



# Healthcare Costs in People with Type 2 Diabetes Remaining on or Escalating from Basal Insulin-Supported Oral Therapy: a 5-Year German Claims Analysis

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## Background

- Many people with type 2 diabetes (T2D) in Germany initiate basal insulin therapy. Some later escalate to multiple daily insulin injections (MDI).
- The long-term costs and healthcare resource use (HCRU) of this switch remain poorly characterised.
- Aim: compare 5-year healthcare costs and utilisation in newly treated basal insulin patients who remained on basal insulin vs switched to MDI.

## Methods

- **Design (Fig 1):** Retrospective cohort using claims from a German statutory health insurance (GKV; ~6.0M insured) from 2017–2022.
- **Population:** T2D patients initiating basal insulin Jul-2017–Dec-2018.
- **Subgroups (Fig 2):** Remained on basal insulin vs switched to MDI, classified by timing of switch: early (<6 months), mid-1 (6–12 months), mid-2 (12–24 months), late (>24 months).
- **Outcomes:** 5-year HCRU and costs.

## Results

- **Cohort:** 13,584 basal-insulin-naïve patients; 17.1% switched to MDI, 74.6% remained on basal insulin (median time to switch ~2 years – Fig 2).
- **Costs:** By Year 5, switchers had 53% higher cumulative costs (€54.8k vs €35.9k), driven by inpatient and medication spend (Fig 3).
- **Switch timing:** Early switchers (<6m) were most costly (~€22k Year 1 vs €10k late switchers; ~10% higher by Year 5).
- **Hospitalisation:** More common and longer median length of stay in switchers (~29 vs 20 days at 5 years, p<0.0001, Fig 4).
- **Strongest predictors:** Younger age, recent hospitalization and prior diabetes microvascular and macrovascular complications.

