

Disability & Diabetes Mellitus

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Why Disability ?

- Diabetes related
 - ◆ Complications of disease
 - ◆ Adverse effects of treatment
- Co-morbidity related
 - ◆ Obesity
 - ◆ Arthritis (Gout)

Economics of Diabetes – 2007

(Diabetes Care 2008;31:596-615)

- Total estimated cost
 - ◆ \$ 174 billion
 - \$ 116 billion in excess medical expenditure
 - \$ 58 billion in reduced national productivity
- Medical costs attributed to diabetes
 - ◆ \$ 27 billion as direct cost to treat
 - ◆ \$ 58 billion to treat diabetes related complications
 - ◆ \$ 31 billion in excess genera; medical costs

Indirect Costs

- Increased absenteeism
 - ◆ \$ 2.6 billion
- Reduced productivity while at work
 - ◆ \$ 20.0 billion
- Reduced productivity for those not working
 - ◆ \$ 0.8 billion
- Unemployment from disease related disability
 - ◆ \$ 7.9 billion
- Lost of productivity due to early mortality
 - ◆ \$ 26.9 billion

Work Disability Among Individuals with Diabetes (*Diabetes Care 2005;28:1326*)

- Significant work disability – 19%
- Unemployed – 12 %
- Missed work (> 5 days/month) – 7%
- Severe difficulty with work tasks – 4%
- Those with *Depression and 3 or more diabetes* related complications > 50% unemployed
- Of those with significant work disability, half met criteria for major or minor depression

Contributors to Disability in Diabetes

- Sensory Neuropathy
 - ◆ Difficulty to sense ground and maintain posture
- Autonomic Neuropathy
 - ◆ Difficulty to prevent drop in blood pressure when standing
- Microvascular Disease
 - ◆ Retinal damage
 - ◆ Damage to nerves

Other Factors

- Diabetes related arthropathy
 - ◆ Inflammatory
 - ◆ Iron over load
 - ◆ Neuropathy
- Gout in patients with type-2 diabetes

Diabetes & Co-morbidities

- Diabetes is a common clinical disorder and , therefore, likely to be seen in the setting of other common disorders
 - ◆ Osteoarthritis
 - ◆ Obesity
 - ◆ Hypertension
 - ◆ Old age
 - ◆ Dyslipidemia

What Else?

- Treatment Related
 - ◆ Hypoglycemia
 - Most common cause of falls and injuries
 - Often over looked
 - Many times nocturnal
 - Easy to fix

Is there a causal relationship?

- Possible
 - ◆ Diabetes might directly affect blood vessel formation in cartilages
 - ◆ Diabetes treatments may lead to weight gain and affect weight bearing
 - ◆ Diabetes affects collagen and makes it rigid
 - ◆ Diabetes affects kidney function and how Uric acid is handled
 - ◆ Iron overload and arthropathy

A Summary of why Arthritis is common in patients with Diabetes

- *Osteoarthritis more common in older patients*
- *Obesity*
- *Cartilage damage from*
 - ◆ *iron overload,*
 - ◆ *and inflammation*
- *Gout more common in patients with type-2 diabetes*
- *Neuropathy*

Does Exercise Help in Ameliorating Risk?

- Diabetes Prevention in conjunction with weight management:
 - ◆ Da Qing Study (Pan et al) 46% risk reduction
 - ◆ Tuomilehto et al 58 % risk reduction
 - ◆ DPP Research Group 58 % risk reduction
 - ◆ Kosaka et al 67 % risk reduction
 - ◆ Ramachandran et al 28.5% risk reduction

A timely review: [*The Cochrane Library 2008;4:1-79*](#)
