

IDF - EUBIROD

## Use of Diabetes Registries and Quality Indicators for Quality Development

Int. Training Course on Diabetes Registries  
Brussels, 24./25. Januar 2011

**Klaus Piwernetz** MD PhD

medimaxx health management GmbH

Über der Klause 2  
D-81545 München, Germany

[kpi@medimaxx.net](mailto:kpi@medimaxx.net)

### Klaus Piwernetz



<b>Physicist</b>	Diploma, PhD
<b>Physician</b>	MD, PhD
<b>Organisations</b>	Diabetes Center Bogenhausen, Munich Germany DDG, EASD, ADA WHO – Europe IDF - Europe
<b>Health Programmes</b>	St. Vincent Declaration (WHO, IDF) DO IT – Diabetes Care Optimization through IT
<b>Telematic projects</b>	Eurodiabetes DiabCare DiabCard Prestige

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## Use of Indicators



- Agenda
  - Definitions
  - Methodology
  - Applications

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## Definitions



- Indicator
  - An indicator is a measure allowing for the distinction between good and poor quality
  - Examples: ...
  
- Reference Level
  - The reference level is the range of values referring to good quality.
  - Examples: ...

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## EUBIROD - Quality Indicator



Item	Content
Indicator Reference	e.g. 71
Indicator Title	e.g. Annual incidence of blindness in patients with diabetes (among those visited during the last 12 months)
Numerator	e.g. Number of diabetes patients recorded to have become blind
Denominator	e.g. Number of clinically diagnosed diabetes patients in the study region/country who visited during the last 12 months
Contributing Data Items	e.g. BIRO001: PAT_ID, BIRO002: DS_ID, BIRO003: TYPE_DM, BIRO007: EPI_DATE, BIRO036 BLIND
Source(s)	e.g. EUDIP, modified in the BIRO meeting in Malta
Common Dataset Issues	e.g. Blindness has Medium Validity Scottish definition specifies clinical status, FQSD concerns compensation payments
Comments	e.g. N/A
Could be added	Content
Stratification	Duration, Type of diabetes
Influence factors	Level of care

