

Swiss Re



# Dis-Ability: Diagnoses and Data

DI: Diagnosis and Data  
J. Bronsema, IAVM  
Basel, 8. September 2005



## Agenda

- **Dis-Ability**
- **Frame of References (from medical to the social model)**
  - **International Classification of Diseases (ICD)**
  - **International Classification of Impairment, Disability and Handicap (ICIDH)**
  - **International Classification of Functioning, Disability and Health (ICF)**
- **Examples**
  - **Ankylosing Spondylitis**
  - **Mental Disorders**
  - **Obesity (and other risk factors)**
- **Conclusions**



## Agenda

- **Dis-Ability**
- **Frame of References**
  - ICD
  - ICIDH
  - ICF
- **Examples**
  - Ankylosing Spondylitis
  - Mental Disorders
  - Obesity (and other risk factors)
- **Conclusions**

## Dis-Ability: ICF



### Diagnosis:

- Lesion of the spinal cord

### Functional/anatomical:

- Paralysis of the legs

### Activities:

- Wheelchair bound

### Participation:

- Olympic champion

## Dis-Ability

- WHO def. disability (ICIDH):  
“Any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being”
- AMA guide def. disability  
“An alteration of an individual’s capacity to meet *personal, social, or occupational demands* because of an **impairment.**”
- (Medical) Disability  
“Loss of ability to perform a **defined work role** because of functional loss caused by **medical impairment**”

Note: - primarily a contractual & legal construct!

Source:  
Holmes EB ea,  
Emedicine. Impairment  
Rating and Disability  
Determination. March  
2002

## Dis-Ability

- WHO def. of impairment  
“Any loss or abnormality of psychological, physiological or anatomical structure or function”
- AMA guide def. impairment  
“An alteration of an individual’s health status; a **deviation from normal** in a body part or organ system and its functioning”
- Medical impairment  
“**Loss of function** (anatomical, physiological, cognitive) from a **medically determinable cause**, resulting in **limitations** (i.e. what cannot be performed) and/or **restrictions** (what should not be performed)”

Source:  
Holmes EB ea,  
Emedicine. Impairment  
Rating and Disability  
Determination. March  
2002

## Dis-Ability

### Misunderstandings:

- the difference between disability and impairment.
- the difference between impairment and diagnosis



What is the

- Ruler?

What are our

- Frame of References?

What are relevant

- Data/risk factors?

## Dis-Ability

### What is a diagnosis?

The nosologic framework:

- **Cause:** tuberculosis, Down syndrome
- **Morphological changes:** melanoma, IBD
- **Physiological symptoms:** epilepsy, hypertension
- **Complaints:** migraine, CFS, fibromyalgia

Increase of biomedical knowledge:

redefinition of diseases

Medical taxonomy: mix of variety of criteria



## Dis-Ability

**Diagnosis is not more than an agreement on disease entity**

E.g. Friedreich's Ataxia

- - progressive cerebellar ataxia
- areflexia lower extremities / bilateral Babinsky's sign
- early age onset (<25 yrs)
- autosomal recessive

Diagnosis: **on clinical signs**

- DNA analysis: causative mutation detected!  
Expanded GAA-repeats in X25-gene

## Dis-Ability

.....clinical spectrum is broader than previously assumed:  
also appears to be expressed as an “atypical” disease!

- - later onset (>25 yrs)
- pyramidal signs at an early stage
- retained tendon jerks or hyperreflexia
- absence of Babinsky’s sign
- and/or slowly progressive course

So: what is Friedreich’s Ataxia?

Diagnosis:

**On traditional clinical signs or the gene mutation?**

**Disease: not independent entity but human construction**

Source: Warrenburg ea.  
Friedreich’s ataxia: clinical  
difficulties and genetic  
possibilities. Ned Tijdschr  
Geneesk 2002;146:1669-72.

## Dis-Ability

### **What is a diagnosis/disease?:** **(Subsequently: what is a “non-disease”?)**

Medical



Insurer



Government

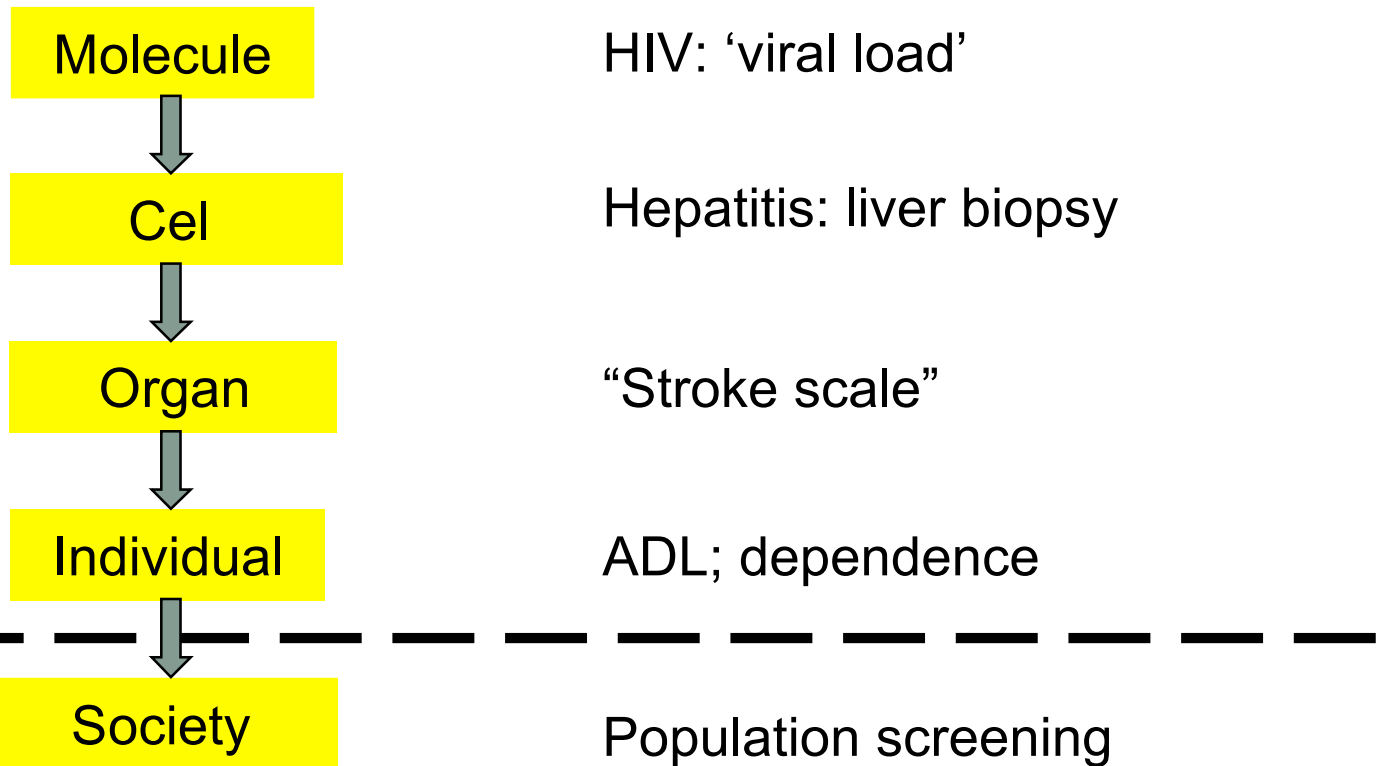


Client

- The *BMJ* conducted a survey on the web to identify “non-diseases” and found almost 200
- The notion of “disease” is a slippery one and the concept of *non-disease* is therefore similarly blurred
- Health is equally impossible to define
- To have your condition labeled as a disease may bring considerable benefit, both material (financial) and emotional
- However, the diagnosis of a disease may also create problems you may be denied insurance, a mortgage, and employment
- A diagnosis may also lead you to regard yourself as forever flawed and unable to “rise above” your problem

