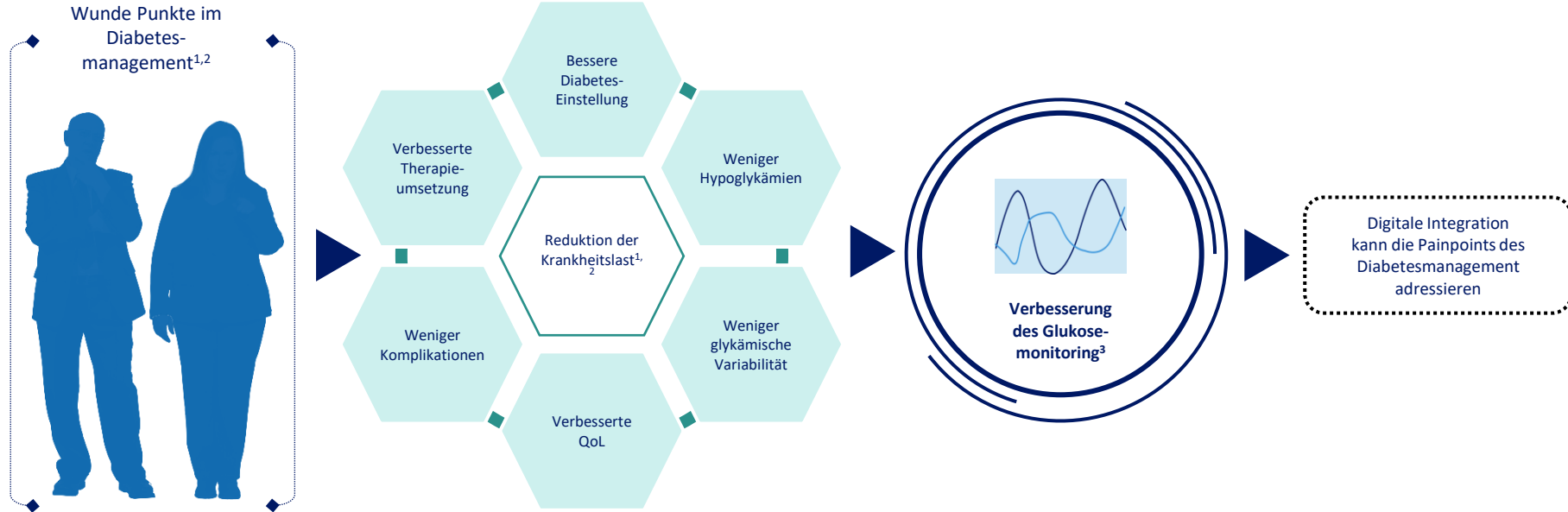


# Diabetes-Technologie: Update 2025



Julia Mader, Medizinische Universität Graz  
Innovationsforum Diabetologie, 18.10.2025

# Wunde Punkte im Diabetesmanagement



QoL, Lebensqualität.

1. Dandona P. Diabetes Technol Ther 2017;19:498–506; 2. Yu PC et al. Diabetes Res Clin Pract 2010;89:1–9; 3. Brown A et al. diaTribe. Going Beyond A1c – One Outcome Can’t Do It All, 2016. Available at: <https://diatribe.org/BeyondA1c#7> (accessed August 2022).

# Ergebnisse der Sensorperformance-Studie

Data wurden analysiert von:



Gute Performance im Vergleich zu kapillären Werten

90,5%  
20/20 Übereinstimmung

9,2%  
MARD (in der Klinik)

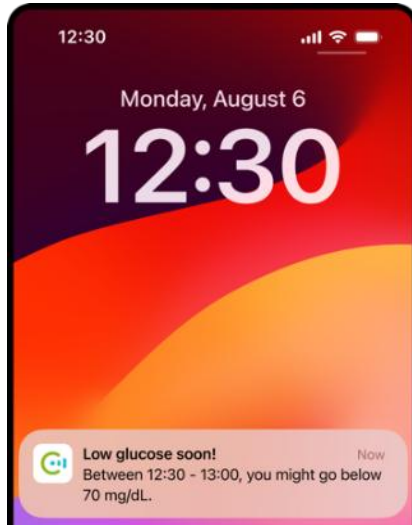
Genauigkeit war stabil über die gesamte Sensortragedauer.

# Prädiktions-Features

## Low Glucose Predict



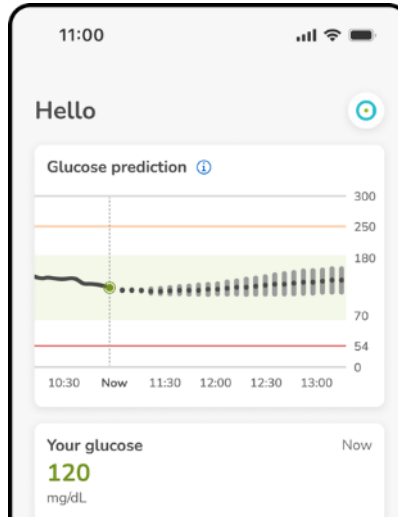
Receive an **alert 30 minutes before** your glucose values get too low



## Glucose Predict



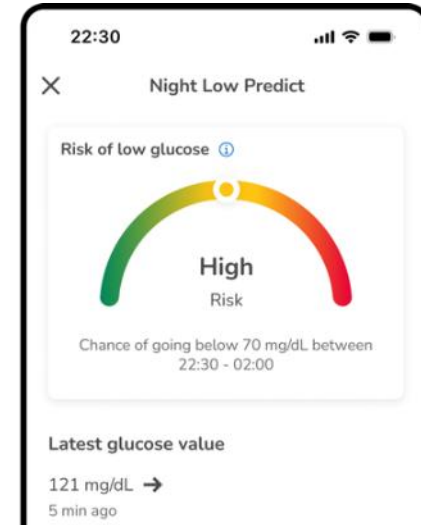
Visualise **2-hour glucose prediction**, allowing you to be prepared and take action



## Night Low Predict



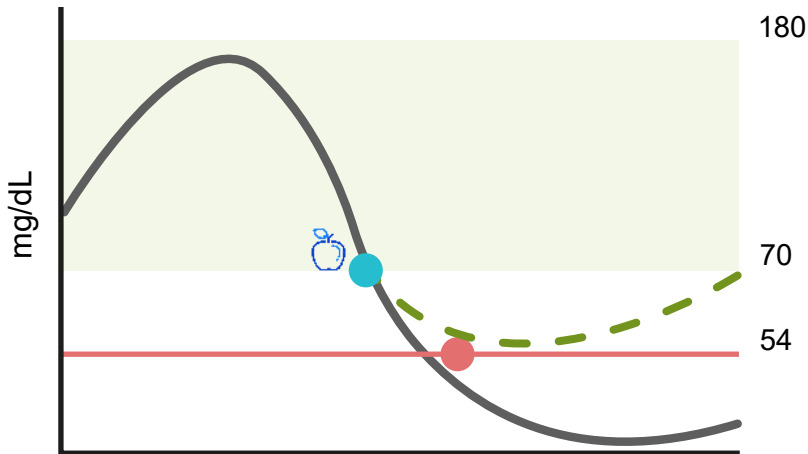
Get a notification of the possibility of having a hypoglycaemia event **during the night** before bedtime