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## BIRO Dataset



Table A.1: BIRO Common Dataset Summary

Ref	BIRO Name	Description	Data Type	Enumerated Values/ Measurement Units
BIRO001	PAT_ID	Patient ID	String(12)	
BIRO002	DS_ID	Data Source ID	String(10)	
BIRO003	TYPE_DM	Type Of Diabetes	Enumerated	1 = Type 1, 2 = Type 2 3 = Other
BIRO004	SEX	Sex	Enumerated	1 = Male, 2 = Female
BIRO005	DOB	Date of Birth	Date	
BIRO006	DI_DIAG	Date of Diagnosis	Date/Time	
BIRO007	EPI_DATE	Episode Date	Date/Time	
BIRO008	SMOK_STAT	Smoking Status	Enumerated	1 = Current Smoker 2 = Non-smoker 3 = Ex-smoker
BIRO009	CIGR_DAY	Cigarettes per day	Integer	
BIRO010	ALCOHOL	Alcohol intake	Integer	grams, g/day
BIRO011	WEIGHT	Weight	Real	kg
BIRO012	HEIGHT	Height	Real	m, cm
BIRO013	BM	Body Mass Index	Real	
BIRO014	SBP	Systolic Blood Pressure	Integer	mmHg
BIRO015	DBP	Diastolic Blood Pressure	Integer	mmHg
BIRO016	HB1C	Hb1c	Real	%
BIRO017	CREAT	Creatinine	Integer	µmol/l, mg/dl
BIRO018	MA_TEST	Microalbumin	Enumerated	1 = MA Normal, 2 = MA Abnormal 0 = No MA Test Recorded
BIRO019	CHOL	Total Cholesterol	Integer	mmol/l, mg/dl
BIRO020	HDL	HDL	Integer	mmol/l, mg/dl
BIRO021	TC	Triglycerides	Integer	mmol/l, mg/dl
BIRO022	EYE_EXAM	Eye Examination	Enumerated	1 = Yes, 0 = No
BIRO023	RETINA	Retinopathy Status	Enumerated	1 = No Retinopathy, 2 = Background Retin., 3 = Referable Retin.
BIRO024	MACULA	Maculopathy Status	Enumerated	1 = No Maculopathy 2 = Referable Macul.
BIRO025	FOOT_ULCAM	Foot Ulceration	Enumerated	1 = Yes, 0 = No
BIRO026	PULSES	Foot Pulses	Enumerated	1 = Present, 0 = Absent
BIRO027	FTSIBS	Foot sensation	Enumerated	1 = Normal, 0 = Abn.
BIRO028	ESRF	End Stage Renal Therapy	Enumerated	1 = Yes, 0 = No
BIRO029	DIALYSIS	Renal Dialysis	Enumerated	1 = Yes, 0 = No
BIRO030	TRANSPLANT	Renal Transplant	Enumerated	1 = Yes, 0 = No
BIRO031	STROKE	Stroke	Enumerated	1 = Yes, 0 = No
BIRO032	ULCER	Active Foot Ulcer	Enumerated	1 = Yes, 0 = No
BIRO033	MI	Myocardial infarction	Enumerated	1 = Yes, 0 = No
BIRO034	LASER	Laser	Enumerated	1 = Yes, 0 = No
BIRO035	HYPERTENSION	Hypertension	Enumerated	1 = Yes, 0 = No
BIRO036	BLIND	Blindness	Enumerated	1 = Yes, 0 = No
BIRO037	AMPUT	Amputation	Enumerated	1 = Yes, 0 = No
BIRO038	HYPERMET_MED	Antidiabetic Medication	Enumerated	1 = Yes, 0 = No
BIRO039	DRUG_THERAPY	Hypoglycaemic Drug Therapy	Enumerated	1 = Insulin Only, 2 = Tablet Only 3 = Insulin/ Tablets, 4 = None (Def)
BIRO040	ORAL_THERAPY	Oral Drug Therapy	Enumerated	1 = Sulphonyl, 2 = Biguan, 3 = Glucos. Inhib., 4 = Glitazones 5 = Glitazoles
BIRO041	PUMP_THERAPY	Pump Therapy	Enumerated	1 = Yes, 0 = No
BIRO042	INSAL_THERAPY	Insulin Therapy	Enumerated	1 = Yes, 0 = No
BIRO043	INJECTIONS	Average Injections	Integer	
BIRO044	SELF_MON	Self Monitoring	Enumerated	1 = Urine, 2 = Blood Gl., 3 = Both
BIRO045	EDUCATION	Diabetes Specific Education	Enumerated	1 = Yes, 0 = No
BIRO046	LFD_THERAPY	Local Lifting Therapy	Enumerated	1 = Yes, 0 = No
BIRO047	ANTIPLATELET_THERAPY	Anti-platelet Therapy	Enumerated	1 = Yes, 0 = No
BIRO048	DMP_ENROL	Patient Enrolment in DMP for Diabetes	Enumerated	1 = Yes, 0 = No

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### Biro-Dataset

These data can be used to calculate quality indicators.

## Methodology



- Examples
  - Number of leg amputations
  - Incidence of late complications
  - Number of hypoglycaemias
  - Quality of metabolic control
  - Coherence with guidelines

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## Methodology



- Aspects for the selection of quality indicators
  - RUMBA
  - Quality indicator versus simple numeric value
  - Time course
  - Proxy indicators
  - Cost of data collection
  - Selection bias
  - The denominator problem
  - The numerator problem

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## Methodology



- RUMBA
  - Relevant
  - Understandable
  - Measurable
  - Behaviour oriented
  - Achievable

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## Methodology



- Registers are a good start.
  - Benefits
  - Limitations
- Registers plus ...?
  - Hard and soft factors
- Models
  - The bio-chemo-physiological model
  - The psycho-social model
  - The econo-organisational model

