Virtual studytrip to integrated care for diabetes patients in Germany

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Population
- More than 80 Mio people
- About 8.5 Mio with private health insurance
- 0.2 Mio without any insurance
- About 70 Mio. insured by statutory health insurance funds

SHI-Physicians
- 120,000 in total
- 41,000 general practitioners
- 20,000 general internists
- 6,000 gynaecologists
- ...
DMP in Germany: Initiation of the debate about quality of care patients with chronic diseases

- too many secondary complications for chronically diseased patients
- avoidable amputations in diabetics > 25,000 (diabetes care)
- insufficient antihypertensive medication (diabetes care)
- otherwise inappropriate treatment
- deficient timeliness of retinopathy screening (diabetes care)
- lack of integrated care delivery
- bias towards acute treatment
- relative neglect of primary and preventive care
- ....
Experts identified deficiencies in care of chronically ill patients (slide adapted from Dr. Müller-deCornejo)

Result of an expert report in 2001\(^{(1)}\)

- Oversupply and undersupply of resources
- Inadequate medication
- Insufficient basic care
- Unnecessary (double)-examinations
- less focusing on comorbidity and complications

- 40 % of patients cause 75 % of the costs of the health care system

Experts recommended the introduction of DMP for chronically ill patients

\(^{(1)}\) www.svr-gesundheit.de
DMP in Germany: Initiation of the debate about quality of care for chronically ill persons

- DMP integrated into the risk structure compensation scheme (RSCS) for health insurance funds
- RSCS was so far based on groupers according to age, sex, occupational disability and sickness pay (consequence of offering free choice among sickness funds), but did not consider different morbidity of funds
- Since 2002: DMP participation as a supplementary criterion by legal intervention, legislated with reimbursement for sick funds
- Number of insured enrolled in DMP determines transfer payments in risk structure compensation scheme
DMP in Germany:
Ministry of Health defined legal prerequisites

- Evidence based guidelines
- Quality assurance instruments (feedback, reminder, peer review)
- Conditions for enrolment (practitioner and patients)
- Patient education programmes (patient empowerment)
- Documentation
- Evaluation (costs and efficiency)

- Accreditation and re-accreditaton by the Federal Insurance Agency
DMP in Germany: Role of practitioners

- Identification of patients eligible for DMP
- DMP-specific counseling
- Documentation of treatment data
- Transmission of relevant data to data processing institutions (uniform set of relevant data for evaluation and reaccreditation)
- Treatment according to ebm recommendations
- Referral of patients according to risk status and decision aids
DMP in Germany:
Critics against DMP motivated by

High work load of recording data and
- Assumed lack of clinical consequences for the patients
- Fear against misuse of data

Idea of professionalism and autonomy
- Strong role of health insurance funds and Ministry of Health
- Fear to loose control over standards of care

Idea of second class medicine
- DMP as cost reduction medicine of lower quality

Prof. Dr. Norbert Schmacke
Health Services Research
Faculty of Public Health
University of Bremen
DMP in Germany: Some of the criticism

- "...Many claims are ‘unrealistic’ and we are being seduced only by a new fashion in health care reform...”
- "...Documentation is extremely time consuming...”
- "...Effectiveness of various disease management initiatives often remains untested ..."
- "...Aggressive disease management programmes can lose support from patients (choice) and from clinicians (autonomy)...”
DMP in Germany: Some of the criticism
DMP in Germany: Established programmes

- Diabetes mellitus type 1 and 2
- Coronary heart disease
- Asthma and COPD
- Breast cancer
DMP in Germany: Enrollment of patients since 2004

Quelle: monatliche KM6/II

slide adapted from
Hintergrund und Berechnung der DMP-Programmkostenpauschale
Dr. Pekka Helstelä, Abteilung Systemfragen
Nationwide DMP implementation (January 2010)

Germany:
- 3,2 Mio T2 DM
- 128,500 T1 DM
- 1,6 Mio CHD
- 126,800 Breast cancer
- 647,800 Asthma bronchiale
- 507,900 COPD

North-Rhine:
- 384,000 T2 DM
- 16,100 T1 DM
- 186,700 CHD
- 14,900 Breast cancer
- 70,000 Asthma bronchiale
- 72,500 COPD
Proportion of DMP-patients of all members of health insurance funds (January 2009)

Proportion DMP patients / statutory insured (%)

