Identification and Quantification of Noncompliance Patterns Associated to Specific Clinical Outcomes

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**Background:** Lack of adherence to prescribed medication is considered a major problem for outpatient health, which leads to lower treatment efficacy, increase toxic events and resistance to treatment. Clinical evidence indicates that specific therapeutic outcomes are more likely associated to some particular noncompliance patterns. Identification and quantifications of these patterns characteristics and their link to outcomes is of great importance for treatment success.

**Objective:** Within the particular context of chronic viral drugs, efavirenz for HIV viral counts as an example, we determine major determinants that link noncompliance patterns to clinical outcomes, with a particular emphasis on the resistance selection window (RSW).

**Methods:** Various noncompliance patterns were simulated using Markov process in order to mimic realistic adherence patterns, recorded by Medication Event Monitoring Systems (MEMS). A population-pharmacokinetic model of efavirenz, known for its relatively low clearance, high potency for susceptible viral strains but a broad resistance selection window, has been used. The probability of therapeutic success or failure of these noncompliance patterns is determined.

**Results:** Medication clearance, potency and the extent of RSW dictate whether a pill count is sufficient to predict clinical outcomes. For those patients taking 80\% of their pills, the usual criteria of compliance, the probability of plasma concentrations located in RSW varies significantly in terms of noncompliance pattern.

**Conclusion:** These findings can help clinicians in their decision regarding the importance of monitoring the drug intake of outpatients.

**References:**