# Reaktive vs. proaktive Therapieanpassung

## Reaktive Therapie (Grenzwerten-Alarme):

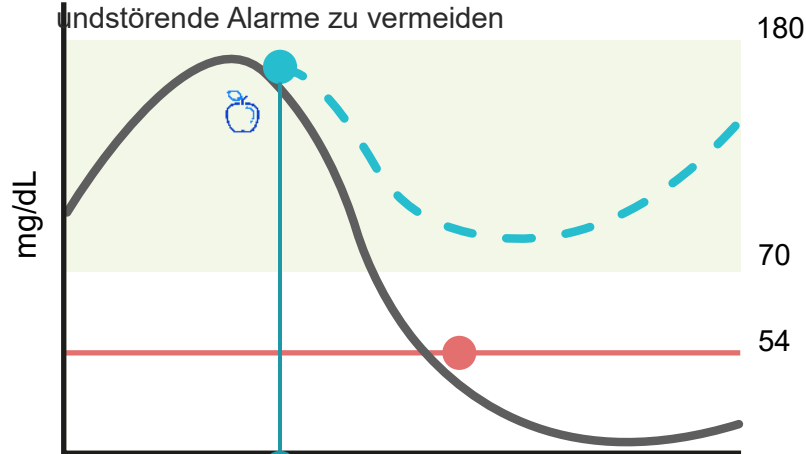
- Sofortige Handlung notwendig
- Möglichkeit einer kritischen Situation
- Negativer Einfluss auf die Diabeteseinstellung



- Glucose curve without intervention
- Hypo alert/rescue or preventive carbohydrates
- - - Reaction to hypo alert
- Very low glucose alert

## Proaktive Therapie (Low Glucose Predict):

- Über zukünftige niedrige Glukosewerte informiert sein, bevor diese auftreten
- Frühzeitiges Handeln, um kritische Situationen und störende Alarme zu vermeiden



Low Glucose Predict

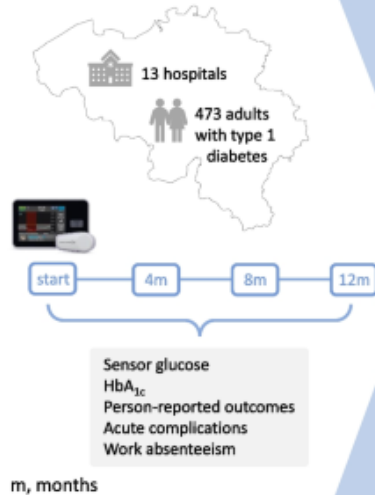
⚠ Between 12:30–13:00, you might go below 70 mg/dL

- Glucose curve without intervention
- Low Glucose Predict notification/preventive carbohydrates
- - - Reaction to Low Glucose Predict notification
- Very low glucose alert

# Tandem Control IQ im klinischen Alltag

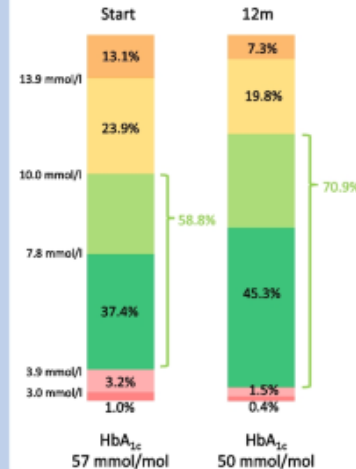
## One-year real-world benefits of Tandem Control-IQ on glucose management and person-reported outcomes in adults with type 1 diabetes: a prospective observational cohort study