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## Definitions



### ▪ EUCID – Indicators

- Fundus tested
- Retinopathy
- Retinopathy and timely laser treatment
- Incidence of blindness
- Creatinine tested
- ESRF (end-stage renal failure)
- Incidence of dialysis and transplantation
- Prevalence of dialysis and transplantation
- Incidence of stroke
- Incidence of myocardial infarction
- Incidence of major amputation

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## Definitions



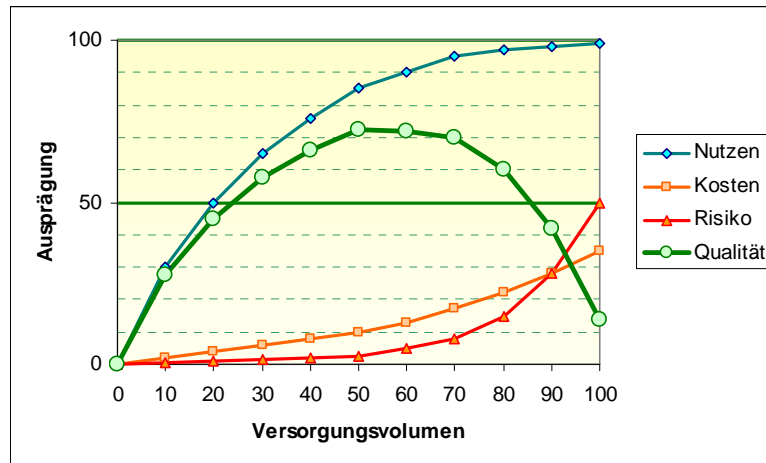
### ▪ Problems

- Combined indicators
  - Complete measurements vs. efficiency
  - HbA1c vs. hypoglycaemia
  - Blood pressure vs. hip fracture
  - Total Cholesterol vs. suicide
  - Inflamated appendix vs. peritonitis

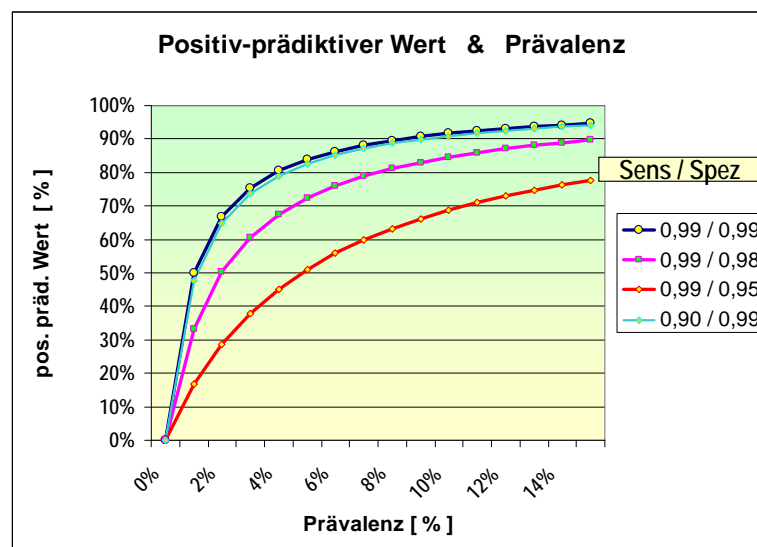
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Appropriateness: Quality = Benefit - Cost - Risk



Add-on: Positive-predictive Value



## Definitions



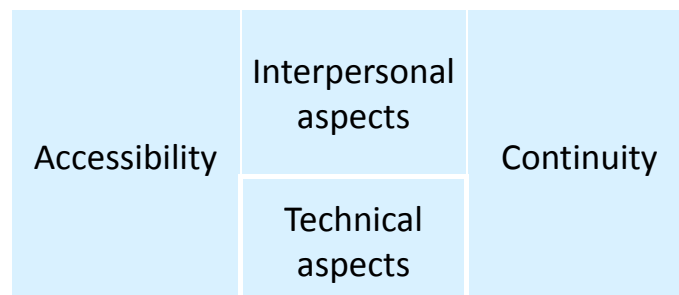
- Quality (DIN EN ISO 9000:2008)
  - The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs.
    - Implied needs
    - Product or service