- 4,9 bis unter 6,6
- 6,6 bis unter 7,5
- 7,5 bis unter 8,7
- 8,7 bis unter 11,7
T2DM in North-Rhine treatment goals and referral rules

- Controlling blood pressure (≥45% normotensive)
- Sufficient glycemic control:
  - HbA1c <8.5% (10 % at maximum with high HbA1c)
  - reaching individual HbA1c level (≥55% reaching spec. level)
- Serum creatinine checked at least once per year (≥90%)
- Antiplatelets for patients with CHD, Apoplex (≥80%)
- Metformin for overweight patients, if no contraindication (≥50%)
- Referal to ophthalmologists once a year (≥80%)
- Referal to food specialists /clinic, if indicated (≥65%)
- Less than 2 emergency incidents because of hypoglycemia within 6 months (≥99%)
- Avoidance of hospitalisation induced by T2DM (≥98%)
T2DM in North-Rhine: referral criteria in detail

Level 2 'must criteria':

- Once a year -> eye specialist;
- Serious diabetic foot lesion (Wagner 2 and worse and/or Armstrong C/D);
- Nephropathy with GFR of less than 40 ml/min or progression more than 5ml/min comparing with the last year);

Level 2 'should criteria':

- All patients with minor diabetic foot lesions;
- Incidence of microvascular complication;
- Hypertension systolic $\geq 140$ mmHg und diastolic $\geq 90$ mmHg within 6 months at max.;
- Hyperglycaemia more than once per 6 months.
DMP T2DM North-Rhine
- Enrolled patients and practitioners -

Practitioners 2009: 4,786

Patients 2009: 423,518
DMP North-Rhine: Data volume since establishing the programmes

<table>
<thead>
<tr>
<th>Condition</th>
<th>Data Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>583,820</td>
</tr>
<tr>
<td>Breast cancer</td>
<td>151,754</td>
</tr>
<tr>
<td>COPD</td>
<td>658,680</td>
</tr>
<tr>
<td>T1DM</td>
<td>213,032</td>
</tr>
<tr>
<td>T2DM</td>
<td>7,025,943</td>
</tr>
<tr>
<td>CHD</td>
<td>2,614,947</td>
</tr>
</tbody>
</table>
DMP North-Rhine: Quality management supported by the DMP-Bureau at Cologne (tasks and products)

- Data validation
- Data processing control (authorized participation)
- Protocols
- Training physicians and health stuff in documentation
- Customer Relationship Management

- Annual report
- Transferring data to external evaluation
- Audit/peer review
- Feedback-reports
- Reminders

Customer Relationship Management

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DMP T2DM – Patient characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of practices</td>
<td>3,441</td>
</tr>
<tr>
<td>patients (at least 6 months enrolled)</td>
<td>383,257</td>
</tr>
<tr>
<td>female</td>
<td>50.5 %</td>
</tr>
<tr>
<td>age (female / male)</td>
<td>69.0 / 66.3 years</td>
</tr>
<tr>
<td>duration of disease (female / male)</td>
<td>9.5 / 9.3 years</td>
</tr>
<tr>
<td>HbA₁c</td>
<td>7.0 %</td>
</tr>
<tr>
<td>blood pressure</td>
<td>134/79 mmHg</td>
</tr>
<tr>
<td>myocardial infarction</td>
<td>7.5 %</td>
</tr>
<tr>
<td>stroke</td>
<td>5.9 %</td>
</tr>
<tr>
<td>neuropathy symptoms</td>
<td>20.1 %</td>
</tr>
<tr>
<td>retinopathy</td>
<td>11.8 %</td>
</tr>
<tr>
<td>nephropathy</td>
<td>9.5 %</td>
</tr>
<tr>
<td>foot lesion ≥ Wagner 2, Armstrong C/D</td>
<td>0.4 % (n = 1,579)</td>
</tr>
</tbody>
</table>
T2DM in North-Rhine
HbA1c-levels within subgroups
(patients with continuous participation)

Abbildung 6-11:
DMP Diabetes mellitus Typ 2 – Veränderung des
mittleren HbA1c-Werts bei Patienten, die im
ersten Halbjahr 2005 eingeschrieben wurden

insgesamt 146.422 Patienten mit einer Einschrei-
bung im ersten Halbjahr 2005 und kontinuierlicher
Teilnahme bis zum zweiten Halbjahr 2008; weitere
Angaben vgl. Abbildung 6-10
DMP T2DM North-Rhine
- Systolic blood pressure for patients with macrovascular complications -