### Study population and design

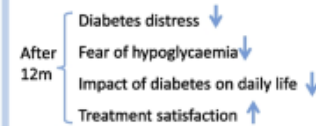


### Findings

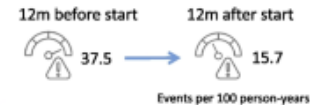
#### Glucose management



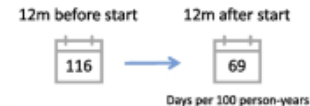
#### Person-reported outcomes



#### Severe hypoglycaemia

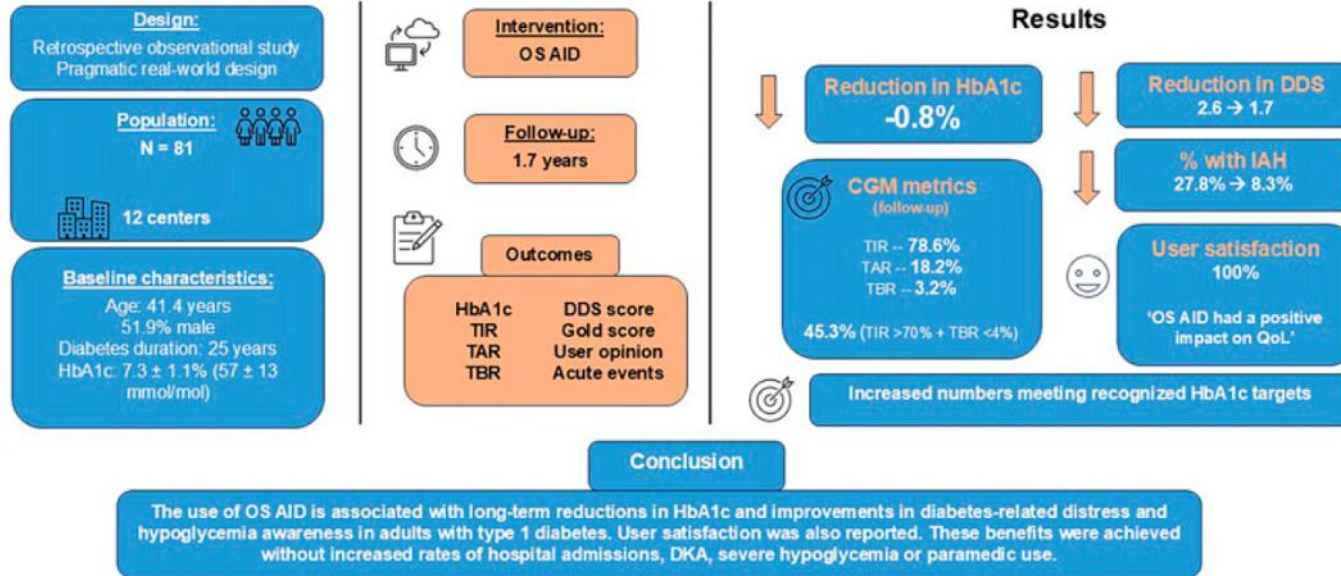


#### Work absenteeism days



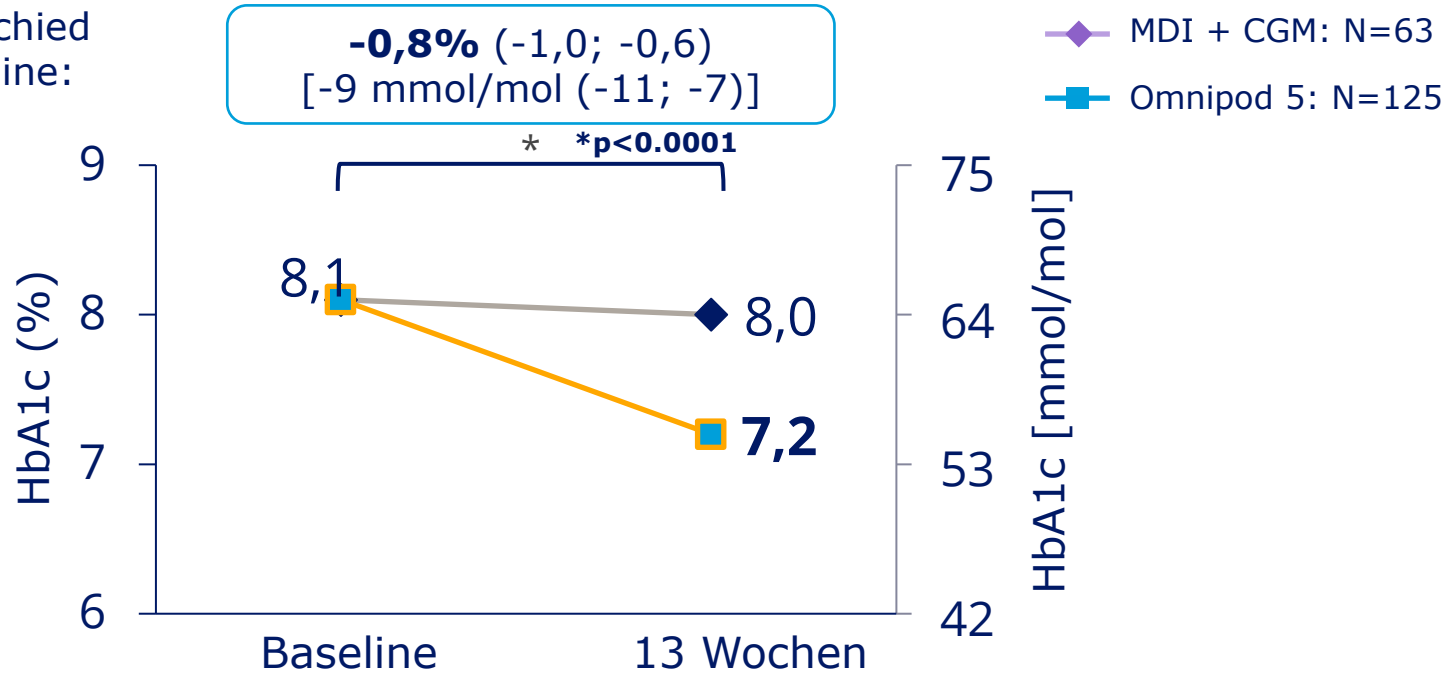
# Open-Source AID im Alltag

Long-term improvements in glycemia and user-reported outcomes associated with open-source automated insulin delivery systems in adults with Type 1 Diabetes in the UK: A real-world observational study



# Omnipod 5 erreicht signifikant höhere HbA1c-Reduktion

Behandlungsgunterschied  
adjustiert für Baseline:  
MW (95% CI)

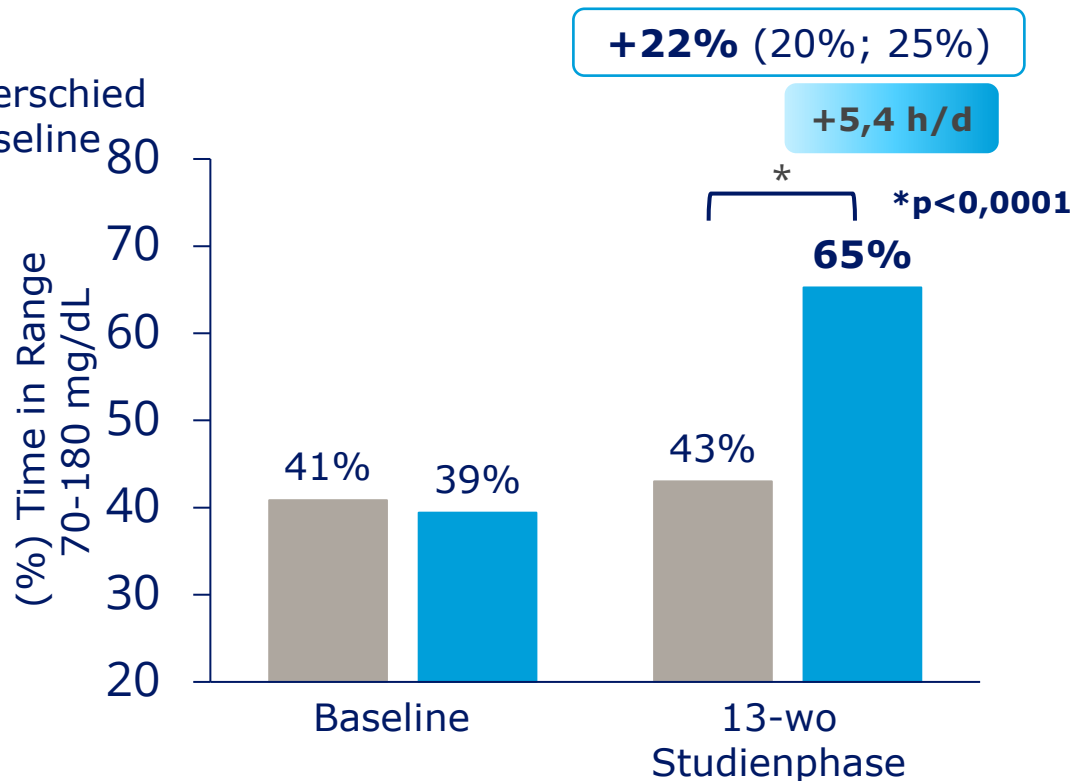


Daten sind Mittelwerte, wenn nicht anders angegeben

Wilmot EG et al. RADIANT Clinical Study. Oral Presentation. Results presented at ATTD; March 19-22, 2025; Amsterdam, NL.

# Omnipod 5 erreicht signifikant höhere TIR

Behandlungsgunterschied  
adjustiert für Baseline  
MW (95% CI)



Data shown as mean

Wilmot EG et al. RADIANT Clinical Study. Oral Presentation. Results presented at ATTD; March 19-22, 2025; Amsterdam, NL.