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## Methodology



- Avedis Donabedian
  - [Evaluating the quality of medical care. 1966.](#)



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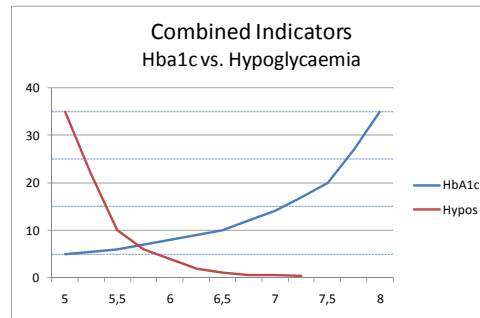
## Definitions



- Problems

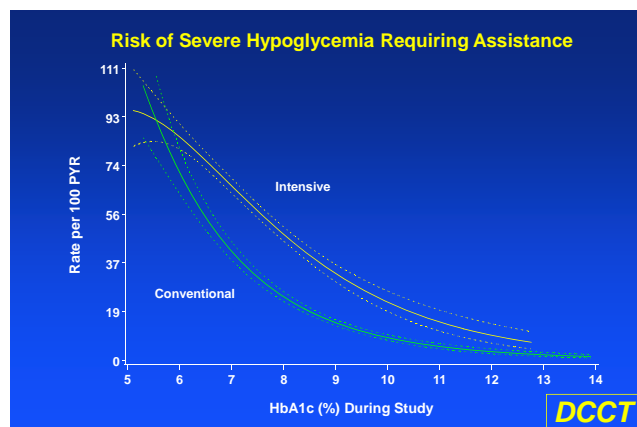
- Combined indicators

- HbA1c vs. hypoglycaemia



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## Add-on: Combined Indicators



Thanks to J.M.Lachin, DCCT

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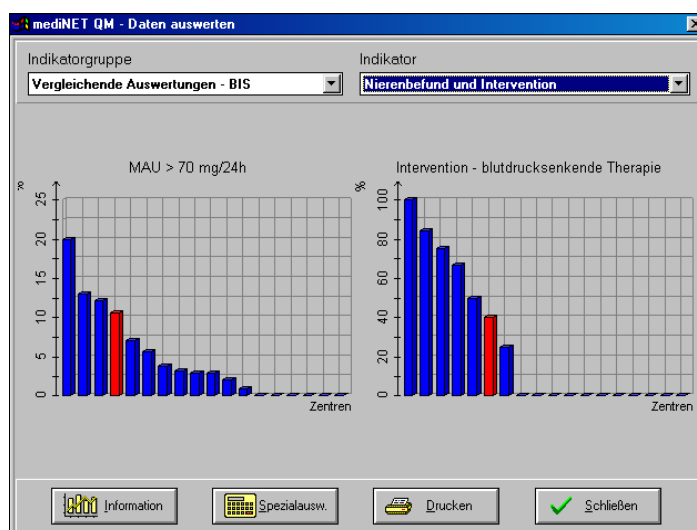
## Methodology



- Problem: Data source
  - Mean HbA1c in a specialized practice (N = 100)
  - Mean HbA1c in a regional central lab (N = 100.000)
  - Number of amputated legs in a hospital
  - Ratio of patients with elevated MAU

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## Applications: DiabCare Indicators



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## Methodology



- Application Level
  - Health Care System
    - Policy making
    - Ressource allocation
    - Benchmarking
  - Organisation
    - Continuous quality improvement
    - Health care management
  - Patient
    - Pathogenic Pathways

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## Applications



- Level of the health care system
- Level of health organisations
- Level of health care provision



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## Applications: Health Care System



- Policy making
- Ressource allocation
- Benchmarking

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## Benchmarking



- A process of searching out and studying the best practices that produce superior performance.
  - internal benchmarking: within the same organization,
  - external benchmarking: outside of the organization with another organization that produces the same service or product, or
  - functional benchmarking: with reference to a similar function or process in another institution.