RR syst. mm Hg

- nephropathy (n: 13.499)
- stroke (n: 6.982)
- MI (n: 9.874)
DMP T2DM North-Rhine:
Proportions of patients having reached targets (2008)

- HbA1c < 8,5 %: 90,4%
- HbA1c-target value reached: 55,8%
- severe hypoglycaemia: 94,2%
- in hospital treatment for hyperglycaemia: 99,7%
- normotensive blood pressure: 56,8%
- renal function (lab.): 93,1%
- antiplatelets in specific indications: 70,2%
- metformin as monotherapy (overweight): 83,1%
- referral eye specialists: 74,6%
- referral foot clinic**: 35,9%
DMP T2DM North-Rhine: Reaching the targets based on physician offices (interquartile ranges)

- HbA1c < 8.5%
- HbA1c-target value reached
- Normotensive blood pressure
- Renal function (lab.)
- Antiplatelets in specific indications
- Metformin as monotherapy (overweight)
- Referral eye specialists
- Referral foot clinic**

IQR and Median
DMP T2DM in Germany:
Proportion of patients with hypertension and T2DM reaching normotensive blood pressure

- Baden-Württemberg: 46,8%
- Bavaria: 47%
- Berlin: 55,4%
- Brandenburg: 49,7%
- Bremen: 46%
- Hamburg: 44%
- Hessen: 46,4%
- Mecklenburg-Western Pomerania: 56,1%
- Lower Saxony: 46,4%
- Northrhine: 54,5%
- Rhineland-Palatinate: 47,3%
- Saarland: 47,3%
- Saxony: 45,9%
- Saxony-Anhalt: 47,1%
- Schleswig-Holstein: 50,1%
- Thuringia: 47,1%
- Westphalia: 50,1%

Target: 50%
DMP North-Rhine: Six different Feedback-Report-Schemes

Examples: //www.zi-dmp.de
DMP North-Rhine:
Targets of our feedback-reporting scheme

- stimulus for reflection about clinical performance
- motivating the practitioner by
  - taking his documentations efforts serious
  - benchmarking with peers
  - showing his individual goal attainment
- to give an idea about the potential for optimization in practice organization and standards of care
- basis for discussion in peer review / self audit
- to close the gap between evidence based medicine and routinized clinical practice
- implementation of an ongoing quality management process
... what is to avoid...
## DMP T2 DM North-Rhine: Feedback-report referring to treatment targets

### Qualitätsziel | erreicht? | Vergleich | Qualitätsziel | erreicht? | Vergleich
--- | --- | --- | --- | --- | ---
**Niedriger Anteil von Patienten mit hohen HbA1c-Werten:** Mindestens 90% der Patienten sollen HbA1c-Werte unter 8,5% aufweisen. | **ja (181/187)** |  | **Hoher Anteil von Patienten mit Hypertonie, die normotone Blutdruckwerte erreichen:** Mindestens 40% der entsprechenden Patienten sollen einen Blutdruckwert unter 140/90 mmHg erreichen. | **ja (73/168)** |  
**Hoher Anteil von Patienten, die ihren Zielwert erreichen:** Mindestens 55% der Patienten sollen ihren individuell vereinbarten HbA1c-Zielwert erreichen. | **ja (141/182)** |  | **Hoher Anteil von Patienten, bei denen die Nierenfunktion überprüft wurde:** Bei mindestens 90% der Patienten soll innerhalb der vergangenen 12 Monate das Serum-Kreatinin bestimmt worden sein. | **ja (167/167)** |  
**Schwere Hypoglykämien vermeiden:** Bei mehr als 99% der Patienten soll innerhalb der vergangenen 6 Monate höchstens eine Hypoglykämie aufgetreten sein. | **ja (180/181)** |  | **Hoher Anteil von Patienten, denen bei einer AVK, KHK oder einem Schlaganfall, Herzinfarkt oder einer Amputation Thrombozyten-Aggregationshemmer verordnet werden:** Bei 80% der genannten Patienten sollen TAH verordnet werden. | **ja (69/75)** |  
**Stationäre Diabetes-Behandlungen vermeiden:** Bei mehr als 98% der Patienten soll innerhalb der vergangenen 6 Monate keine stationäre Diabetes-Behandlung erfolgt sein. | **ja (181/181)** |  | **Hoher Anteil von Patienten, denen bei Übergewicht und einer OAD-Monotherapie Metformin verordnet wird:** Bei mindestens 50% der genannten Patienten soll Metformin verordnet werden. | **ja (76/90)** |  

Erfüllen zehn oder weniger Ihrer Patienten eines der genannten Kriterien, erfolgt keine Bewertung: - : (n / m): absolutes Verhältnis der zubereitenden Fälle (Zähler) zu den insgesamt vorhandenen Fällen (Nenner); i.A.: Patienten, welche die geforderten Bedingungen erfüllen, sind bei Ihnen nicht dokumentiert.