# Dis-Ability

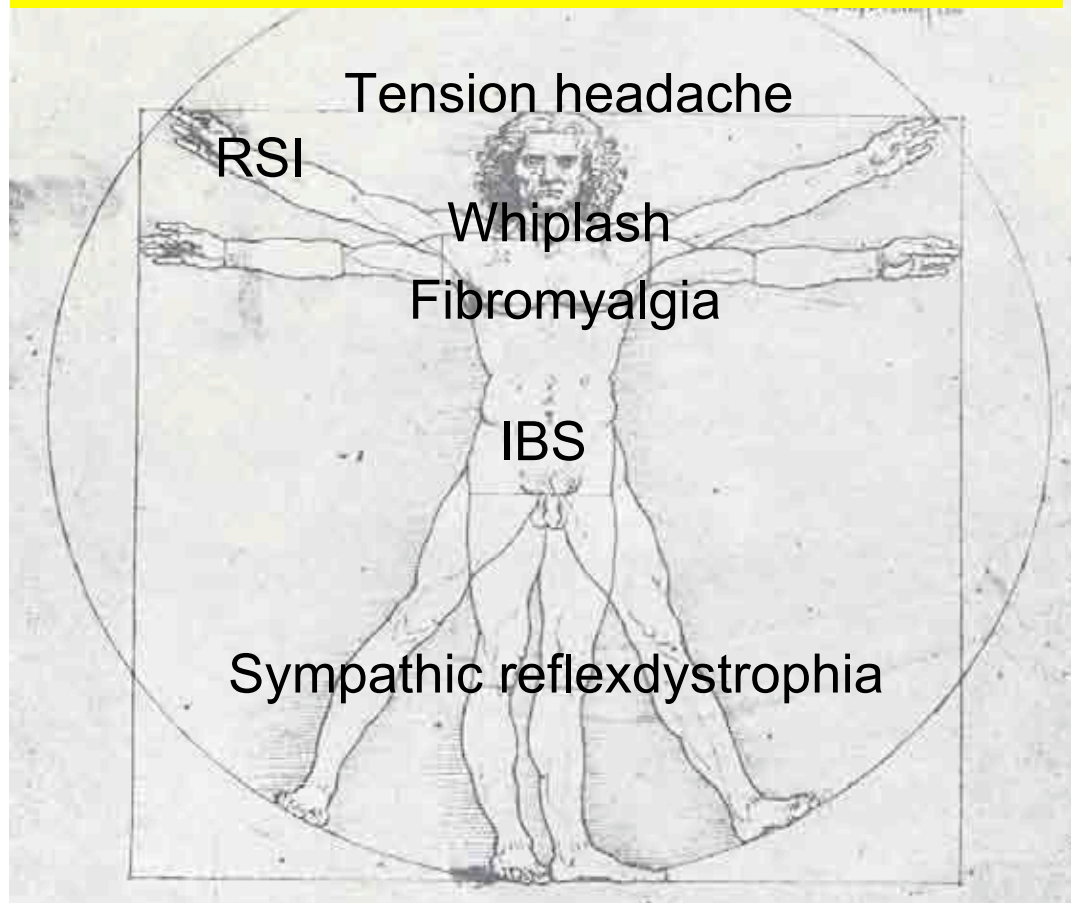
## Results: what level of measuring?





# Dis-Ability

## Diagnosis: the individual in cultural context





## Dis-Ability: ICF



### Diagnosis:

- CFS/Fibromyalgia

### Functional/anatomical:

- ?

### Activities:

- Wheelchair bound

### Participation:

- Non: TPD



## Agenda

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  - **ICF**
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  - Mental Disorders
  - Obesity (and other risk factors)
- Conclusions

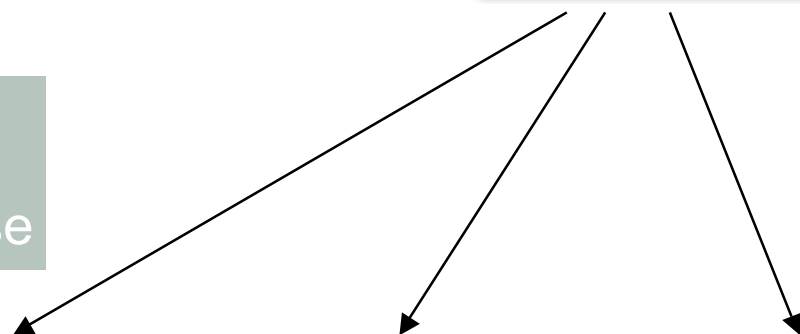
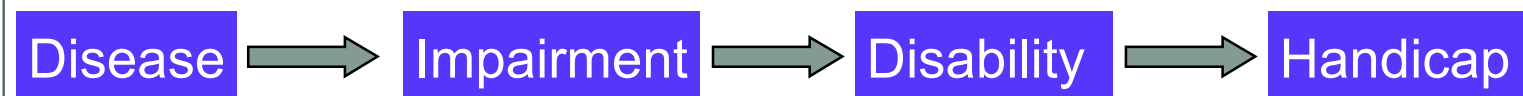


# Frame of References

ICD (10):  
Etiological framework

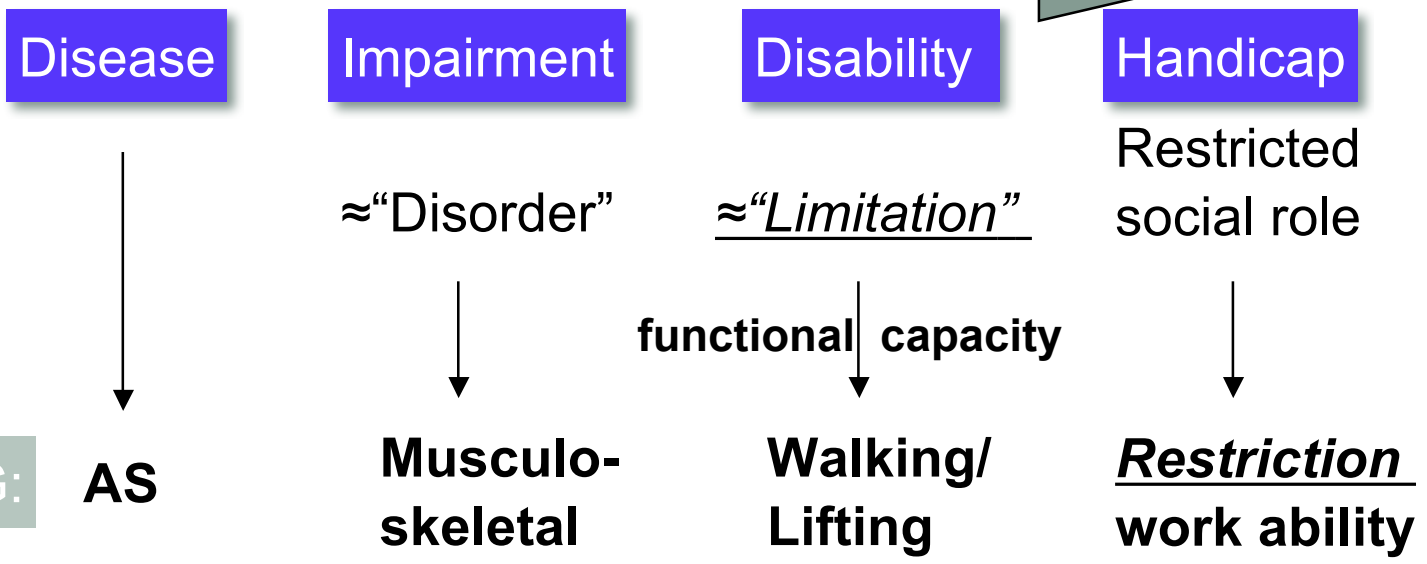
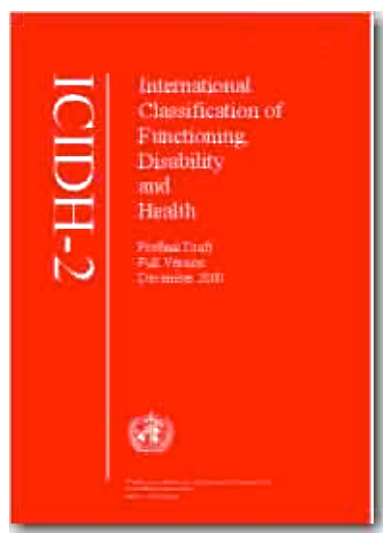


ICIDH:  
Consequences of disease





# Frame of References



E.G:

Outcome parameter?

AMA Guide

“Traditional” DI



# Frame of References

	<u>NL ASSESSMENT</u>	ICD	ICIDH	Physical Work Capacity
<b>STEP 1</b>	<u>DI</u>	Aetiology		
	Disease/Accident		Disease	
		Pathology		
			Impairment	Muscular function/strength /coordination/endurance
		Symptoms		
	Disorders			
	Limitations		Disability	Functional Capacity
				Work capacity
	<b>Restrictions</b>			
<b>STEP 2</b>	Loss of work- or earning capacity		Handicap (work)	Handicap in work : Work capacity vs Workload

## Frame of References

### Disadvantages of ICDH

- Impairment, disability and handicap are not distinct events in time.
- Environmental/personal factors are not taken into account
- Confusion about “disability“: it is defined in a variety of ways. Disability is an umbrella term for impairments, activity *limitations* and participation *restrictions*.

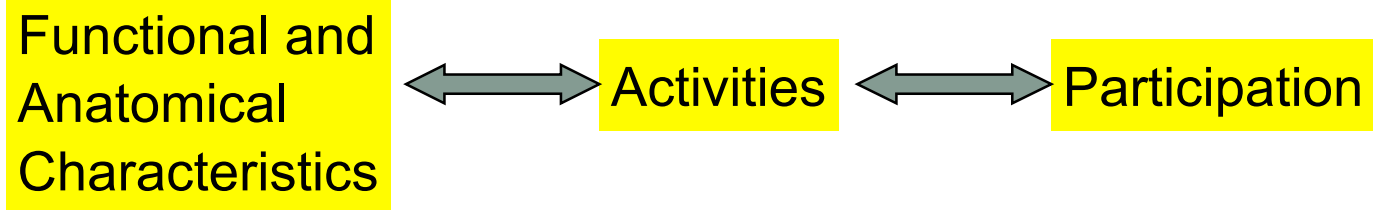
### Introduction of ICF

- Shift from disability to focus on “level of health”  
(note: shift from cause to *experience* of impact on health)

## Frame of References



ICF: biopsychosocial model of disability  
International Classification of Functioning, Disability and Health



### ICF:

“based on the integration of **two opposing models (medical and social model)**, by use of a **biopsychosocial approach**, in order to provide a coherent view of different perspectives of health from a biological, individual and social perspective”