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## Applications: Health Organisation



- Health care management
  - In most cases outcomes cannot be measured, partly so-called proxy-outcomes
  - Assessment of follow-up
  - Concentration on processes and structure
  - Co-operation with referring physicians

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## Applications: Health Organisation



- Continuous quality improvement
  - Completeness
  - Correct classification
  - Diagnostic assessment
  - Risk classification
  - Therapeutic consequences
  - Monitoring of treatment success
  - Appropriateness
    - Over-, under-treatment
  - Waiting times

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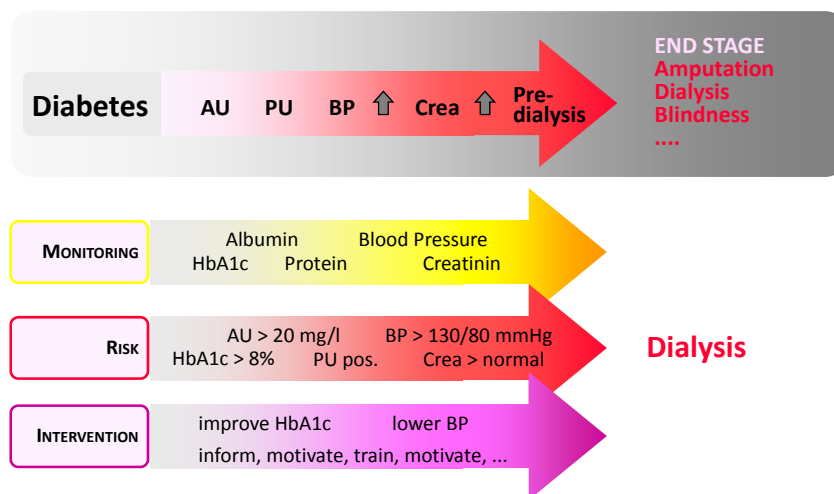
## Applications: health care provision

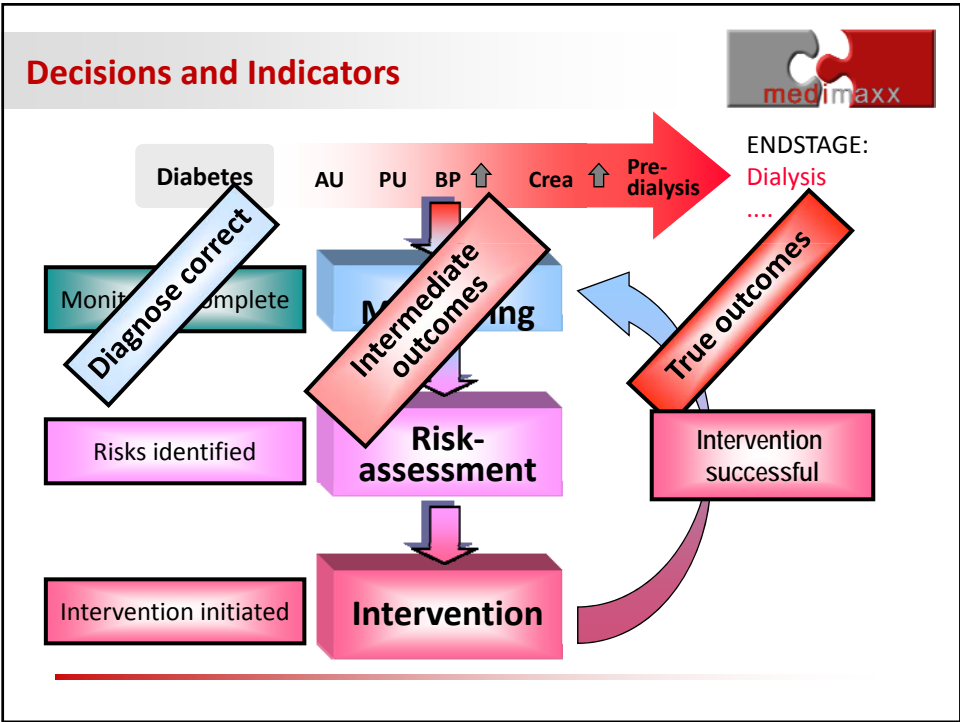
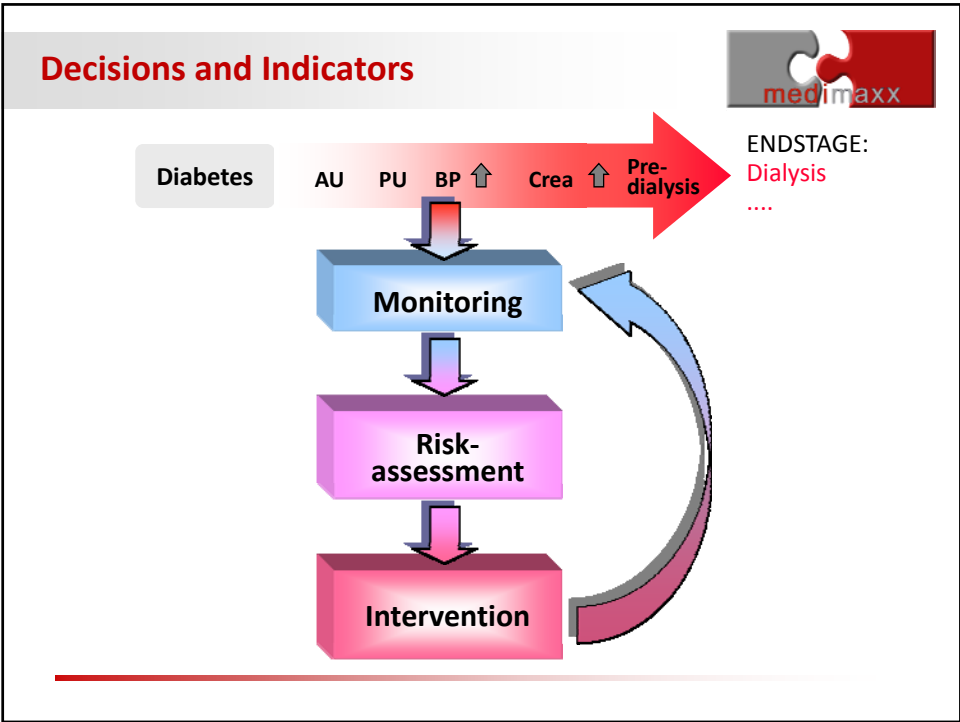


