

# 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.<sup>3-5, 8, 11</sup>
- 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.<sup>6</sup> However, study data suggest low adherence rates.<sup>1,7,10</sup>
- Growing, more differentiated scientific evidence gets embedded into T2DM guidelines, making them more complex to apply.<sup>2,9</sup>

**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 diabetology 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).

## Methods (cont.)

- Analysis based on select aspects of the 2019 ESC/EASD guideline on diabetes, pre-diabetes, and cardiovascular diseases<sup>2</sup>

**Guideline adherence measured in 3 areas: Targeting, Monitoring, and Therapy adherence. Combined adherence = adherence to all 3 areas (see table 1).**

**Treatment success (TS) = Achievement of the appropriate treatment target for HbA1c (glycemic control), blood pressure and LDL-Cholesterol**

- Correlation of guideline adherence and TS was measured with Fisher's Exact test (FET) at significance level  $\alpha=0.05$ .

## 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.
  - Average baseline HbA1c: 9.3% (SD  $\pm 1.7$ ), average baseline BMI: 32.2 (SD  $\pm 6.4$ )
  - 90% of participants with hypertension, 89% with lipid metabolism disorder
  - 27% of participants with macrovascular complications, 70% with microvascular complications, 88% with high or very high CVR
  - Baseline diabetes therapy: 84% of participants were on 2+ oral anti-diabetic drugs (OAD) and/ or insulin

### Guideline Adherence

- BS guideline adherence was 28% For BP and lipids, adherence rates were 25% and 9% (see figure 1).

### Treatment Success

- TS rates were 64% for BS, 66% for BP and 9% for lipids (see figure 1).
- Patients with adherent BP and Lipid management had a higher chance of TS (see table 2).

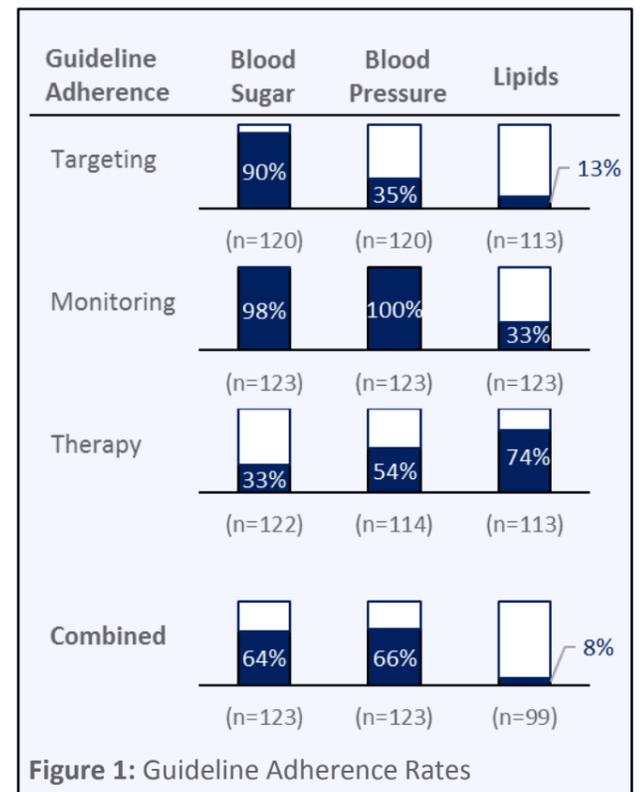


Figure 1: Guideline Adherence Rates

Combined Adherence	TS rate	FET p
<b>BS (n=123)</b>		
Adherent	54%	0.2106
Non-adherent	68%	
<b>BP (n=111)</b>		
Adherent	82%	0.0994*
Non-adherent	64%	
<b>Lipids (n=85)</b>		
Adherent	44%	0.0035*
Non-adherent	5%	

\*significant results at  $\alpha=0.05$

Table 2: Guideline Adherence and Treatment Success

	Blood Sugar	Blood Pressure	Lipids
<b>Targeting Adherence</b>	Age-adjusted Hba1c target: <ul style="list-style-type: none"> <li>≤65 yrs: ≤7.0%</li> <li>&gt;65 yrs: ≤8.0%</li> </ul>	Age-adjusted blood pressure target: <ul style="list-style-type: none"> <li>≤65 yrs: ≤130/80mmHg</li> <li>&gt;65 yrs: ≤140/80mmHg</li> </ul>	LDL target adjusted by cardiovascular risk (CVR): <ul style="list-style-type: none"> <li>Very high: ≤55mg/dl</li> <li>High CVR: ≤70mg/dl</li> <li>Moderate CVR: ≤100mg/dl</li> </ul>
<b>Monitoring Adherence</b>	Hba1c monitoring least once p.a.	Blood pressure monitoring at least once p.a.	LDL monitoring at least once p.a.
<b>Therapy Adherence</b>	Treatment with SGLT 2 Inhibitors or GLP-1 Receptor Agonists if high/very high CVR	Treatment with RAAS blocker (ACEI or ARB) if hypertension	Treatment with statin if fat metabolism disorder

Table 1: Parameters used for guideline adherence measurement, based on ESC/EASD guideline 2019<sup>2</sup>

**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.

**Ethics Approval:** This study was approved by the Research Committee for Scientific Ethical Questions at UMIT university (application no. 2551, 02/2019). Informed consent was obtained from each participant of the study.

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