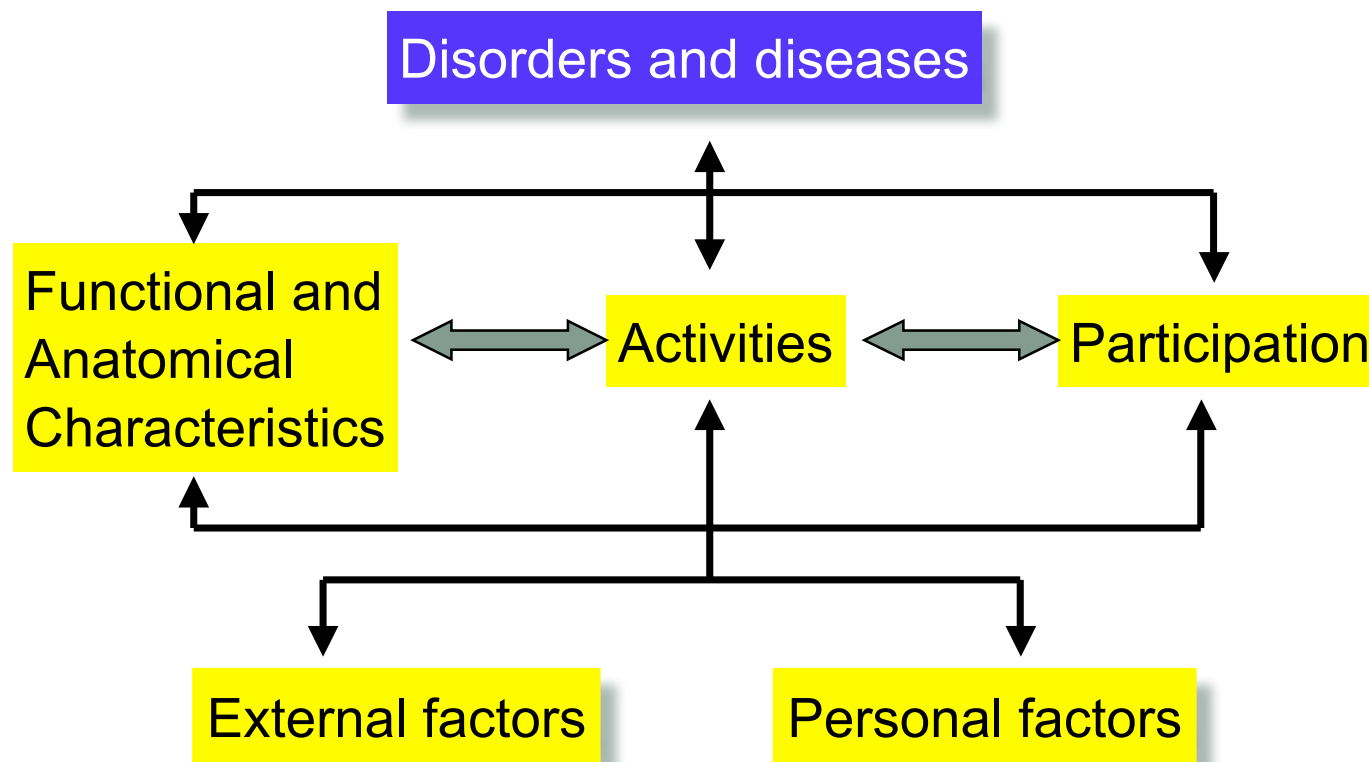
## Frame of References

### Disability and functioning:

- **Medical model:** disability as a *problem of the person, directly caused by disease, trauma or other health condition*. Management is aimed at cure (by professionals) or individual's adjustment and behavioral change.  
**Political level: health care policy modifying or reforming**
- **Social model:** disability is a *socially created problem, not an attribute of an individual, a complex collection of conditions mainly created by social environment*. Management is the collective responsibility of society at large for full participation in all areas of social life.  
**Political level: human rights**



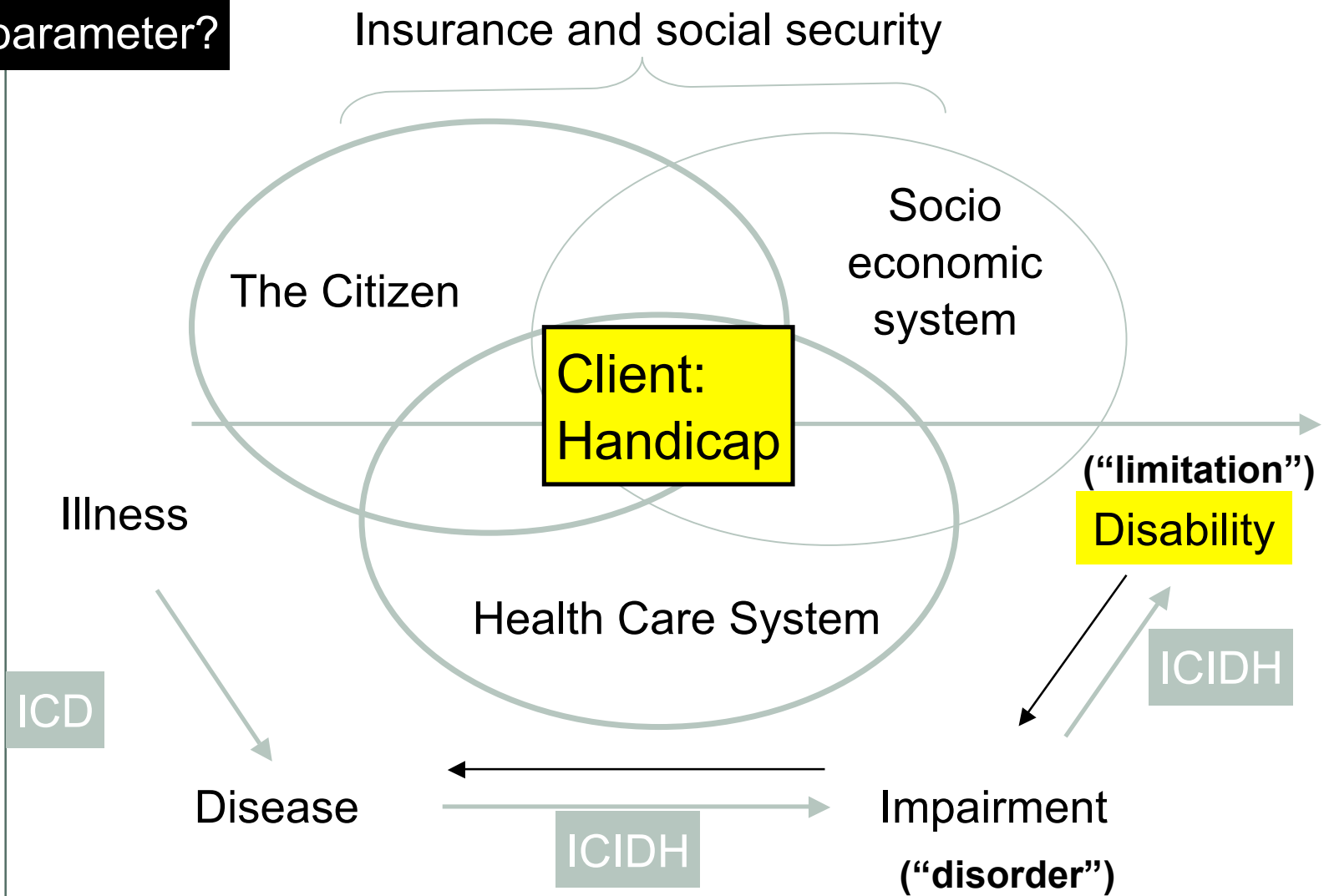
# Frame of References



Outcome parameter?

# Frame of References

Outcome parameter?



## Frame of References

### Disability insurances:

- Underwriting:  
predominantly based on the medical model
- Client's claim:  
based on the social model



Which model is in force?  
The policy terms decide!

Outcome (risk-)parameters,  
decisive for pricing,  
should be based on the **policy terms**



## Frame of References

- Medical model (focus on impairment -disorder in ICDH-) is rational but often insufficient
- (Biophysio)social model is the client's "view", but can be irrational (subjective)

Consequences for claims management?

- Framework of argumentative claim-handling: consistency, verifiability and reproducibility, based on **restrictions for work = what should not be performed (dynamic) and complimentary: abilities / possibilities** not on limitations (-disability in ICDH-) = what cannot be performed (static)

## Frame of References

Solution for underwriting and pricing?

- Clear policy terms:
  1. Based on **impairments**  
("medical model")
  - or
  2. Based on **restricted work ability**  
("biophysiosocial model")  
focus on instruments for prevention, rehabilitation  
and return to work in multidisciplinary setting:  
focus on **abilities / possibilities**
- Incorporate **all relevant risk factors**

## Frame of References

### Risk factors

- Predisposing factors:  
genetic factors, age, gender, personality (traits and states), lifestyle, previous experiences, etc.
- Provoking factors:  
life events, incidents at work, working conditions.  
In general: factors raising health problems in sensitive persons. Main causal or contributing factors.
- Maintaining factors:  
cognitions, avoiding behavior (severe avoidance of physical activities), environmental factors (disability claim)

Source: Health Counsel  
of the Netherlands,  
Medical treatment in  
sick leave and disability  
7/2005

# Frame of References: risk factors



## Risk factors

Risk takers

vs

Risk carriers

Own fault



No fault

Verifiable



Unverifiable

Voluntary



Not voluntary

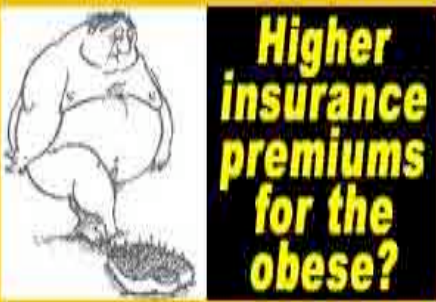
Offender



Victim

Essentialism in lawmaking: genetics.

