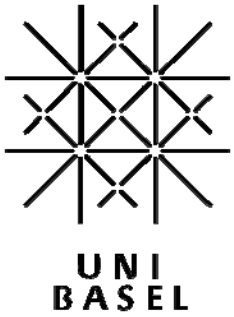

Validation of the new technology Polymedication Electronic Monitoring System (POEMS) in view of a use in HIV patients of the Swiss HIV Cohort Study (SHCS)

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Abstract

Background: In the treatment of HIV infected patients compliance of ≥ 95 % is widely cited and demanded in order to achieve the goal of the therapy and to avoid the development of resistance. As the therapy cannot eradicate the HIV at present, it has become a lifelong therapy. Unfortunately, the complexity of regimens makes it difficult for the patients to be compliant with the therapy, although therapeutic approach has changed and the number of pills patients have to take daily could be reduced.

Aims: To validate a new technology (POEMS), to develop a compliance report form for POEMS data with compliance parameters, to validate 6 compliance questions in German and to assess the supply of HIV medication to ambulatory HIV patients at the University Hospital Basel and at the Cantonal Hospital Bruderholz.

Methods: Validation of POEMS was performed by calculating the technology's reliability (percentage of readable devices), timing accuracy (± 5' of index time), sensitivity (true positive rate) and specificity (true negative rate). Test conditions were defined and mock medication was removed from two different types of blister packs (14-pill and 28-pill blister packs), with the electronic film POEMS affixed to the back. The compliance report form was developed by means of the main compliance parameters. The 6 compliance questions were translated from the "*Extended Adherence Questionnaire for the Swiss HIV-Cohort"* and their comprehensibility was evaluated. Information on the supply of HIV medication was obtained from interviews with Dr. Marcel Stöckle, senior physician of Infectious Diseases and Hospital Hygiene, University Hospital Basel and from Dr. Markus Lampert, head of clinical pharmacy, Cantonal Hospital Bruderholz.

Results: Reliability was 100 % for the 14-pill blister packs and 97.5 % for the 28-pill blister packs. Timing accuracy was 99.5 % and 70.4 %; sensitivity was 99.5 % and 77.8 %, while specificity was 96.9 % and 46.7 %, respectively. The compliance report form was divided into 4 sections. The 6 questions were comprehensible, except for the meaning of the arrows and the failure to indicate the possibility of multiple answers to question 4. Currently approximately 90 % of the ambulatory HIV patients in the SHCS are supplied with HIV medication directly by the clinic ward at the University Hospital Basel.

Conclusion: The 14-pill blister packs performed far better than the 28-pill blister packs, the film of which needs greater protection. The developed compliance report form summarizes all compliance parameters on one single page. The translated questions can be used as such. In view of a future use of POEMS in the context of a clinical trial at the University Hospital Basel, further considerations are required. Solutions need to be carefully worked out and checked.