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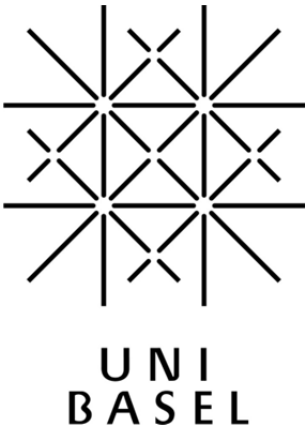

Electronically Measured Multidrug Compliance

Relationship between objectively and subjectively measured compliance parameters and their impact on biomarker outcome

Master Thesis

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Abstract

Background: Compliance is constantly influenced by different factors, as – among others - by the subjective attitude of the patient towards his medication. This attitude influences the drug intake behaviour which can be described with objective compliance parameters. Studies have shown that the compliance influences clinical outcomes (clinical relevant biomarkers) of the patients, therefore it is important to explore the relationship between compliance parameters and clinically relevant biomarker outcomes.

Aim: The primary aim of this master thesis was the evaluation of the relationship between subjective compliance parameter, objective compliance and biomarker outcomes for patients who took a lipid lowering agent. As a secondary aim temporal patterns of drug intake at cardiovascular risk patients should be described.

Method: Within a prospective study with cardiovascular risk patients different compliance parameters and biomarkers were measured. Subjective measures associated with compliance were collected using the MMAS-8 and the BMQ. Objectively measured compliance was recorded over seven days with the OtCM™-technology. The objective compliance was expressed as intervals and time variability in drug intake. In patients with lipid lowering therapies, LDL-C was used as clinically relevant outcome variable.

Results: 60 patients completed the study. 57 were included in analyses; of which 46 patients had a prescription for a lipid lowering agent. 33 (57.9%) patients generated complete objective compliance data. The time variability in drug intake was larger in the evening (40min (25-75th percentile = 18min-65min)) than in the morning (31min (25-75th percentile = 21min-45min)). The mean morning-evening interval was 11h42min (SD=2h04min), the mean morning-night interval was 13h11min (SD=2h00min). For patients with secondary prevention the difference between the necessity and the concerns score correlated negatively (r_s = -0.419) with the time variability in drug intake of the first daily dose. Patients who reached their LDL-C target value had a significant (p=0.048) lower time variability in drug intake of the first daily dose than patients who did not reach their target value. Patients who took the lipid lowering agent in the evening had significant (p=0.038) higher LDL-C values than those who took it in the morning.

Conclusion: Parameters derived from objectively measured compliance predicted the biomarker values better than the subjective compliance parameters. The time variability in drug intake was associated with the achievement of LDL-C target values. This showed that the variability parameter can be used as parameter for the objective compliance.
The OtCM™ technology allowed the analysis of the intake behaviour exactly and in different ways. It could be shown that intervals were interpreted different by the patients than expected by the prescriber.
Further studies are necessary to confirm the result of this thesis and to specify the relationship between subjectively and objectively measured compliance and biomarker response. Thereby the OtCM™ system can contribute to monitor multidrug compliance but the technology has to develop further.