Fig 1. Study design and observation periods

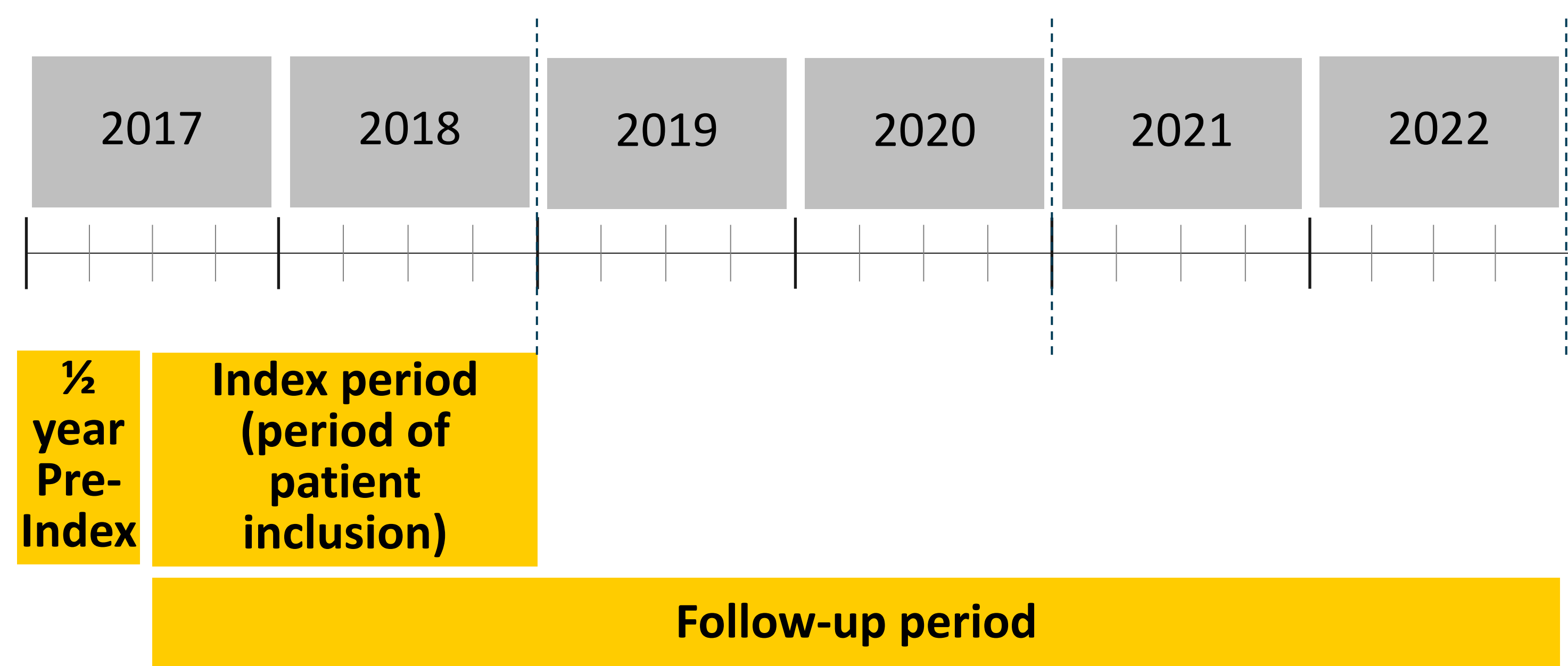


Fig 2. Switching from basal insulin to MDI: proportions and timing

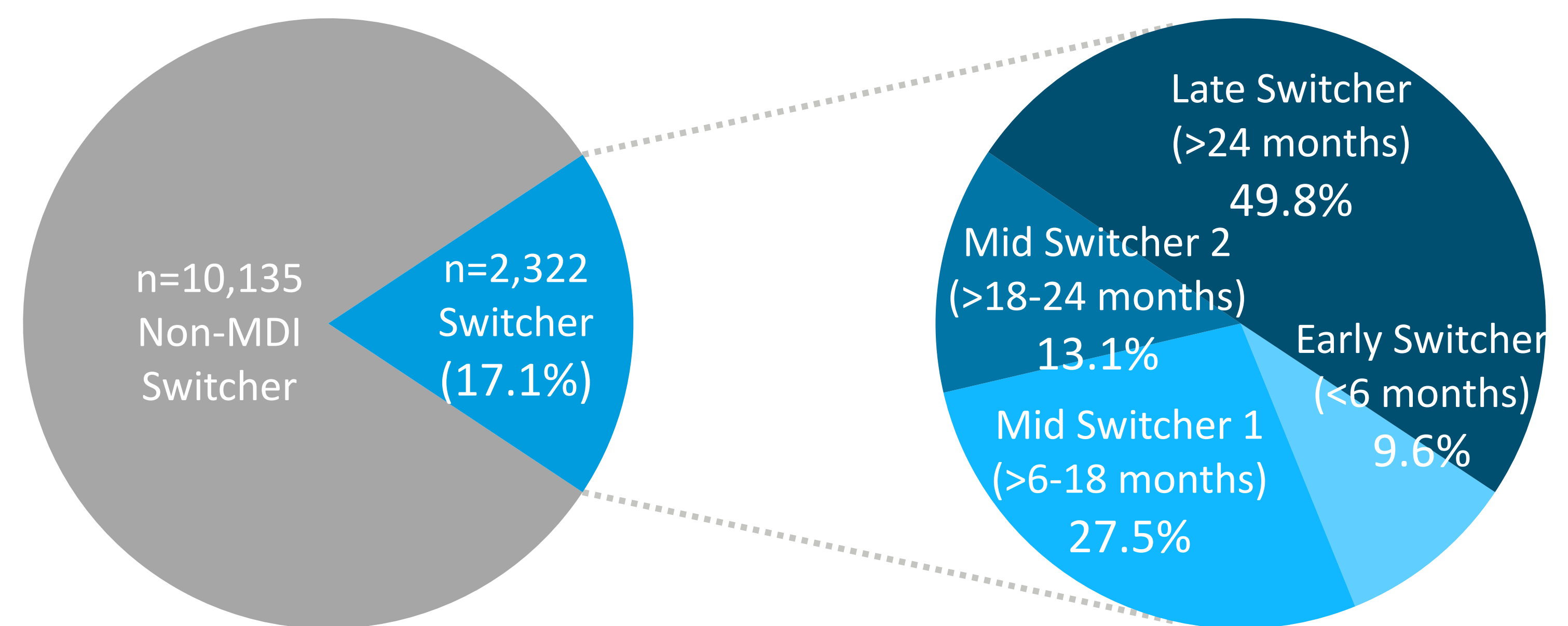


Fig 3. Average total costs per patient (Cumulative)