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DMP North-Rhine: Number of feedback reports / year

- DMP Diabetes mellitus Typ 2
- DMP Diabetes mellitus Typ 1
- DMP KHK
- DMP Brustkrebs
- DMP Asthma
- DMP COPD

Years: 2003 to 2009
DMP North-Rhine:
Volume of produced reminders and feedbacks

We have produced more than 231,000 reminders and 139,000 feedback-reports!
Incidence (/1,000) of amputations for DMP-patients vs. none-DMP-patients per year (Ullrich 2007)
Effectiveness of DMP – ELSID-Study

Studiendesign

Table 1. Sociodemographic Data

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Before Matching</th>
<th></th>
<th></th>
<th>After Matching</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DMP (n = 2300)</td>
<td>Non-DMP (n = 8779)</td>
<td>P</td>
<td>DMP (n = 1927)</td>
<td>Non-DMP (n = 1927)</td>
<td>P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female, No. (%)</td>
<td>1364 (59.3)</td>
<td>5361 (61.1)</td>
<td>.124</td>
<td>1162 (60.3)</td>
<td>1162 (60.3)</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age, y (SD)</td>
<td>70.47 (8.88)</td>
<td>72.80 (9.63)</td>
<td>&lt;.001</td>
<td>70.70 (8.6)</td>
<td>70.73 (8.57)</td>
<td>.933</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal state Sachsen-Anhalt, No. (%)</td>
<td>1366 (59.4)</td>
<td>6047 (68.9)</td>
<td>&lt;.001</td>
<td>1204 (62.5)</td>
<td>1204 (62.5)</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of PCGs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>1.88 (1.24)</td>
<td>1.71 (1.18)</td>
<td>&lt;.001</td>
<td>1.75 (1.31)</td>
<td>1.75 (1.31)</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median (IQR, 25%-75%)</td>
<td>2.00 (1.00-3.00)</td>
<td>2.00 (1.00-2.00)</td>
<td></td>
<td>2.00 (1.00-2.00)</td>
<td>2.00 (1.00-2.00)</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of DCGs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>0.28 (1.2)</td>
<td>0.40 (1.3)</td>
<td>&lt;.001</td>
<td>0.05 (0.44)</td>
<td>0.05 (0.44)</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median (IQR)</td>
<td>0.00 (0.00-0.00)</td>
<td>0.00 (0.00-0.00)</td>
<td></td>
<td>0.00 (0.00-0.00)</td>
<td>0.00 (0.00-0.00)</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescription of insulin, No. (%)</td>
<td>971 (42.2)</td>
<td>3318 (378)</td>
<td>&lt;.001</td>
<td>794 (41.2)</td>
<td>751 (39.0)</td>
<td>.158</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DCG indicates diagnostic cost group; DMP, disease management program; IQR, intraquartile range; PCG, pharmacy-based cost group.
Effectiveness of DMP – ELSID-Study

Figure. Kaplan-Meier Survival Curves for the Matched Pairs (A) and the Total Sample (B)

DMP indicates disease management program.
DMP T2DM:
Economic evaluation: average cost for six months

- Outpatient medical care: 313 €
- Hospital care: 708 €
- Medication: 588 €
- Medical supply cost: 80 €

Total cost: ≈1.900 €
'German model' of DMP is a quite established concept and feasible, but needs a further detailed tuning regarding several aspects (documentation, special target groups, multimorbidity and polypharmacy)

The initial scepticism of the practitioners has now changed by a pragmatic acceptance

Referring to our data: DMP can contribute to optimizing medical care for chronic diseases

Patients survey suggest that patients seem to be more satisfied with their role and with their treatment

The effectiveness of DMP referring to micro- and macrovascular complications still needs to be analysed by carefully designed controlled studies