Specifics, access and reliability of German claims data

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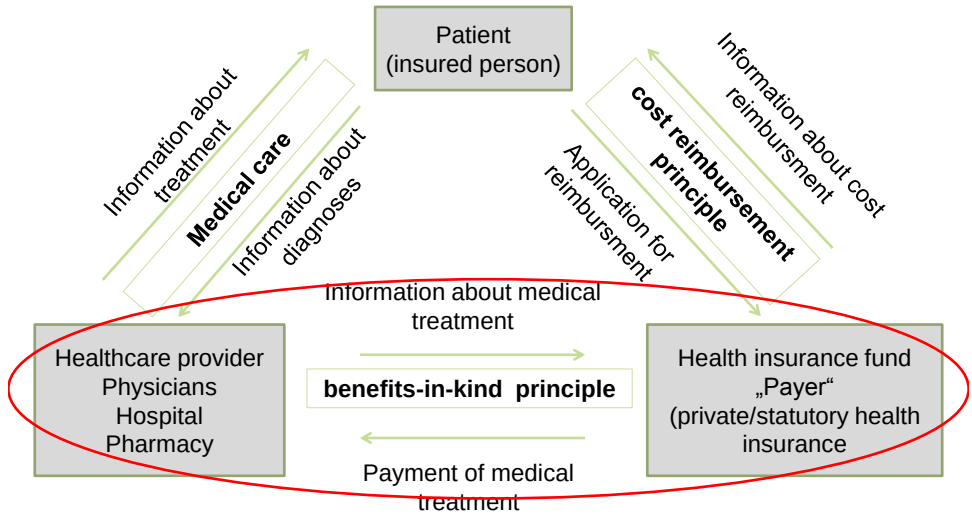
Overview

„A useful analysis requires an understanding of the sources and organization of the data“
(WHO Introduction to Drug Utilization Research)

1. Structures of German health care system; legal basis and available data
2. Strength and limitations of available claims data
3. Example
   Real life treatment of diabetes mellitus type 2 patients: An analysis based on a large sample of 394,828 German patients

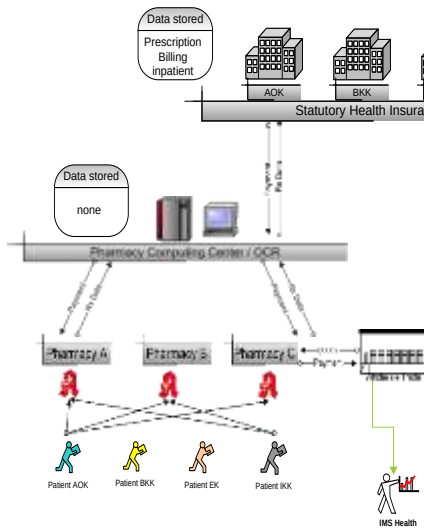
Structure of German health care system



Structure of German health care system

- 120 different statutory health insurances (SHI's)
  SHIs storing claims data for billing purposes
- About 40 Private health insurances
  (storing no routine data)
- About 148.000 practicing physicians, organized in 23 regional associations of SHI-accredited physicians ("Kassenärztliche Vereinigung")
  KV storing diagnosis data for billing purposes
- About 21.000 public pharmacies
  generating electronic prescription data for the SHI's
- Approximately 2000 hospitals
  transfer data for billing purposes to SHIs

Access to claims data



In order to have access for German claims data, cooperation agreements between SHIs and academic institutions are necessary .

Available claims data

Health care sector	Patient demo-graphics	Health care provid er	Diagnoses (ICD 10)	Clinical Data	Treatment done	Dates of health care utilisation	Costs
Inpatient services	x	x	x	---	x	x	x
Outpatient services	x	x	x	---	x	x	x
Supply of medicines	x	x	---	---	x (ATC/ DDD	x	x
Disease mana-gement programs	x	x	---	x	---	---	---

Strengths & limitations

Health care sector	Strengths	Limitations
Inpatient services	Prompt availabilty Detailed information about main diagnosis and side diagnosis Good validity of diagnosis Information about DRG/OPS	Few information about clinical parameters No information about inpatient drugs
Outpatient services	High number of cases – sample size is big	Delayed availability (9 months - Data are not promptly transferred) no information about the date of diagnosis, clinical parameters Validity of diagnosis is unknown
Medication in outpatient service	Prompt availabilty High validity	No information about drug related diagnosis, dosage and regimen No information about OTC-Drugs
Disease manage-ment programs	Prompt availabilty Clinical information are available (BMI; HbA1c; Blood pressure)	Availabe for a small number of insured persons validity of diagnosis is unknown