# AID bei T2D

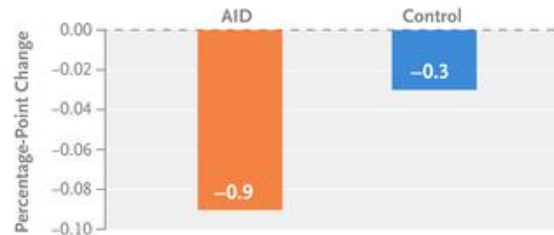
## Patients

- 319 adults
- Age range, 19 to 87 years
- Men: 52%; Women: 48%



## Change in Mean Glycated Hemoglobin Level

Mean adjusted difference: -0.6 percentage points  
(95% CI, -0.8 to -0.4); P<0.001



## Automated Insulin Delivery



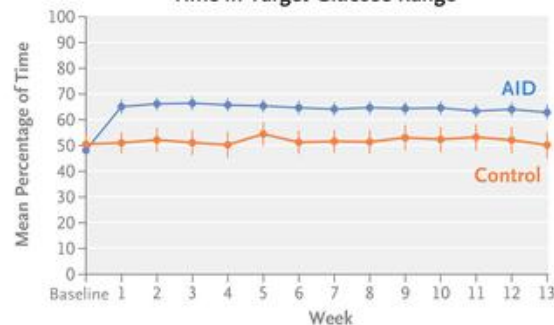
N = 215

## Control



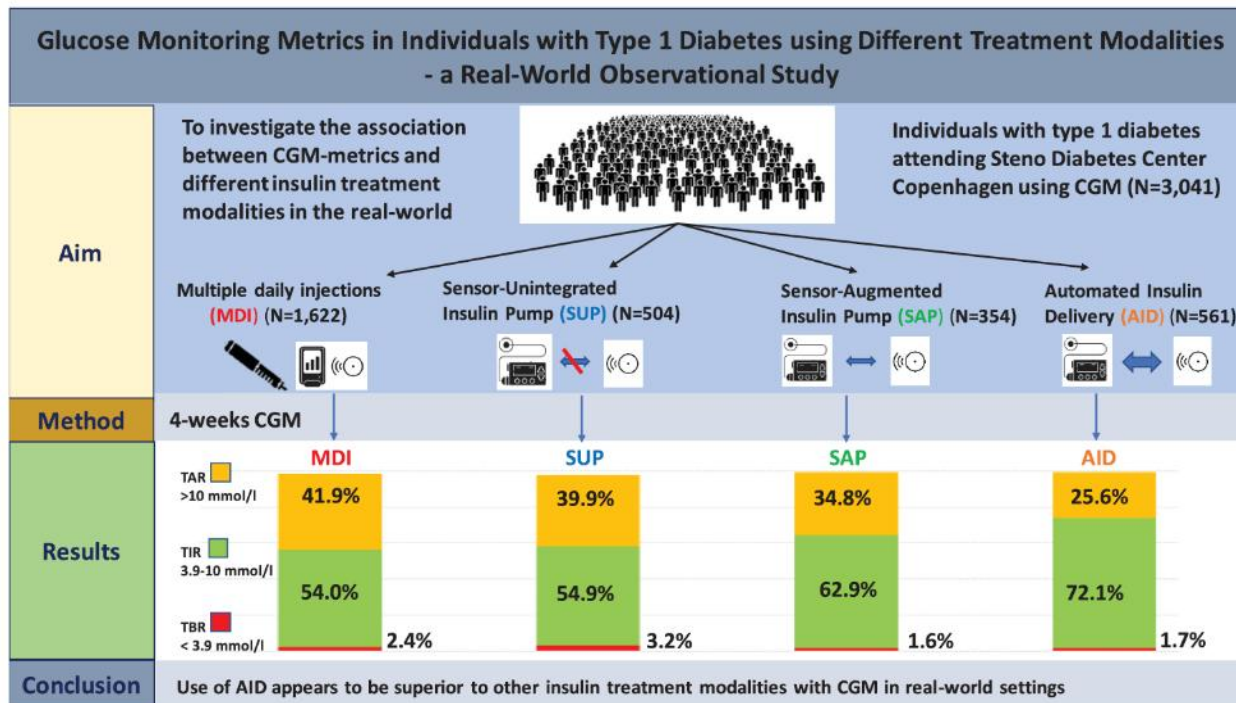
N = 104

## Time in Target Glucose Range



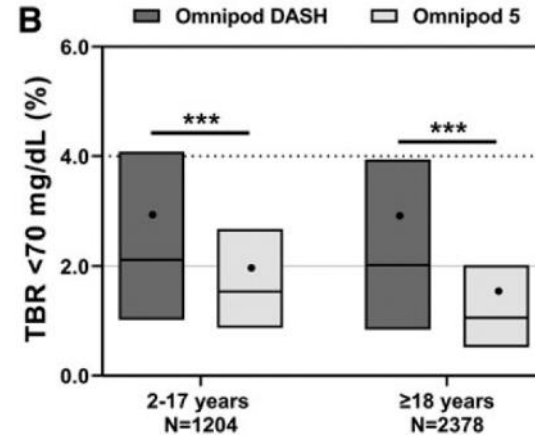
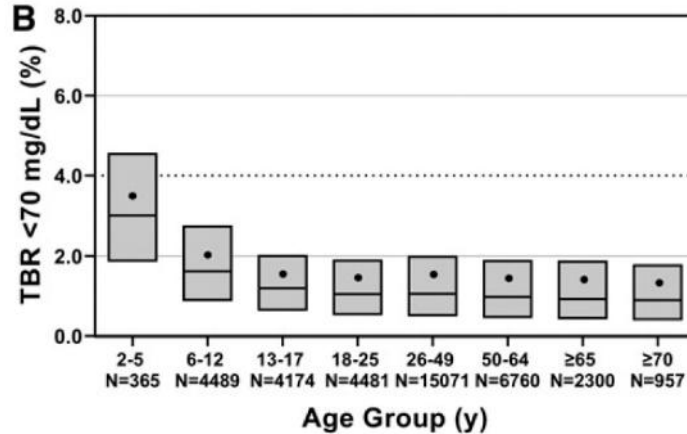
# DiabetesEinstellung bei T1D