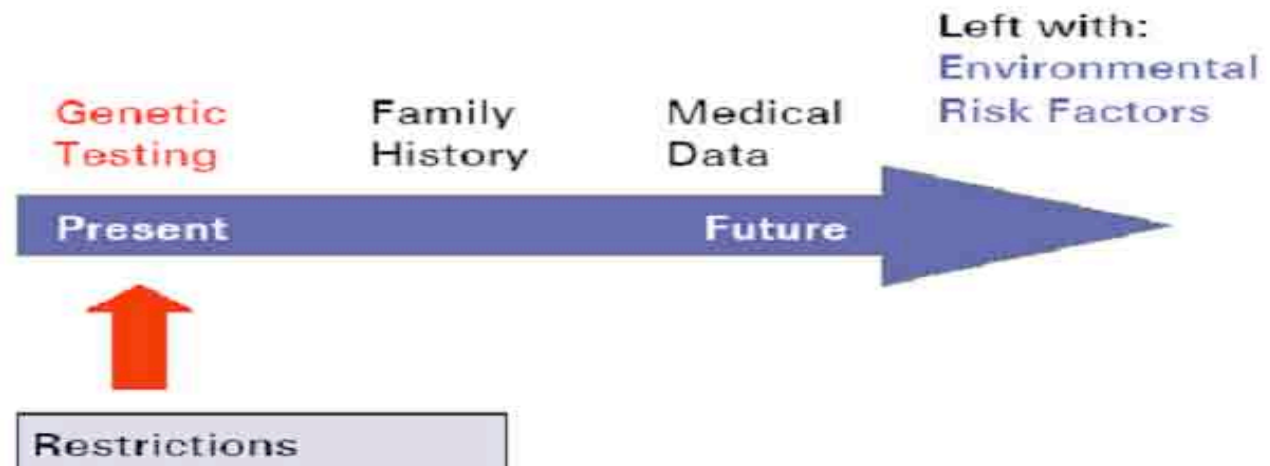
Priority to “genetic” risk carriers!



Risk carriers vs (?) risk takers

“Health behavior” → med. examination on moral risk?

cf. trends in EU law and regulations:



Hoyweghen v I: GAV meeting 2005



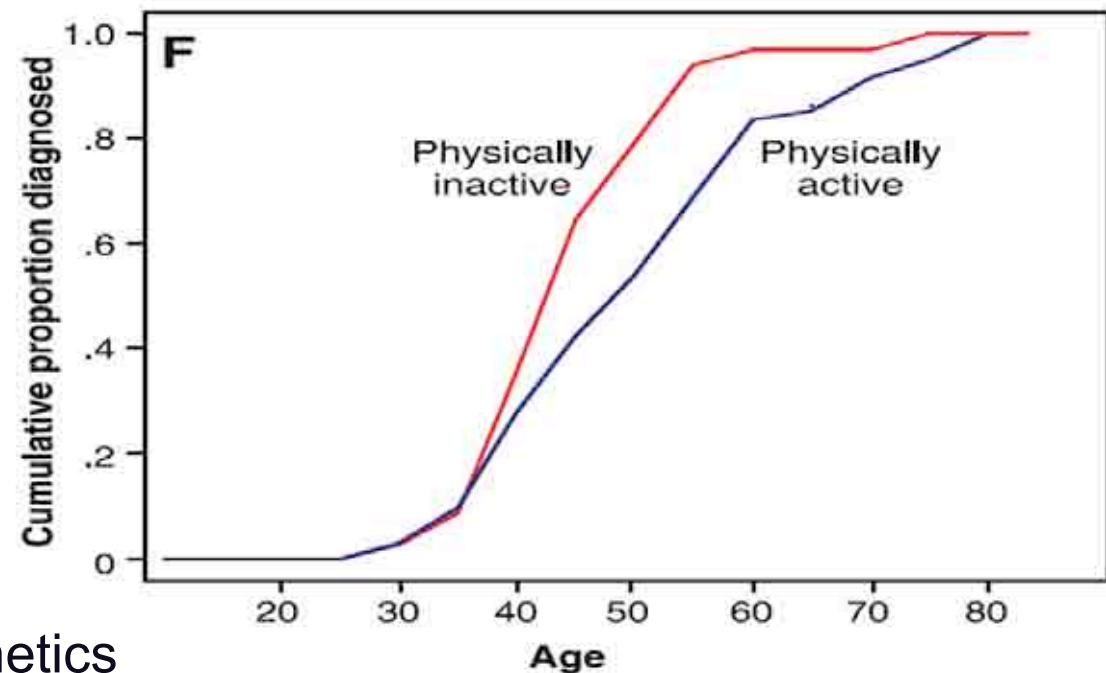
## Frame of References: risk factors

### New York Breast Cancer Study (NYBCS)

environment  
lifestyle



penetrance of  
BRCA mutations



- multifactorial
- behavioral genetics

Figure: King MC et al.  
Science 2003



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# Examples

## Restrictions and Adaptations







AS

### Modified New York Criteria for Ankylosing Spondylitis

#### **Radiologic criterion**

Sacroiliitis, grade II bilaterally or grade III to IV unilaterally

#### **Clinical criteria**

Low back pain and stiffness for more than 3 months that improves with exercise but is not relieved by rest

Limitation of motion of the lumbar spine in both the sagittal and frontal planes

Limitation of chest expansion relative to normal values correlated for age and sex

**Note:** *The condition is definitely AS* if the radiological criterion is associated with *at least 1* clinical criterion.

(Sieper J et al AS:  
an overview  
Ann Rheum Dis  
2002;61:8-18)



# AS

(Sieper J ea AS:  
an overview  
Ann Rheum Dis  
2002;61:8-18  
X-ray: Rudwalet M)



Pelvic radiograph of a patient with AS showing bilateral sacroiliitis grade III.



## AS

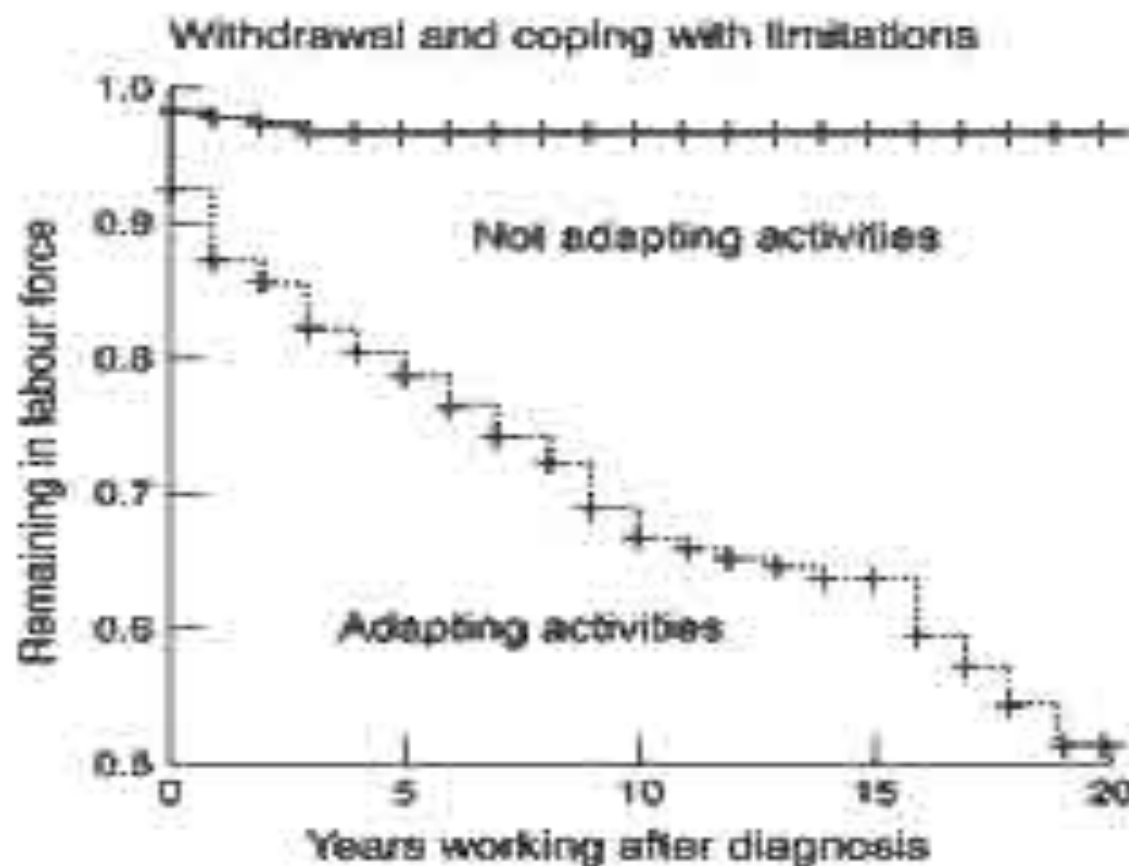
Variables associated with withdrawal from labour force because AS related work disability, assessed by Cox's proportional hazard regression analysis