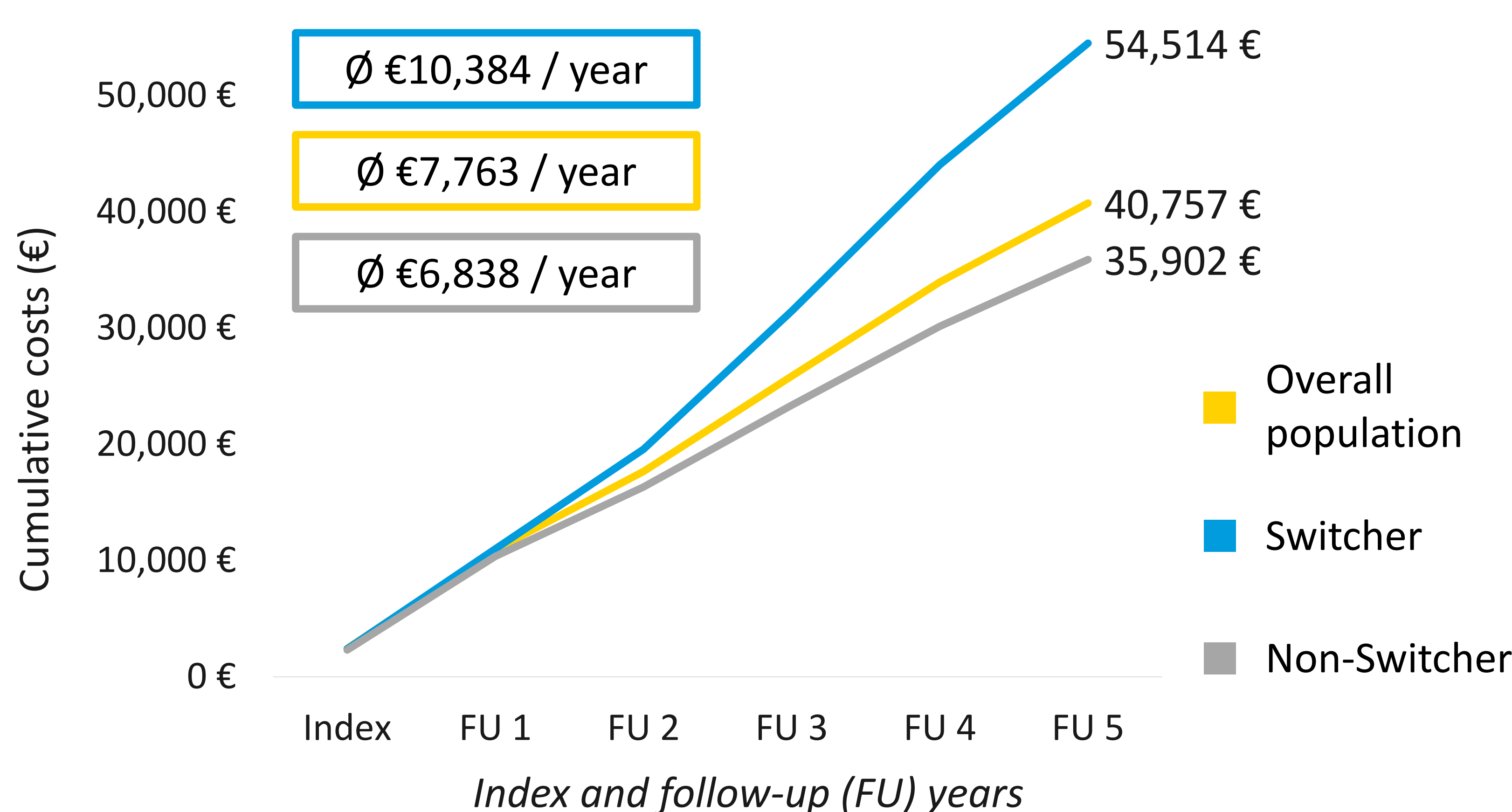
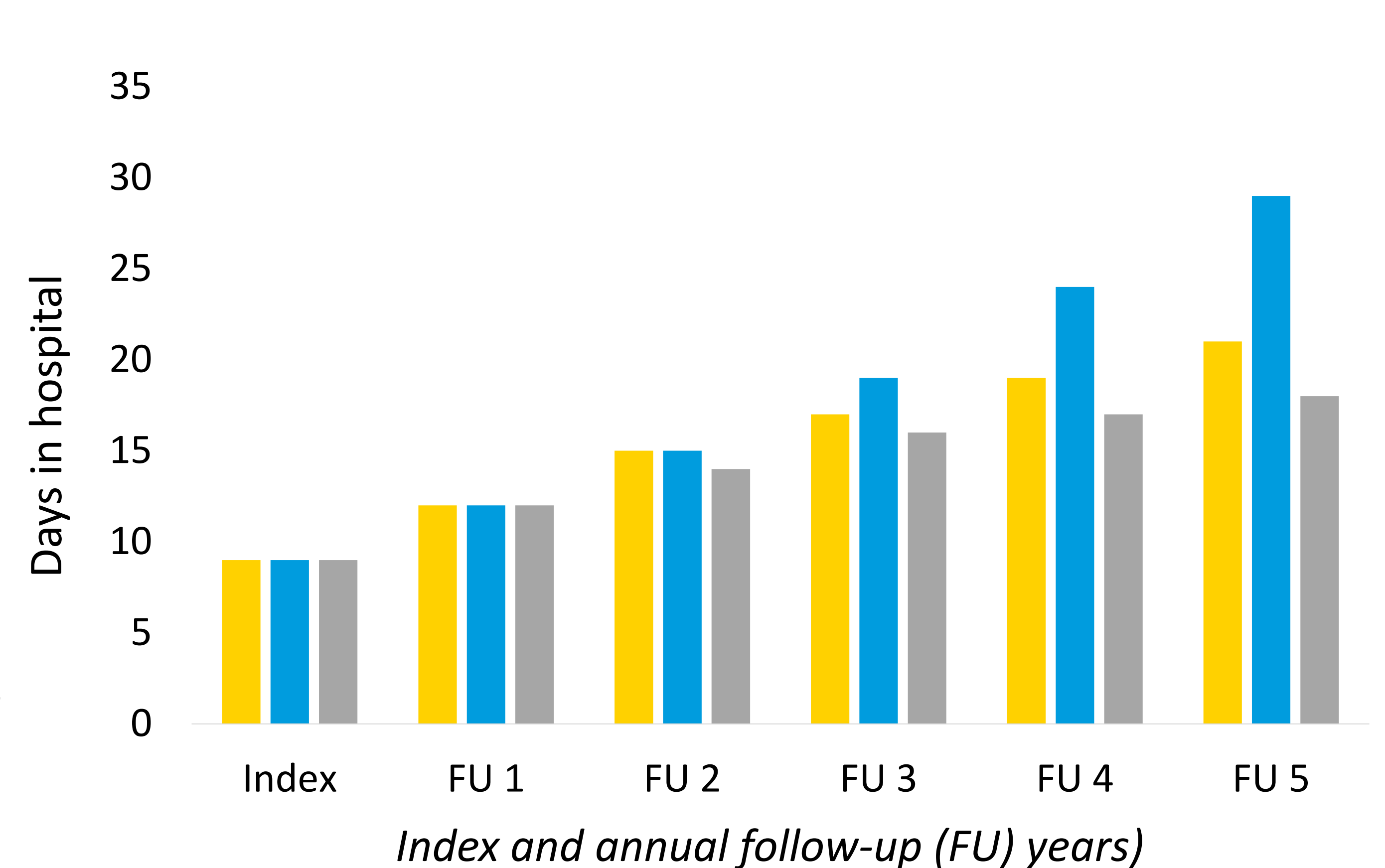


Fig 4. Median length of hospital stay (Cumulative)



## Conclusions

- Escalation from basal insulin to MDI is associated with substantially higher 5-year costs, driven by hospitalisation and medications.
- These higher costs likely reflect the burden of suboptimal glycaemic control and related complications.
- Optimisation of basal insulin therapy – aligned with standards of care and supported by continuous glucose monitoring (CGM) – could help mitigate long-term costs where appropriate.

## Abbreviations

CGM = continuous glucose monitor; T2D = type 2 diabetes; MDI = multiple daily insulin injections; HCRU = healthcare resource utilisation.

## Acknowledgements

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