Diabetes mellitus
The "diabetes epidemic“, improved survival and strategies for rehabilitation

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Diabetes and rehabilitation

- The diabetes epidemic
  - And why

- Rehabilitation
  - Rehabilitation in Diabetes
  - Organization of rehabilitation in Diabetes – the challenges

- From Diabetes to cancer
The Diabetes Epidemic
As we know it

- U.S.: 2010 = 26.8 M, 2030 = 36.0 M (34% increase)
- Germany: 2010 = 7.5 M, 2030 = 8.0 M (6% increase)
- Brazil: 2010 = 7.6 M, 2030 = 12.7 M (67% increase)
- Egypt: 2010 = 4.8 M, 2030 = 8.6 M (180% increase)
- Russia: 2010 = 9.6 M, 2030 = 10.3 M (7% increase)
- Pakistan: 2010 = 7.1 M, 2030 = 13.8 M (94% increase)
- India: 2010 = 50.7 M, 2030 = 87.0 M (72% increase)
- China: 2010 = 43.7 M, 2030 = 63.5 M (45% increase)

World 2010 = 285 M
2030 = 439 M (54% increase)

M = Million
Trends in the Prevalence of Diabetes

Carstensen & al, Diabetologia, 2008, 51, 2187-96
Incidence of DM in Denmark

National Diabetes Register, 360,000 DM patients, Carstensen & al, Diabetologia 2008, 51, 2187-96
The Changing age Pyramid

Germany

Vaupel & Loichinger, Science 2006
Decreasing excess mortality in Denmark

Excess mortality down from
1.90 in 1997
To
1.57 in 2010
(36% decrease in 13 years)

Blue: Males, Red: Females, Full drawn: Diabetes, Dotted: without Diabetes
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Rehabilitation in diabetes

Rehabilitation

- Rehabilitation of people with disabilities is a process aimed at enabling them to reach and maintain their optimal physical, sensory, intellectual, psychological and social functional levels. Rehabilitation provides disabled people with the tools they need to attain independence and self-determination.

- i.e. Reestablish near-normal function, timed process

Rehabilitation in Diabetes (Toronto Rehabilitation Institute)

- Toronto Rehab’s Diabetes, Exercise and Healthy Lifestyle Service, part of the Cardiac Rehabilitation and Secondary Prevention Program, is one of only a few services in Canada that teaches adults who have diabetes or are at an elevated risk of developing it, how to manage or prevent the disease through a structured, intensive lifestyle program.

- i.e. Prevent disability through prevention, lifelong process
Challenges in rehabilitation in DM

- DK: > 250,000 in life-long rehabilitation – VOLUME
- Patients differ: newly diagnosed without complication to patient with disabilities (blindness, renal failure, amputations, heart disease) – HETEROGENEITY IN NEEDS
- Organization of rehabilitation – diabetes clinics – general practice – nurse led clinics – health centers – MATCHING NEEDS WITH STRUCTURE
The stratification concept

Level 3
Highly specialized

Level 2
(specialized care in diabetes clinic)

Level 1 (basic care)
<table>
<thead>
<tr>
<th></th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c</td>
<td>&lt; 7.0 %</td>
<td></td>
<td>&gt; 9.0%</td>
</tr>
<tr>
<td>Metabolic problems</td>
<td>No</td>
<td>Severe Ins. Resist.</td>
<td>Severe hypo’s Fluctuating HbA1c</td>
</tr>
<tr>
<td>BP</td>
<td>&lt; 130/80</td>
<td></td>
<td>&gt; 190/90</td>
</tr>
<tr>
<td>Nephropathy</td>
<td>No</td>
<td>Microalb.</td>
<td>Proteinuria</td>
</tr>
<tr>
<td>CVD</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retinopathy</td>
<td>None or mild simplex</td>
<td></td>
<td>Need for specialized treatment</td>
</tr>
<tr>
<td>”Diabetic foot”</td>
<td>No</td>
<td>Neuropathy/ PVD</td>
<td>Ulcer, gangrene, amputation etc.</td>
</tr>
</tbody>
</table>
Stratification of patients

Level 3

Level 2

Level 1
The future of rehabilitation in DM

- Create the ”life long curriculum”
- Plan, act and fund across sectors
  - Municipalities, GP’s, Diabetes centers, specialist care
- Increase flexibility in the model (in chronic care level of stratification varies over time and may progress or regress)
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Diabetes and Cancer
Mutual learning

- Diabetes
  - Well documented effects of
    - Pt. education
    - Pt. empowerment
    - Multi-disciplinary teams
    - Life style intervention
  - Low level of evidence with respect to
    - Involvement of relatives
    - Pt. to pt. empowerment
    - Impact of depression and mental illness

- Cancer
  - Experience with
    - Involvement of relatives
    - Pt. to pt. empowerment
    - Early intervention
We all still have a lot to learn

THANK YOU