	<b>HR</b> (95% CI)	<i>p</i> Value
■ Age at diagnosis (cut off 35 years)	<b>1.98</b> (1.30 to 3.03)	0.002
■ Manual profession	<b>2.27</b> (1.52 to 3.38)	0.0001
■ Coping with pain by limiting activities	<b>2.32</b> (1.48 to 3.64)	0.0002
■ Coping with limitations by adapting activities	<b>6.99</b> (3.13 to 15.63)	<0.000



## AS

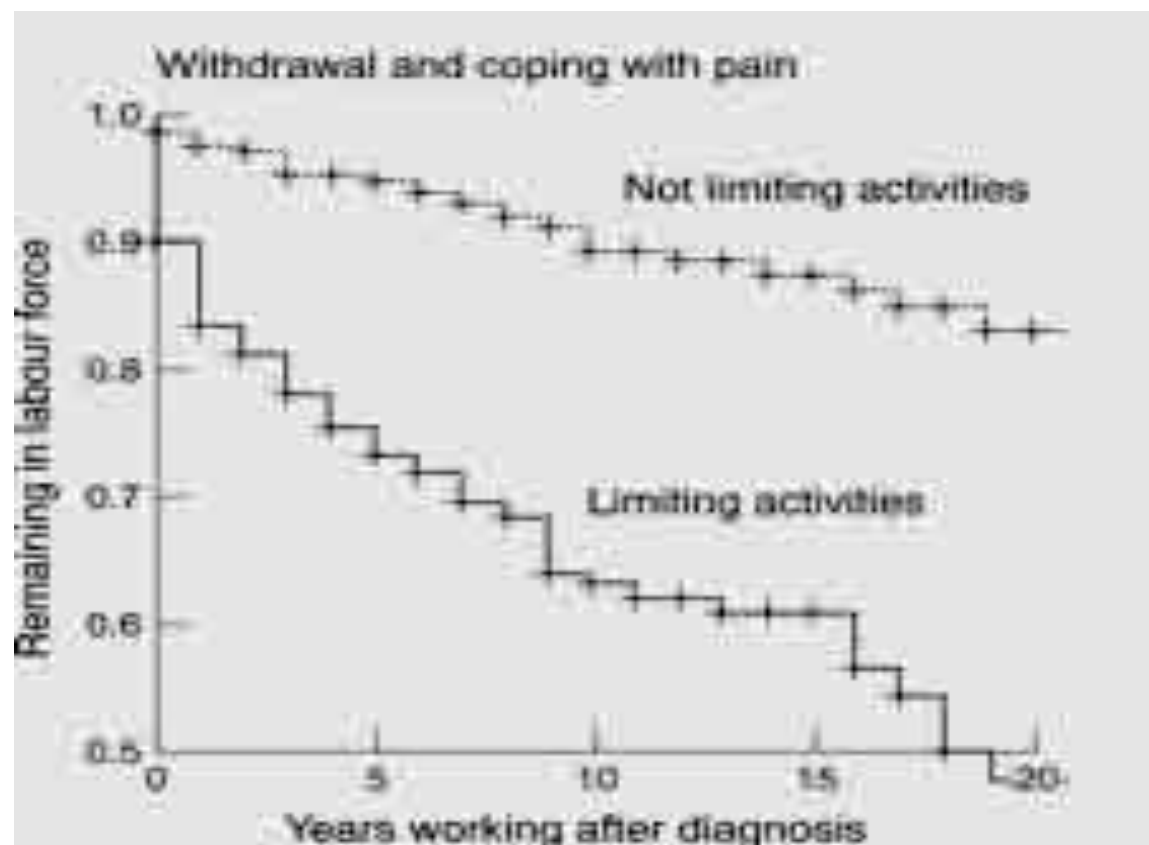
**Kaplan-Meier curves illustrating probability to remain in the labour force for coping with limitations in the Cox regression analysis**





AS

### Kaplan-Meier curves illustrating probability to remain in the labour force for coping with pain in the Cox regression analysis



Boonen A et al Ann Rheum Dis 2001;60:1033-1039



## AS

Boonen A et al Ann Rheum Dis 2002;61:658

**Annual withdrawal rate from the labour force due to official work disability in patients with AS for classes of work and ratios when compared with the general population**

	Male patients		Female patients		All patients	
	Withdrawal rate (%)	SIR 95% CI	Withdrawal rate (%)	SIR 95% CI	Withdrawal rate (%)	SIR 95% CI
Manual job	3.9 (3.6 to 6.4)	5.2	3.5 (0.1 to 4.7)	2.4	4.2 (3.5 to 5.9)	4.9
Non-manual job	1.3 (1.3 to 2.8)	2.1	2.8 (1.3 to 3.1)	2.2	2.0 (1.6 to 2.7)	2.2
All jobs	2.3 (2.6 to 4.1)	3.4	2.9 (1.4 to 3.1)	2.2	2.7 (2.5 to 3.6)	<b>3.0</b>

(SIR: standardised incidence ratios of withdrawal)



## AS

**Multiple logistic regression analysis with sociodemographic (age, sex, education, and profession) and disease related variables (disease duration, inflammatory bowel disease, peripheral arthritis, and total hip replacement) to assess characteristics of work disabled patients with ankylosing spondylitis (AS) (n=136) compared with patients with AS having a paid job without work disability (n=338) at the time of the survey**

	<b>OR</b>	<b>95% CI</b>	<b>p Value</b>
<b>Age</b>	1.09	1.06 to 1.13	<0.0000
<b>12 years formal education</b>	3.17	1.55 to 6.48	0.001
<b>Manual profession</b>	1.80	1.10 to 2.97	0.02
<b>Comorbidity</b>	3.15	1.96 to 5.09	<0.000
<b>Peripheral arthritis</b>	2.02	1.19 to 3.43	0.004
<b>Total hip replacement</b>	6.52	2.15 to 19.83	<0.000

(OR = odds ratio)

# AS

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## Productivity costs of AS in the USA, The Netherlands, France, and Belgium

Boonen A et al Ann Rheum  
 Dis 2002;61;429-437

	<b>USA</b> (n=241)	<b>NL</b> (n=130)	<b>Fr</b> (n=53)	<b>Be</b> (n=26)
■ <b>Work disability (%)</b>	<b>12</b>	<b>41*</b>	<b>23*</b>	<b>9*</b>
■ <b>Days sick leave pt/y; mean (range)</b>	<b>Not stated</b>	<b>19</b> (0–130)	<b>6</b> (0–77)	<b>9</b> (0–60)
■ <b>Friction costs/pt/y; mean (range)</b>	<b>Not applied</b>	<b>1257</b> (0–7356 )	<b>428</b> (0–5979)	<b>476</b> (0–2354)
■ <b>Human cap. costs/pt/y; mean (range)</b> (0–34320)	<b>4227</b> (0–39145)	<b>8862</b> (0–46818)	<b>3188</b> (0–43550)	<b>3609</b>

\* Adjusted for age and sex. Includes patients with partial work disability who continue in a part-time paid job in The Netherlands and France; in those with a paid job; converted to euros using 1998 purchasing power parities.





AS

## RELEVANT DATA FOR RISK ASSESSMENT

- Medical
- Profession
- Age
- Education
- Gender
- **Coping**
- Local situation





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  - Obesity (and other risk factors)
- Conclusions



# Examples

Mental disorders:  
Do you get what you see?



## Mental Disorders

“PSYCHIATRY IS A SAFETY ISLAND FOR MANY”

Expectation for secondary gain by psychiatric outpatients associated with therapy outcome

Reported expectation to get specific benefits while in therapy

Questionnaire	70 (42,2%)	N = 166
Explicit	9 (6%)	N = 147

### Results:

- Significantly more prone to poor therapy outcome:  
RR 1.64 (95% CI: 1.12 – 2.40)
- Not related to Axis I or II diagnoses

(Egmond van J.  
 Thesis: Secondary  
 Gain in Psychiatry.  
 18. March 2005)



## Mental Disorders

**DSM-IV diagnoses in “overstrained” patients (n=307), diagnosis by GP, based on CIDI (Composite International Diagnostic Interview)**

**Exclusion criteria (intake 370 patients):**

- moderate and serious mood or anxiety disorders
- no sick leave and sick leave > 3 months

DSM-IV diagnosis	match criteria	
	N	(%)
Mood disorder (incl. moderate-serious/bipolar I)	169	(55,1)
Anxiety disorder (incl. panic disorder/social fobia/agora fobia)	133	(43,4)
No match with DSM-IV criteria	116	(37,8)

