIAS 8 + 3 sessions, regular contact
- TUMAINI 16 + 8 sessions, regular contact
- individual risk evaluation after 1 year, quality management
- Implementation
  - Structured program
  - Risk adjusted
  - quality management
  - structured intervention material
  - individual empowerment
  - physical activity as basis
  - self management as concept
  - Reevaluation as outcome

- Educational programs for diabetes prevention
- Implementation
Innovative patient education – individualized but centralized

- Patient receives education online through social education network
- Educational modules are selected based on persons individual needs
- Educational content vary based on educational medical and motivational needs
- Interactivity and peer support assure adherence
# The Prevention Paradox

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<th>Science</th>
<th>Screening</th>
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What is needed

Evidence

Evidence based evaluation not evidence based development

Liability

Health related Liability for consumer products and policy

Business

Business models for prevention
## EVIDENCE

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<th>Met</th>
<th>Life/Met</th>
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<th>TZD</th>
<th>Orlist</th>
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*Life: lifestyle; Met: metformin; RR: risk reduction; TZD: Glitazone*
Quality Management in diabetes prevention

• Specific
• Mesurable
• Achievable
• Relevant
• Timely

Thank you very much!
LIABILITY - Increase in diabetes risk

by drinking (336g) softdrink per day / 1 year

100%

Business Solution?
10.000 steps a day from the age of 22 prevents any chronic disease

1.000 additional steps a day reduces postprandial glucose by 1,5 mmol/l
2700
How many hours a day are we inactive?

23.40
## Recommendation for daily step count

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<td>Low (typical of daily activity excluding volitional activity)</td>
<td>5000-7499</td>
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<tr>
<td>Moderate (likely to incorporate the equivalent of around 30 minutes per day of moderate-intensity physical activity)</td>
<td>7500-9999</td>
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<tr>
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<tr>
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People with Pedometer walk more steps than those without. Use of a pedometer is a very pragmatic and effective way for diabetes prevention.
### Tele-assisted Pedometer program

#### Walking Away Diabetes

**1000 additional steps a day reduce postprandial glucose by 1,5 mmol/l**

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Walk away from Diabetes
Effective Prevention of Diabetes