Example
Study on the basis of German claims data

Real life treatment of diabetes mellitus type 2 patients: An analysis based on a large sample of 394,828 German patients

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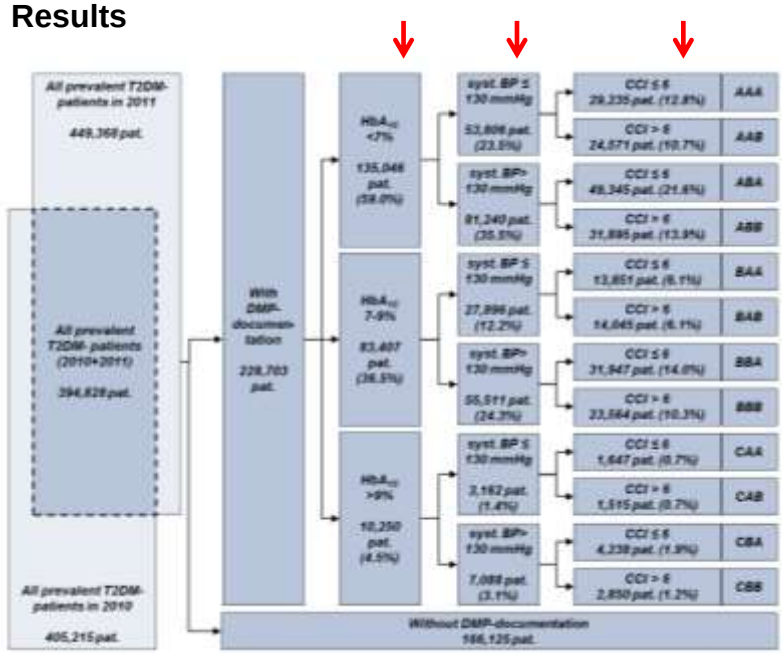
Description inpatient/outpatient care of patients with T2DM
Determination which subgroups could be differentiated in terms of the achieved T2DM-related treatment results.

Diabetes Res Clin Pract. 2014 Nov;106(2):275-85. doi: 10.1016/j.diabres.2014.08.002. Epub 2014 Aug 10.

Variables	1-.T2DM-prevalent in 2010 and 2011	2. T2DM-prevalent + complete DMP-data (study sample)	3. Study sample patients + event
N	394,828	228 703	14,281
Mean age in years (per 31/12/2010)	73.05 (SD 11.80)	70.65 (SD 11.05)	74.36 (SD 9.88)
Gender (male/female)	43.54%/56.46%	45.05%/54.95%	50.84%/49.16%
Mean number of long-term prescribed medications (at least two prescriptions per ATC code; based on 2010 and 1st Quarter of 2011)	5.80 (SD 3.65)	6.03 (SD 3.46)	8.21 (SD 3.92)
Mean CCI (based on 2010 and 1st Quarter of 2011)	6.62 (SD 3.04)	**6.30 (SD 2.80)**	**8.06 (SD 2.94)**
Mean aDSCI (based on 2010 and 1st Quarter of 2011)	1.73 (SD 1.71)	**2.08 (SD 1.93)**	**3.56 (SD 2.21)**
5 most common comorbidities (based on outpatient diagnoses 2010)			
Hypertension (ICD: I10)	86.5%	88.1%	91.7%
Disorders of lipoprotein metabolism (ICD: E78)	48,4%	52.7%	57.8%
Disorders of refraction and accommodation (ICD: H52)	38.3%	45.6%	44.3%
Chronic ischaemic heart disease (ICD: I25)	36.7%	35.7%	56.8%
Dorsalgia (ICD: M54)	34.3%	36.7%	35.8%
Treatment-dependent variables (based on 01/01/2011 until 31/12/2011 or date of event)			
Mean HbA_{1C}	n.a.	**6.99 (SD 1.03)**	**7.36 (SD 1.30)**
Patients with mean HbA_{1C} < 6.0%		24,844 (11.2%)	1,182 (8.3%)
Patients with mean HbA_{1C} < 7.5%		167,283 (75.7%)	8,872 (62.1%)
Patients with mean HbA_{1C} ≥ 9.0%		**10,476 (4.7%)**	**1,528 (10.7%)**
Mean BMI		30.54 (SD 5.59)	30.55 (SD 5.62)
Patients with BMI > 30		107,292 (48.5%)	6,963 (48.8%)
Mean systolic/diastolic blood pressure		135.74/78.89 mmHg (SD 12.25/6.96)	135.11/77.87 mmHg (SD 14.38/8.11)
Patients with systolic blood pressure > 130 mmHg		139,923 (63.3%)	8,087 (56.6%)
Patients with diastolic blood pressure > 80 mmHg		69,764 (31.6%)	3,583 (25.1%)

Quelle: IPAM.

