Insulin pump and CGM data to be used for searching of non compliant patients and therapy mistakes

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RSF Russian Science Foundation
Transparency - Competence - Result

Background and Aims

In real-life CSII and CGM effectiveness can be affected by several factors, such as low compliance, wrong pump/CGM settings, technical issues, knowledge deficiency, and so on.

The aim of our study was to use stored in pumps data for searching patients to be actively supervised (non compliant, with significant mistakes in settings).

? Why the results are different in similar patients with similar treatment?
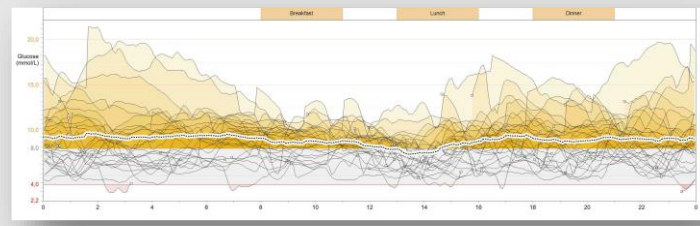
Method

Cross-sectional observational single-centre study includes data from type 1 diabetes mellitus patient transferred to CSII in Endocrinology Research Centre.

All participants were treated in routine outpatient regimen within last year or longer. We selected only CSII+CGM users (Medtronic Paradigm Real-Time and Veo pumps) who use sensors in real-life for self-monitoring.

Results

We included data from 75 patients with long history of CSII using (3,6±1,7 years) and found several types of issues:

1. Technical issues:
   - hight infusion set use duration;
   - loss of Fixed Primes;
   - extreme Fixed Prime amount;
2. CGM issues:
   - extreme high/low pump alarms frequency;
   - manual stop pump due to hypo- exists;
   - hypo- alarms without actions;
   - sensor self-calibrations;
   - calibrations due to rapid BG changes;
3. Bolus wizard issues:
   - No of Carbohydrate ratios/day profile;
   - unsuitable BG targets;
   - incorrect Active insulin settings;
4. General diabetes compliance:
   - Carbohydrate under-/overcounting;
   - low SMBG frequency;
5. Advanced pump functions issues:
   - Dual/Square boluses use;
   - Temp basal use;
6. Pump settings self-adjustment:
   - Basal Rate profile changes;
   - Bolus Wizard settings changes.

We found ≥2 types of issues in all participants.
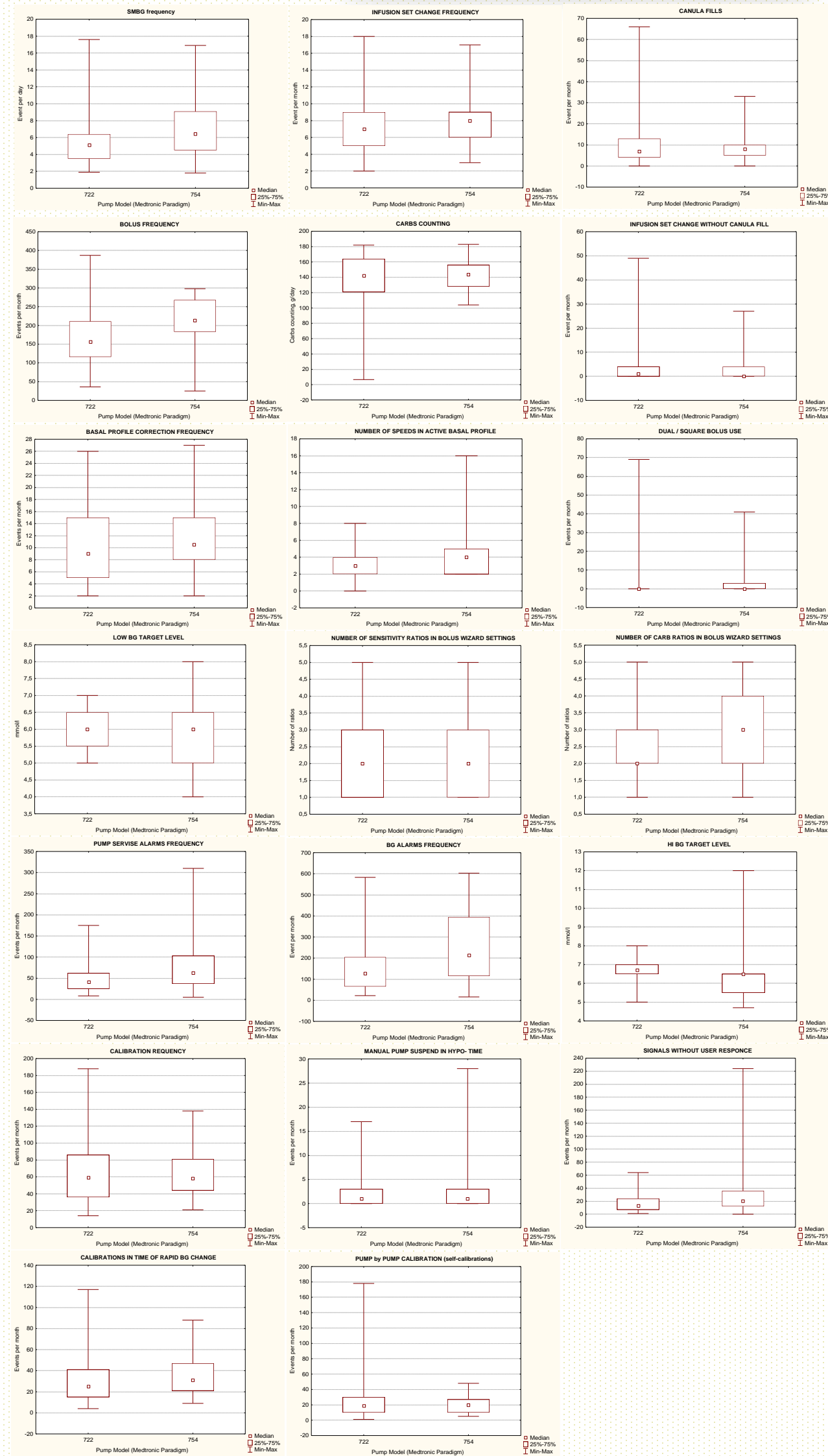
Conclusion

Low compliance and technical mistakes can persist in CSII+CGM users very often. Searching and selecting patients with such issues can be a tool in routine healthcare system.

Acknowledgements