## Dänische Real-World Kohort

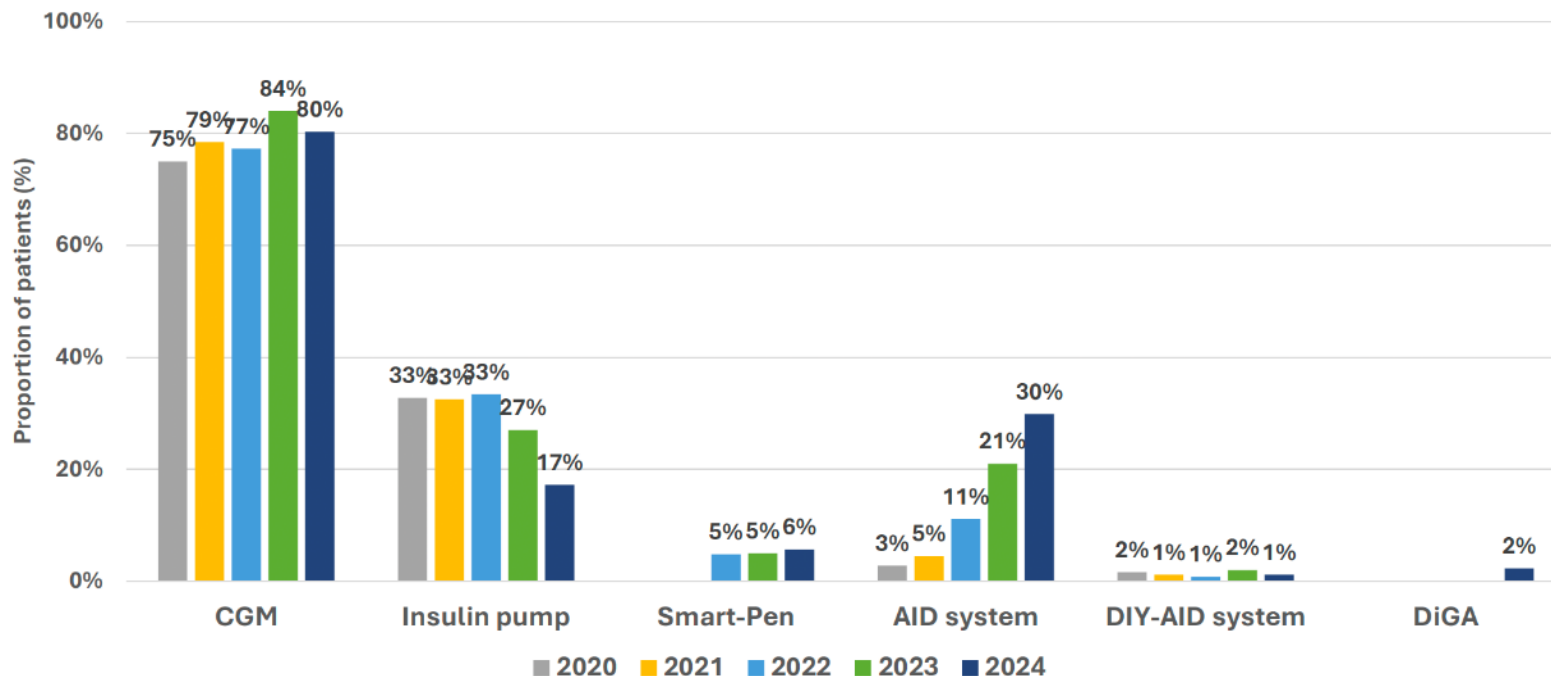


# AID in der Routine

n=69.902 mit T1D



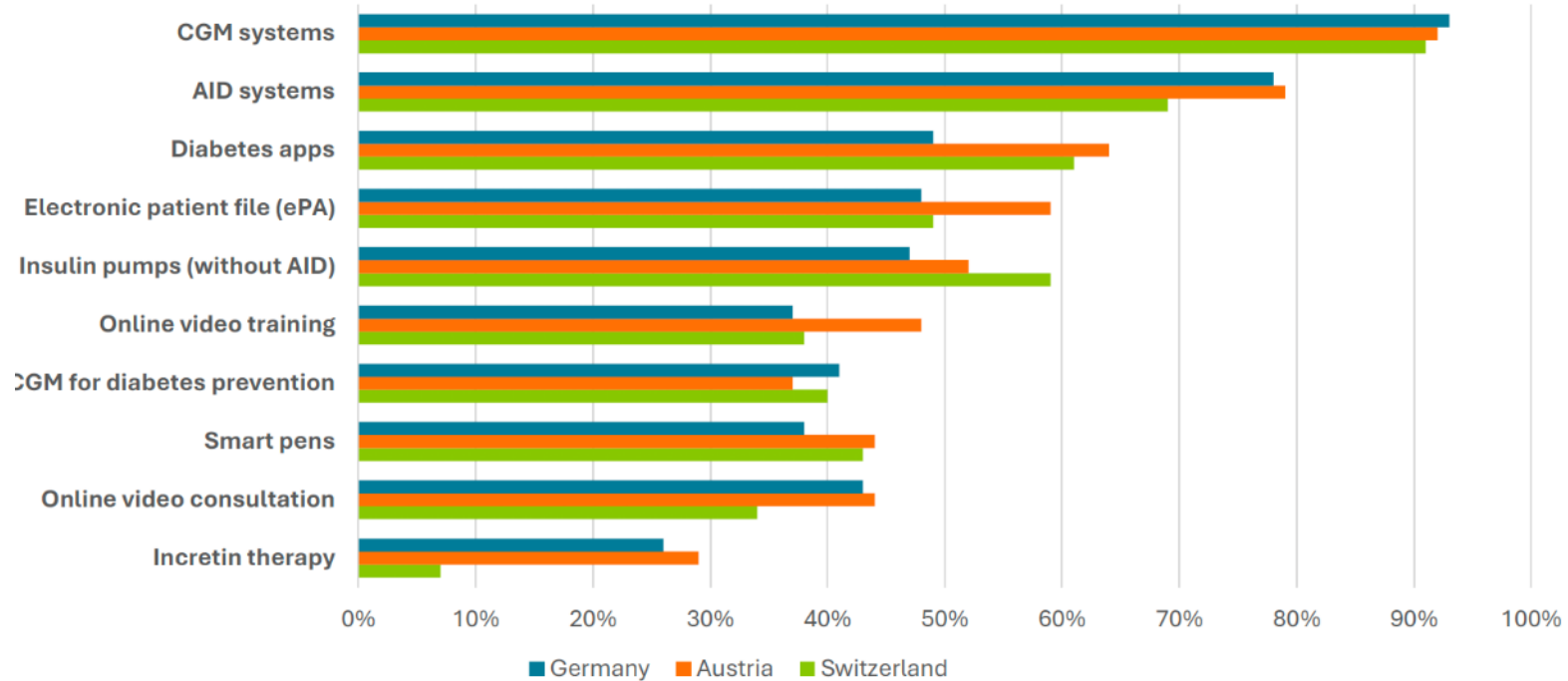
# T1D und Diabetestechnologie – Trends



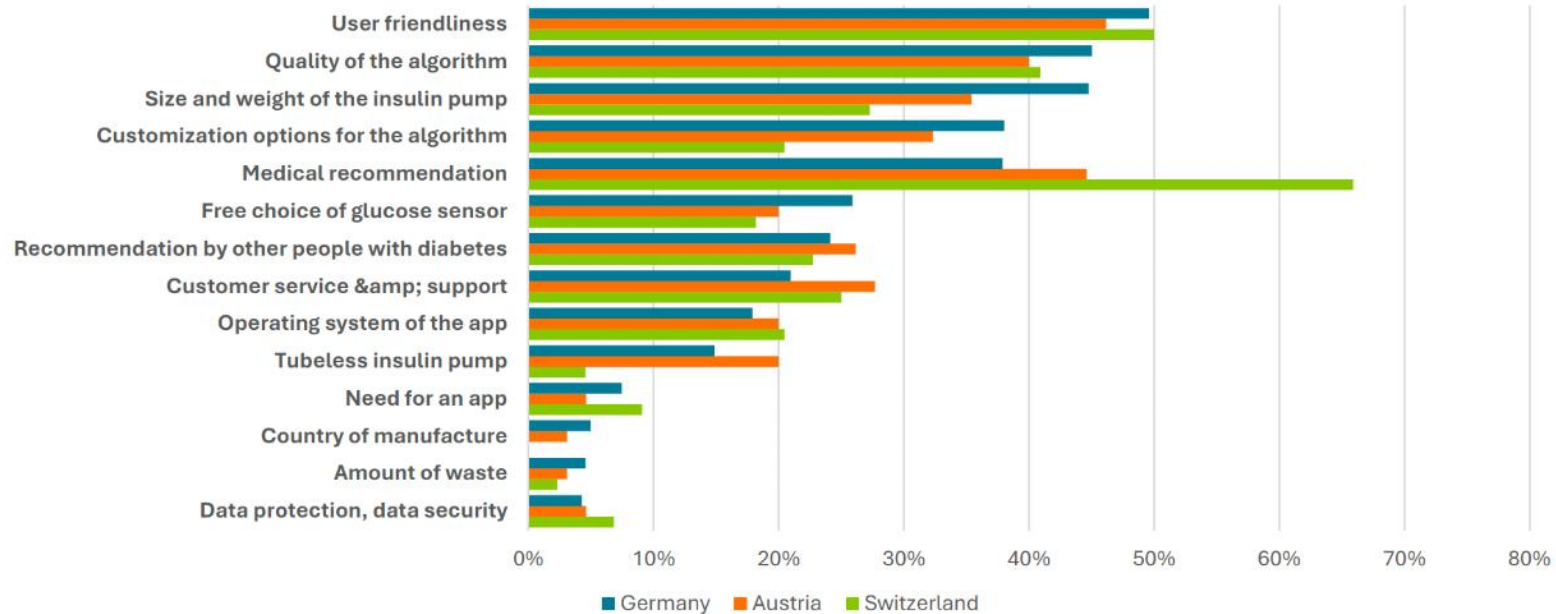
# Auswahl eines AID-Systems



# Relevanz von Technologie



# Gründe für die Auswahl eines AID-Systems



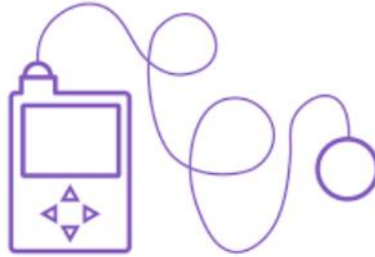
