Could we improve Patient Outcomes in Type-2 Diabetes with systematic Monitoring of Guideline Adherence?

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Background
- Despite many new treatment options, patient outcomes in Type-2 Diabetes (T2DM) have not improved significantly over the past 2 decades.²,³,¹⁰
- Most countries have developed treatment guidelines for T2DM, aiming to translate research evidence and expert consensus into clinical practice.
- In Germany, like in many other countries, adherence to these guidelines is not systematically monitored in clinical practice.²,³ However, study data suggest low adherence rates.¹,²,¹⁰
- Growing, more differentiated scientific evidence gets embedded into T2DM guidelines, making them more complex to apply.¹,²

Objective: Measure guideline adherence in T2DM care and evaluate its correlation with patient outcomes (treatment success).

Methods
- Observational study, conducted in 2017/18 with 123 German T2DM patients in diabetes specialist care.
- Inclusion criteria: T2DM diagnosis, adult age, pending initiation or adjustment of insulin therapy, informed consent.
- Use of routine care data collected through a digital platform for personalized diabetes management (PDM One, Roche Diabetes Care).
- Guideline adherence measured in 3 areas (see table 1): blood sugar (BS), blood pressure (BP) and lipid metabolism management (Lipids).

Results
Study Population
- Participants were more severely impacted by their disease than the average T2DM patient, which is characteristic for diabetology specialist care:
  - Average age 64 years, 47% >65 years old.
  - 68% of participants had >10 years of disease.
  - 90% of participants with hypertension, 89% with lipid metabolism disorder.

Discussion
- >70% of T2DM patients did not received guideline-adherent care. Considering that this study was conducted before release of the 2019 ESC/EASD guideline, some of this may be explained by physicians’ apprehension to change their therapeutic approach until release of the new guideline – despite emerging evidence from clinical trials.
- Patients benefit from guideline adherent care: Non-adherence to BP and lipid guidelines puts them at risk for cardiovascular complications, even when achieving glycemic control.

Conclusion: Only a minority of T2DM patients received guideline-adherent care. Patients in this small study sample benefited from guideline adherent care in blood pressure and lipid metabolism management. Systematic guideline adherence monitoring in clinical practice is needed to support clinicians in delivering adherent care in times of increasing guideline complexity. Guideline and patient information must then be integrated and available to clinicians at the time of decision making. Digital platforms like PDM One can provide valuable support to this process.

Methods (cont.)
- Analysis based on select aspects of the 2019 ESC/EASD guideline on diabetes, pre-diabetes, and cardiovascular diseases²

Guideline adherence measured in 3 areas:
- Guideline and patient information must then be integrated and available to clinicians at the time of monitoring and treatment.

Table 1: Parameters used for guideline adherence measurement, based on ESC/EASD guideline 2019²

<table>
<thead>
<tr>
<th>Guideline Adherence</th>
<th>Blood Sugar</th>
<th>Blood Pressure</th>
<th>Lipids</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Targeting Adherence</strong></td>
<td>Age-adjusted HbA1c target:</td>
<td>LDL target adjusted by cardiovascular risk (CVR):</td>
<td>LDL target adjusted by cardiovascular risk (CVR):</td>
</tr>
<tr>
<td>≥65 yrs: ≤7.0%</td>
<td>Very high: ≤550mg/dl</td>
<td>Very high: ≤70mg/dl</td>
<td></td>
</tr>
<tr>
<td>&gt;65 yrs: ≤8.0%</td>
<td>High: ≤140mg/dl</td>
<td>Moderate CVR: ≤100mg/dl</td>
<td></td>
</tr>
<tr>
<td><strong>Monitoring Adherence</strong></td>
<td>HbA1c monitoring least once p.a.</td>
<td>Blood pressure monitoring at least once p.a.</td>
<td>LDL monitoring at least once p.a.</td>
</tr>
<tr>
<td><strong>Therapy Adherence</strong></td>
<td>Treatment with SGLT2 inhibitors or GLP-1 Receptor Agonists if high/high very high CVR</td>
<td>Treatment with RAAS blocker (ACEI or ARB) if hypertension</td>
<td>Treatment with statin if metabolic disorder</td>
</tr>
</tbody>
</table>

Table 2: Guideline Adherence and Treatment Success

<table>
<thead>
<tr>
<th>Guideline Adherence</th>
<th>BS guideline adherence was 28% for BP and lipids, adherence rates were 25% and 9% (see figure 1).</th>
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<tbody>
<tr>
<td>Treatment Success</td>
<td>BP rates for BS, 66% for BP and 9% for lipids (see figure 1).</td>
</tr>
<tr>
<td>Patients with non-adherent BP and Lipid management had a higher chance of TS (see table 2).</td>
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*significant results at α=0.05

Ethics Approval: This study was approved by the Research Committee for Scientific Ethical Questions at UMIT university (application no. 2531, 02/2019). Informed consent was obtained from each participant of the study.

Acknowledgement, Funding, and Conflict of Interest: The authors thank Roche Diabetes Care for access to PDM One feasibility study data. The authors did not receive funding for this study and do not have any conflicts of interest to declare.

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