Results



Results of the study

Particularly for those patients who reached HbA1C goals, but had also achieved relevant treatment goals in terms of blood pressure and who developed few comorbidities, the T2DM-related event rate was relatively low.

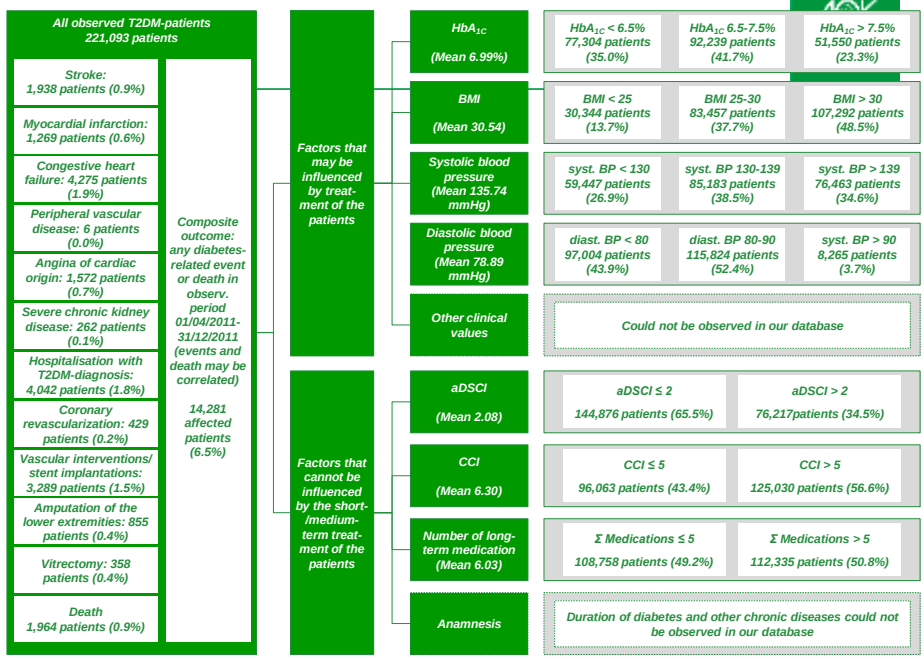
If, on the other hand, HbA1C values fell far short of the goals, the event rate was higher on average (independent of blood pressure and comorbidities); if there were many comorbidities and if blood pressure goals were not achieved as well, the event rate per patient year was almost 7 times that of those subgroups that reached treatment goals.

Summary

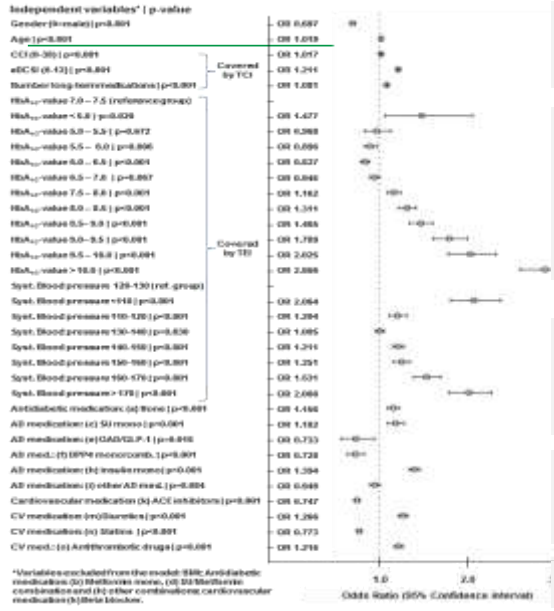
- In spite of some methodic limitations (few information about clinical parameters and unknown validity of diseases) German claims date are a useful as well as essentiel basis for longterm analysis in health outcome research.
- A big sample size of claims data is available.
- Methodic limitation (e.g. validity) could be minimized through addiditional data from primary studies and/or skilled combination of variables.
- Analysis should be focused on available data with high validity.

THANK YOU.

Overview: observed event categories and patient characteristics



Results: Multivariable Cox regression analysis using T2DM-related events as dependent variable



Older comorbid men with higher risk

Second U-curve: HbA1C and event risk

First U-curve: Systolic blood pressure and event risk

Cholesterin values not available – but statins with risk-reducing effect

BMI without association to event risk

Quelle: Wilke et al. 2011.

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