# Diabetes-Technologie rund ums Fliegen

## CGMs



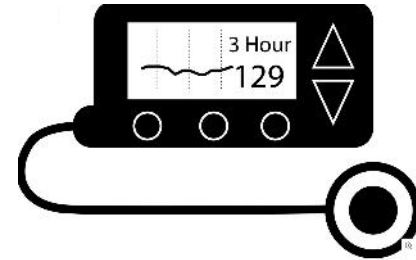
Genauigkeit der  
Glukosemessung

## Insulinpumpen



Genauigkeit der  
Insulinabgabe

## AID-Systeme



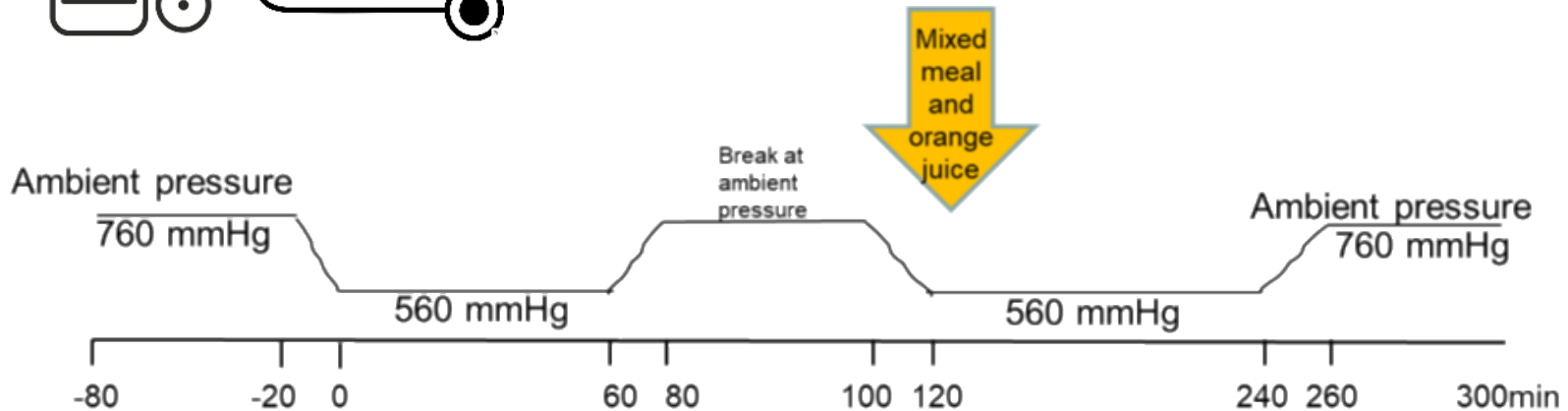
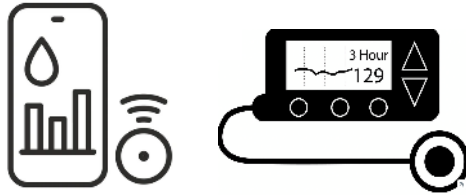
Genauigkeit der  
Glukosemessung und  
der Insulinabgabe