Note: patients with more than one disorder

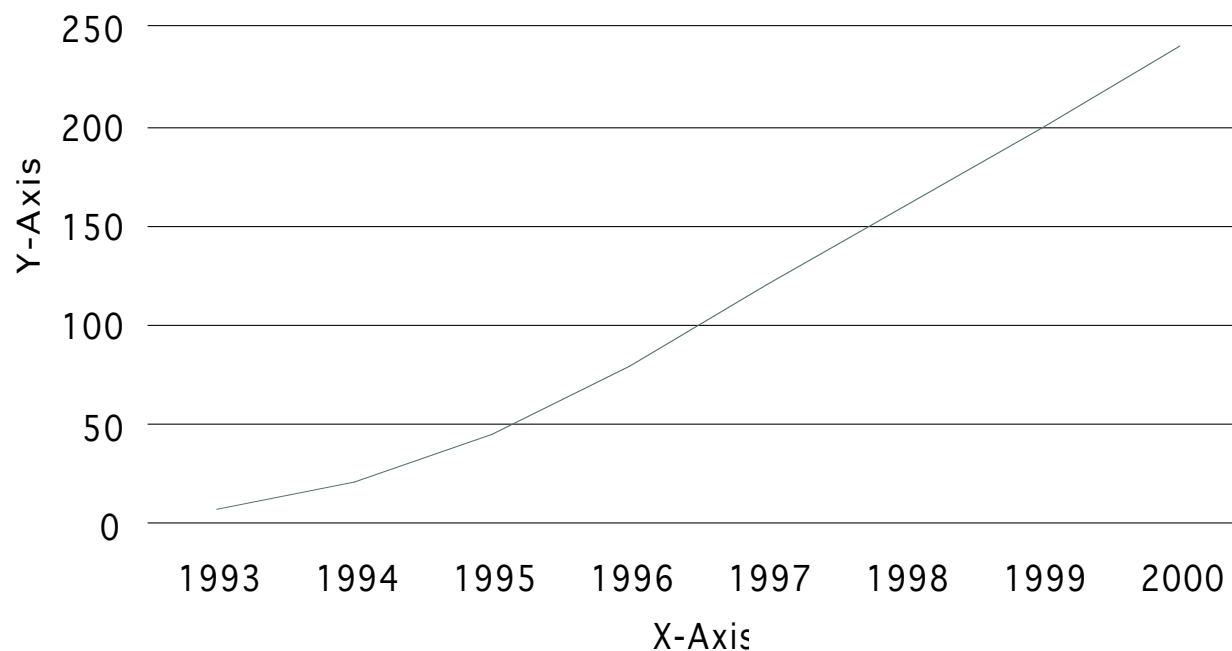
Source: Brouwers EPM  
“Layman term as diagnosis”  
MC 2005 Jan;60(3):  
100-102



# Mental Disorders

## Citation of the word "stress" in British Newspapers 1993-2000

x 1000



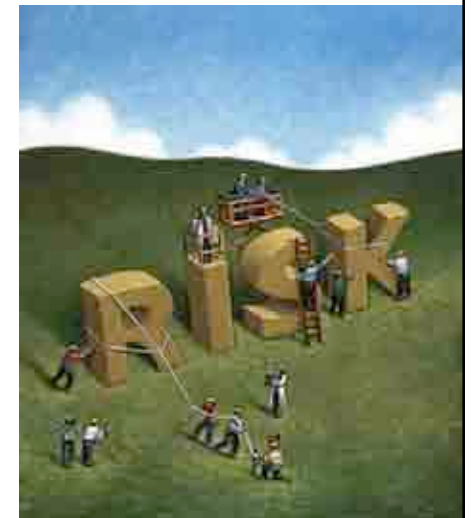
Furedi F.  
"Therapy Culture",  
2004, pag 5

## Mental Disorders

### **RELEVANT DATA FOR RISK ASSESSMENT**

#### Mental disorders

- Use clear diagnostic criteria: e.g. DSM-IV otherwise: two potential pitfalls
  - underdiagnosed “disorders”
  - overdiagnosed “disorders”
- Incentives (financial, employment)
- Trends in social-cultural context





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# Obesity



Obesity: increases mortality CVD  
**extended** morbidity CVD



## Obesity

Relative risk of CVD (and subtypes) by “single risk”factor:  
BMI (95% CI) during age of 30-50.

	<b>BMI</b>	<b>CVD</b>	<b>CHD</b>	<b>MI</b>	<b>Stroke</b>	<b>CHF</b>
	<b>18.5-24.9</b>	1.00	1.00	1.00	1.00	1.00
<b>Male</b>	<b>25 - 29.9</b>	<b>1.24</b> (1.07-1.45)	<b>1.23</b> (1.03-1.47)	<b>1.04</b> (0.84-1.30)	<b>1.71</b> (1.21-2.40)	<b>1.18</b> (0.88-1.57)
<b>Female</b>		<b>1.30</b> (1.12-1.52)	<b>1.38</b> (1.13-1.69)	<b>1.15</b> (0.87-1.53)	<b>1.34</b> (1.02-1.77)	<b>1.61</b> (1.23-2.11)
<b>Male</b>	<b>30+</b>	<b>1.81</b> (1.46-2.25)	<b>1.84</b> (1.44-2.36)	<b>1.83</b> (1.37-2.46)	<b>2.37</b> (1.50-3.75)	<b>2.20</b> (1.50-3.22)
<b>Female</b>		<b>1.91</b> (1.56-2.34)	<b>2.12</b> (1.64-2.73)	<b>2.37</b> (1.71-3.29)	<b>1.42</b> (0.94-2.13)	<b>2.72</b> (1.95-3.79)

(Source: A.A.Mamun, Life History of CVD and its riskfactors, thesis 2003)



## Obesity

**Total life expectancy and the residual life expectancy free from CVD (and subtypes) based on a population free of CVD at the age of 50, by 'single risk' factor status BMI**

	A / G		Total	CVD -	CVD +	CHD -	CHD +	MI -	MI +
<b>BMI &lt;25</b>	50	M	28.46	22.50	5.95	24.00	4.30	25.47	2.79
		F	33.29	28.18	5.11	30.25	2.94	31.93	1.19
	70	M	13.25	8.37	4.87	9.74	3.41	10.87	2.27
		F	16.39	12.07	4.33	13.95	2.40	15.29	1.05
<b>BMI 30+</b>	50	M	24.66	17.10	7.57	19.03	5.82	20.73	4.04
		F	29.52	22.61	6.92	24.66	4.83	27.39	2.05
	70	M	10.74	4.70	6.04	6.43	4.57	7.49	3.34
		F	13.66	7.93	5.73	9.79	3.93	11.81	1.77
<b>Difference</b>	50	M	3.79	5.41	-1.61	4.97	-1.52	4.74	-1.25
		F	3.77	5.58	-1.81	5.59	-1.89	4.54	-0.85
	70	M	2.51	3.67	-1.16	3.32	-1.16	3.37	-1.07
		F	2.74	4.14	-1.40	4.16	-1.53	3.47	-0.72

(Source:  
A.A.Mamun, Life  
History of CVD and  
its riskfactors, thesis  
2003)



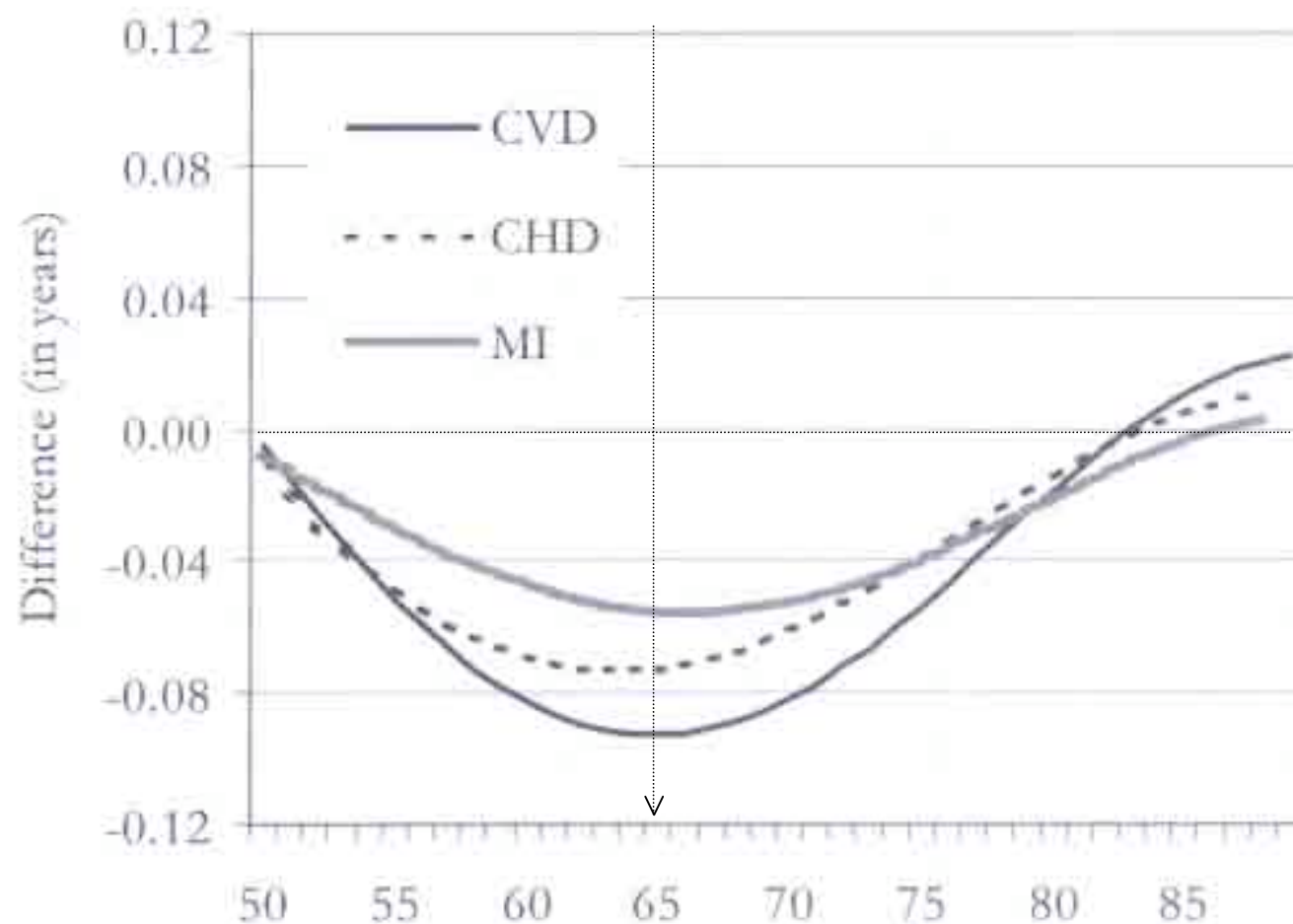
# Obesity

## Optimal BMI vs Obesity

Risk factors and compression

of cardiovascular morbidity:


BMI  
Male



(Source: A.A.Mamun, Life History of CVD and its riskfactors, thesis 2003)

# Obesity

## **“Adult obesity and the burden of disability throughout life”**

Disability, measure: 

- 1) limitations in mobility
- 2) limitations in ADL

(Non smokers) BMI 30 or > during age of 30-50	<u>Less</u> number of years free of ADL-limitations compared to normweight
Male 50 >	5,7 yr (4.11 - 7.35)
Female 50 >	5.2 yr (3.36 - 6.61)

Note: No significant difference in years with limitations throughout life, due to combination of higher prevalence of limitations and higher mortality in obesity

Source: Peeters A. ea.  
 Obes Res. 2004  
 Jul;12(7):1145-51



## Obesity

### **“Adult obesity and the burden of disability throughout life”**

#### **Conclusions:**

##### Adult obesity

- increases the risk of limitations (in ADL)
- with reduction of the remaining years to live without limitations,

Source: Peeters A. ea.  
Obes Res. 2004  
Jul;12(7):1145-51

# Obesity

## “Adult obesity and the burden of disability throughout life”

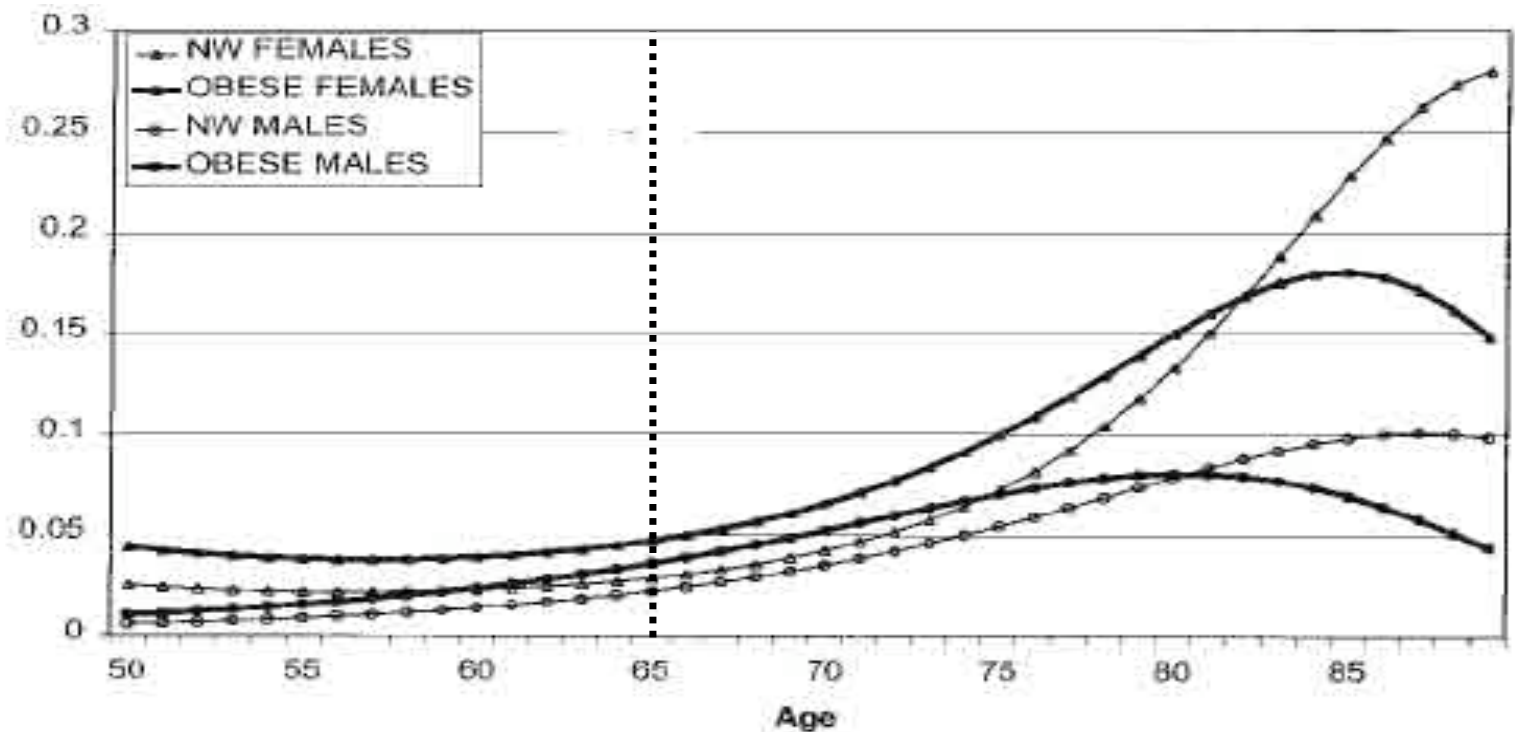


Figure 3: Life years lived with limitations in ADL (dressing, bathing, eating, or transfer) at each year of age by sex and BMI category (in nonsmokers). NW, normal weight.

Bron: Peeters A. ea.  
Obes Res. 2004  
Jul;12(7):1145-51



# Obesity

## RELEVANT DATA FOR RISK ASSESSMENT

### Life style factors!

- Weight
- Physical activity
- .....and.....







and .....

**Longitudinal research on previous sick-leave and LTD-risk:**

(4 year period 1997 -2001 / transport and communication sector)

Frequent sick-leave (FSL:  $\geq 4/\text{yr}$ ) N = 4.126

Long term sick-leave (LTSL:  $> 6 \text{ wk}$ ) N = 3.585

FSL and LTSL N = 979

Reference population N = 45.300

**Relative Risk for FSL and LTSL in 1998 – 2001 per cohort**

	<u>Frequent sick Leave</u>	<u>Long term sick leave</u>
	RR	RR
Reference population	1.0	1.0
Frequent sick leave	3.7	1.8
Long term sick leave	1.6	1.8
FSL and LTSL	3.5	2.3

Groothoff J, Sick leave and LTD. TBV 2005; 13, 6 (166-171)



and .....

■ **At risk for frequent sick leave ( $\leq 4/\text{yr}$ ):**

- Women
- Younger employees
- Singles
- Lower salary scales

■ **At Risk for long term sick leave ( $> 6 \text{ wk}$ ):**

- Women
- Elderly employees
- Lower salary scales

and .....

Relative risk for long term disability  
(LTD: > 1 year)

	RR
Reference population	1.0
Frequent sick leave	2.3
Long term sick leave	5.3
FSL and LTSL	6.3