- Pathogenic Pathways
  - Having the risk of diabetes
  - Always: Metabolic control
  - Being of risk at developing adverse outcomes
  - Staging the risk
  - Prevent from progression

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## DiabCare: Pathogenic pathway





## Decisions and Indicators



Amputation  
Dysplasia  
Disease

Psycho-social Functioning

Monitoring

Treatment Satisfaction

assessment

Quality of Life

## Psycho-social functioning



### Physical fitness

During the past 2 weeks...  
What was the hardest physical activity you could do for at least 2 minutes?

Very heavy, (for example) run, at fast pace		1
Heavy, (for example) jog, at a slow pace		2
Moderate, (for example) walk, at a fast pace		3
Light, (for example) walk, at a medium pace		4
Very light, (for example) walk, at a slow pace or not able to walk		5

### Feelings

During the past 2 weeks...  
How much have you been bothered by emotional problems such as feeling anxious, depressed, irritable or downhearted and sad?

Not at all		1
Slightly		2
Moderately		3
Quite a bit		4
Extremely		5

### Daily activities

During the past 2 weeks...  
How much difficulty have you had doing your usual activities or tasks, both inside and outside the house because of your physical and emotional health?

No difficulty at all		1
A little bit of difficulty		2
Some difficulty		3
Much difficulty		4
Could not do		5



## Conclusions



- Result → Indicator → Data
- Not each calculated result is clinically meaningful.
- Collect data without clear target is often disappointing.
- Data should only be interpreted if you know under which conditions they have been collected.
- Start simple – but start soon!

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## Diabetes Registries & Quality Indicators



- Thank you very much!
- Your questions please.
- ...
  
- Klaus Piwernetz, MD PhD
- [kpi@medimaxx.net](mailto:kpi@medimaxx.net)

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