# Zielpopulation

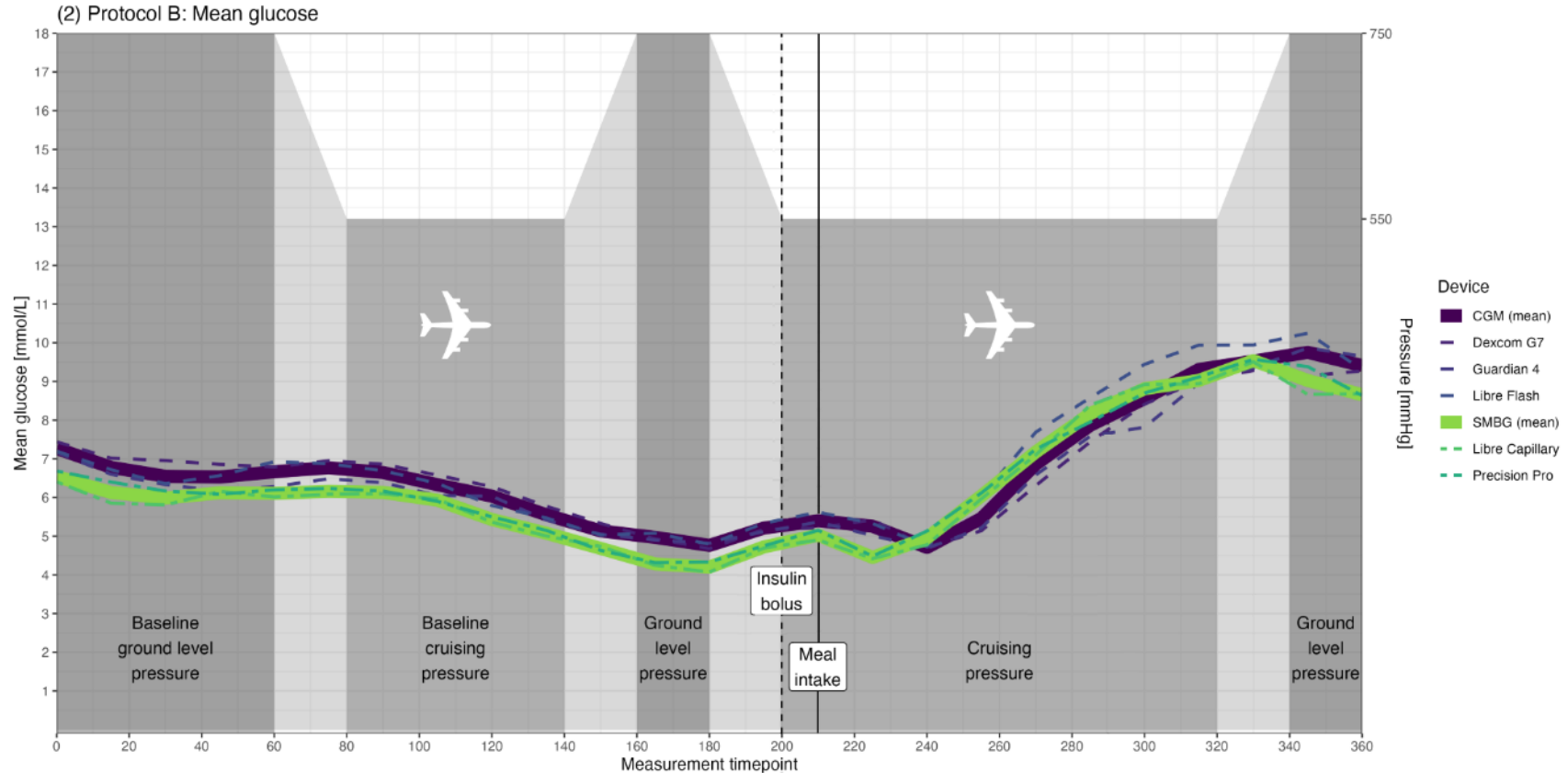


# Experimente in der Druckkammer (UK)

- 6 Piloten in simuliertem Flug: nüchtern + postprandial
- Take-off -> Landung -> Take-off -> Mahlzeit



# CGM-Experiment in Druckkammer

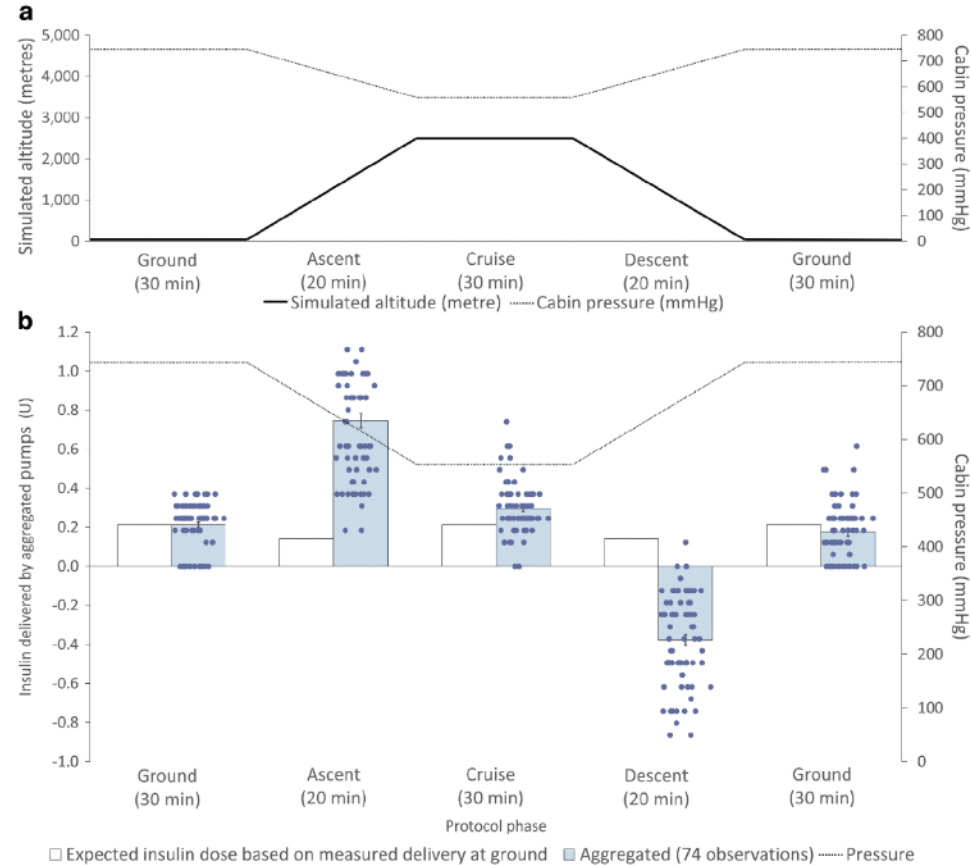


# Praktische Überlegungen: CGM vs. SMBG

|                                                                               | CGM   | SMBG   |
|-------------------------------------------------------------------------------|-------|--------|
| Respondent attitudes and ratings of the glucose measurement method (n/N)      |       |        |
| Very satisfied or satisfied with the attention required to take a measurement | 6/6   | 3/6    |
| Very satisfied or satisfied with convenience of the measurement method        | 6/6   | 3/6    |
| Very satisfied overall with the modality                                      | 6/6   | 2/6    |
| Very confident in the results from the modality                               | 6/6   | 4/6    |
| Very confident in acting on the readings                                      | 6/6   | 5/6    |
| Time required to take measurement                                             |       |        |
| Min Time                                                                      | 1 S   | 4 S    |
| Max Time                                                                      | 20 S  | 120 S  |
| Mean                                                                          | 6.1 S | 46.9 S |
| Median                                                                        | 4.5 S | 41 S   |

Abbreviations: CGM, continuous glucose monitoring; SMBG, self-monitoring blood glucose.