Relative Risk for retirement

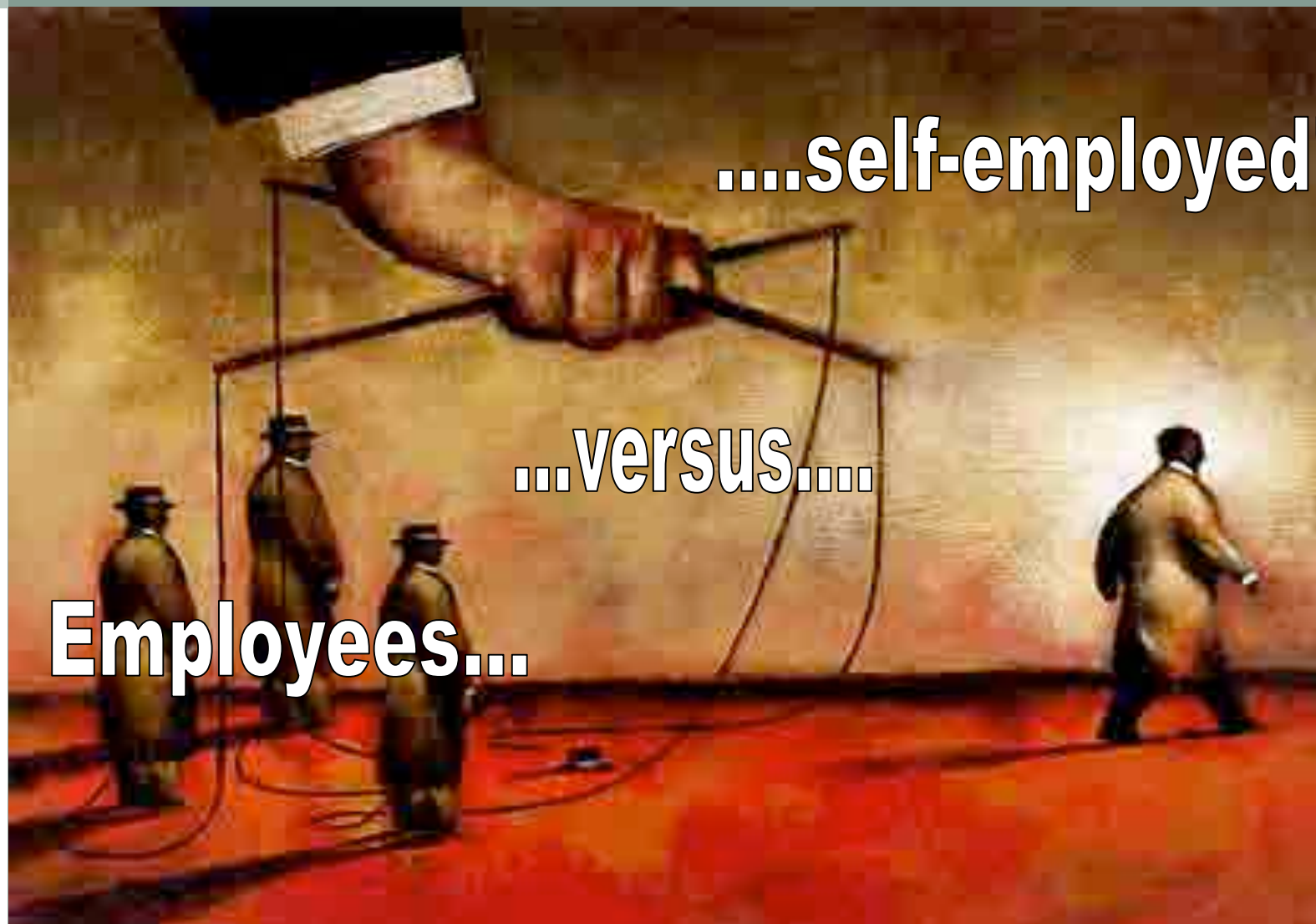
RR
1.0
1.3
1.3
1.6

**At risk for long term disability:**

- Women
- Singles
- Elderly
- Lower salary scales
- Engagement > 5 year



and .....



and .....

Self-employed versus Employees

**Diagnosis LTD per risk class (1-1-2002)**

	1	2	3	4	total private	total SE-soc	total Empl. soc.
<b>Mental</b>	35%	30	15	10	16	17	33
<b>CVD</b>	20	15	15	10	12	9	5
<b>MSD</b>	15	30	40	50	42	38	28
<b>Accidents</b>	5	10	10	15	11	7	5
<b>Remaining</b>	25	15	20	15	20	30	30
	100%	100	100	100	100	100	100



and .....

## Death versus DI-risk per 1000, 2002 NL

### Per gender

Note

Death: total population

	DEATH		DI		DI	
	(INCIDENCE)		(INCIDENCE)		(PREVELANCE)	
	M	F	M	F	M	F
15-24	<1	<1	2	5	3	7
25-34	<1	<1	7	15	20	60
35-44	1	1	11	18	60	100
45-54	4	3	17	25	160	180
55-64	11	6	21	27	520	560

Note

DI: Employees

and .....

**Department for Work and Pensions, UK 2003:**

- Screening to identify People at Risk of Long-term Incapacity for Work: Review. Waddel e.a.
- Literature Review of risk factors for job loss following sickness absence. Peters ea.

Conclusion: screening with clinical/psychosocial predictors  
strong evidence that best selection of predictors varies:

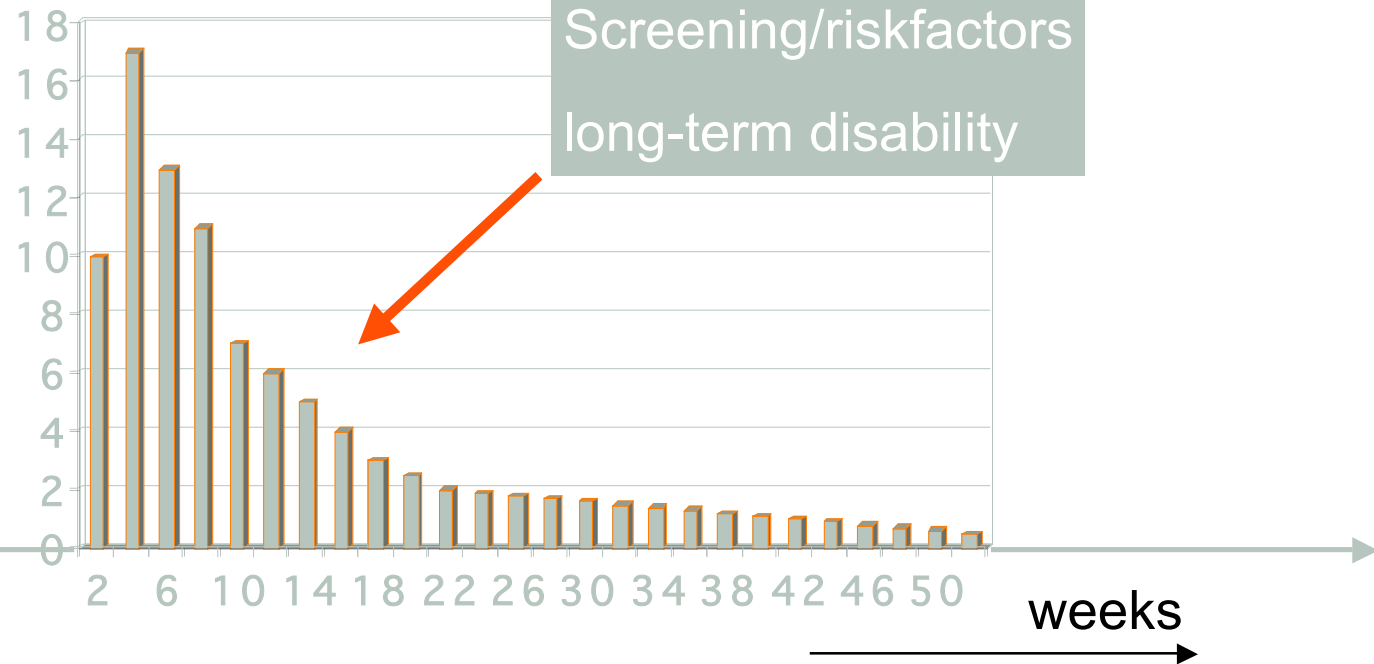
- per medical / clinical situation
- time dependant: varies with duration of sick leave
- outcome and intervention specific
- sensitivity/specificity varies between 70 – 80%

and .....

Standard off-claim sick-leave curve  
(in % of all cases)

Riskfactors/  
screening of  
“zero  
absenteeism”!?

Screening/riskfactors  
long-term disability



DATA.....!?



and .....

3-4 weeks

6 months

Risk very low:  
screening impractical

Window for screening  
to identify those at risk

Risk so high:  
no need to screen

Administrative  
screening

Individual  
screening

Socio-demographic  
'risk-markers'

Clinical and  
psychosocial factors  
'yellow flags'

All claimants

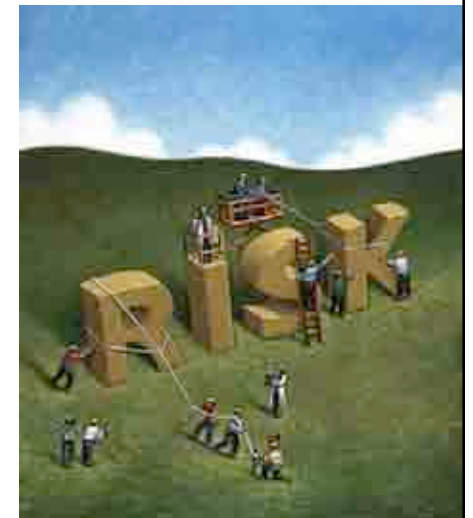
Identify claimants  
at risk of LTD

Provide details on:  
\* Obstacles to RTW  
\* Possibility of simple, early  
psychosocial intervention  
\* Suitable for work-focused  
interventions  
\* Individual work-focused  
interventions

and .....

## **RELEVANT DATA FOR RISK ASSESSMENT**

- Population data  
(e.g. employee vs self-employed)
- Disability incidence and prevalence  
(Disability = restricted work ability)
- Previous sick leave
- Sensitivity / specificity of risk factors



Note: hardly any publication on riskfactors for LTD  
in “zero absence” population!



## Agenda

- **Dis-Ability**
- **Frame of References**
  - ICD
  - ICIDH
  - ICF
- **Examples**
  - Ankylosing Spondylitis
  - Mental Disorders
  - Obesity (and other risk factors)
- **Conclusions**



## Conclusions

**Risk management in DI = TEAMWORK**  
**Medical aspects only in multidisciplinary approach**



## Conclusions

Medical aspects in DI?



- **Disability: multiple concepts**
- **Lack of knowledge and data**
- **Weighting of the person in social/cultural context**
- **Medical data relative moderate important**
- **Many factors contribute to DI-risk**
- **Relative risk (RR) of each factor often unknown**

**We need: - cross sectional population studies  
- prospective RCT in DI-portfolios**