# Resultate aus der Druckkammer



# CGM-Resultate aus einem Routineflug

| Condition (duration)    |               | G7             | Libre 3        | Simplera        | i3             |
|-------------------------|---------------|----------------|----------------|-----------------|----------------|
| Ascent                  | Mean $\pm$ SD | 8.0 $\pm$ 5.2  | 9.0 $\pm$ 3.5  | 23.3 $\pm$ 20.3 | 17.8 $\pm$ 8.9 |
|                         | 95% CI        | 5.6–10.4       | 7.4–10.6       | 13.6–32.9       | 13.8–21.8      |
|                         | n (N)         | 18 (35)        | 19 (38)        | 17 (30)         | 19 (37)        |
| Cruising                | Mean $\pm$ SD | 8.0 $\pm$ 4.6  | 8.2 $\pm$ 2.8  | 26.9 $\pm$ 9.2  | 18.8 $\pm$ 7.8 |
|                         | 95% CI        | 5.9–10.2       | 6.9–9.5        | 22.5–31.3       | 15.3–22.3      |
|                         | n (N)         | 18 (209)       | 19 (225)       | 17 (182)        | 19 (226)       |
| Descent                 | Mean $\pm$ SD | 9.0 $\pm$ 8.4  | 8.2 $\pm$ 6.5  | 18.4 $\pm$ 11.5 | 16.4 $\pm$ 7.8 |
|                         | 95% CI        | 5.1–12.8       | 5.2–11.1       | 12.9–23.8       | 12.9–20.0      |
|                         | n (N)         | 18 (35)        | 19 (38)        | 17 (32)         | 19 (38)        |
| In-Flight (overall)     | Mean $\pm$ SD | 8.6 $\pm$ 4.8  | 8.3 $\pm$ 2.9  | 26.4 $\pm$ 10.1 | 18.4 $\pm$ 7.9 |
|                         | 95% CI        | 6.4–10.8       | 7.0–9.6        | 21.6–31.2       | 14.9–22.0      |
|                         | n (N)         | 18 (415)       | 19 (449)       | 17 (363)        | 19 (448)       |
| In-Flight (fasting)     | Mean $\pm$ SD | 8.4 $\pm$ 4.9  | 10.2 $\pm$ 5.0 | 15.6 $\pm$ 5.9  | 16.9 $\pm$ 7.8 |
|                         | 95% CI        | 6.3–10.6       | 8.0–12.4       | 12.9–18.4       | 13.5–20.3      |
|                         | n (N)         | 20 (434)       | 20 (463)       | 18 (347)        | 20 (465)       |
| In-Flight (non-fasting) | Mean $\pm$ SD | 10.3 $\pm$ 4.7 | 9.0 $\pm$ 3.3  | 23.5 $\pm$ 7.7  | 14.5 $\pm$ 6.8 |
|                         | 95% CI        | 8.3–12.4       | 7.6–10.5       | 20.0–27.1       | 11.5–17.4      |
|                         | n (N)         | 20 (442)       | 20 (463)       | 18 (397)        | 20 (462)       |
| Ground                  | Mean $\pm$ SD | 11.0 $\pm$ 8.0 | 10.6 $\pm$ 6.0 | 13.6 $\pm$ 5.8  | 13.3 $\pm$ 7.6 |
|                         | 95% CI        | 7.5–14.5       | 8.0–13.2       | 11.0–16.3       | 10.0–16.6      |
|                         | n (N)         | 20 (461)       | 20 (477)       | 18 (381)        | 20 (479)       |
| Overall                 | Mean $\pm$ SD | 9.5 $\pm$ 3.3  | 9.6 $\pm$ 3.8  | 19.9 $\pm$ 6.2  | 15.7 $\pm$ 6.6 |
|                         | 95% CI        | 8.1–11.0       | 7.9–11.3       | 17.1–22.8       | 12.9–18.6      |
|                         | n (N)         | 20 (876)       | 20 (926)       | 18 (744)        | 20 (927)       |

| Condition  | Blood glucose range |               | G7              | Libre 3         | Simplera        | i3              |
|------------|---------------------|---------------|-----------------|-----------------|-----------------|-----------------|
| Overall    | <70 mg/dL           | Mean $\pm$ SD | 14.4 $\pm$ 10.7 | 10.7 $\pm$ 8.2  | 47.4 $\pm$ 41.4 | 35.0 $\pm$ 30.3 |
|            |                     | 95% CI        | 7.8–21.1        | 6.0–15.4        | 22.9–71.8       | 17.8–52.1       |
|            |                     | n (N)         | 10 (26)         | 12 (30)         | 11 (25)         | 12 (29)         |
|            | 70–180 mg/dL        | Mean $\pm$ SD | 9.4 $\pm$ 3.4   | 9.4 $\pm$ 3.8   | 18.6 $\pm$ 5.6  | 15.2 $\pm$ 6.3  |
|            |                     | 95% CI        | 7.9–10.8        | 7.8–11.1        | 16.1–21.2       | 12.5–18.0       |
|            |                     | n (N)         | 20 (751)        | 20 (797)        | 18 (636)        | 20 (798)        |
| In-flight  | >180 mg/dL          | Mean $\pm$ SD | 8.1 $\pm$ 3.9   | 10.1 $\pm$ 5.7  | 25.3 $\pm$ 12.5 | 18.4 $\pm$ 6.9  |
|            |                     | 95% CI        | 6.1–10.1        | 7.2–13.0        | 18.5–32.1       | 14.9–21.8       |
|            |                     | n (N)         | 15 (99)         | 15 (99)         | 13 (83)         | 15 (100)        |
|            | <70 mg/dL           | Mean $\pm$ SD | 15.6 $\pm$ 9.9  | 9.1 $\pm$ 6.3   | 65.6 $\pm$ 38.7 | 22.2 $\pm$ 16.3 |
|            |                     | 95% CI        | 9.2–22.0        | 5.2–13.1        | 40.3–90.9       | 12.2–32.3       |
|            |                     | n (N)         | 9 (16)          | 10 (19)         | 9 (17)          | 10 (18)         |
| Ground     | 70–180 mg/dL        | Mean $\pm$ SD | 8.3 $\pm$ 4.2   | 8.2 $\pm$ 3.7   | 22.9 $\pm$ 7.8  | 18.2 $\pm$ 7.9  |
|            |                     | 95% CI        | 6.3–10.3        | 6.5–9.9         | 19.2–26.6       | 14.6–21.7       |
|            |                     | n (N)         | 18 (361)        | 19 (392)        | 17 (308)        | 19 (391)        |
|            | >180 mg/dL          | Mean $\pm$ SD | 8.4 $\pm$ 7.3   | 11.7 $\pm$ 8.8  | 41.6 $\pm$ 9.8  | 26.7 $\pm$ 7.3  |
|            |                     | 95% CI        | 3.9–12.9        | 6.5–17.0        | 35.5–47.7       | 22.4–31.0       |
|            |                     | n (N)         | 10 (38)         | 11 (38)         | 10 (38)         | 11 (39)         |
| Ground     | <70 mg/dL           | Mean $\pm$ SD | 16.0 $\pm$ 18.5 | 15.1 $\pm$ 11.8 | 6.5 $\pm$ 5.2   | 57.8 $\pm$ 60.3 |
|            |                     | 95% CI        | –0.2–32.2       | 5.7–24.6        | 1.4–11.6        | 9.5–106.1       |
|            |                     | n (N)         | 5 (10)          | 6 (11)          | 4 (8)           | 6 (11)          |
|            | 70–180 mg/dL        | Mean $\pm$ SD | 10.9 $\pm$ 8.0  | 10.7 $\pm$ 6.2  | 14.1 $\pm$ 6.1  | 12.9 $\pm$ 7.2  |
|            |                     | 95% CI        | 7.4–14.4        | 8.0–13.4        | 11.3–17.0       | 9.7–16.0        |
|            |                     | n (N)         | 20 (390)        | 20 (405)        | 18 (328)        | 20 (407)        |
| >180 mg/dL | >180 mg/dL          | Mean $\pm$ SD | 8.6 $\pm$ 6.9   | 10.1 $\pm$ 6.0  | 13.2 $\pm$ 6.9  | 14.1 $\pm$ 7.2  |
|            |                     | 95% CI        | 5.0–12.2        | 6.9–13.2        | 9.3–17.1        | 10.3–17.9       |
|            |                     | n (N)         | 14 (61)         | 14 (61)         | 12 (45)         | 14 (61)         |

# CGM-Resultate aus einem Routineflug

