

Publication

Polymedication Electronic Monitoring System (POEMS) – introducing a new technology as gold standard for compliance measurement

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ntroduction: Reliable and precise measurement of patient adherence to medications is feasible by incorporating a microcircuitry into pharmaceutical packages of various designs, such that the maneuvers needed to remove a dose of drug are detected, time-stamped, and stored. The principle is called "electronic medication event monitoring" but is currently limited to the monitoring of a single drug therapy.

Aim: Our aims were introducing a new technology; a clear, self-adhesive polymer film, with printed loops of conductive wires that can be affixed to multidrug punch cards for the electronic adherence monitoring of multiple medication regimens (Polymedication Electronic Monitoring System, POEMS), and illustrating potential benefits for patient care. We present a preliminary report with one patient experience.

Materials and methods: Our illustrative case was supplied with a pre-filled 7-day multiple medication punch card with unit-of-use doses for specific times of the day (six pills in the morning cavity, two pills in the evening cavity, and one pill in case of insomnia in the bedtime cavity), with the new electronic film affixed on it.

Results: The intake times over 1 week were extremely skewed (median intake hours at 2:00 pm for the morning doses and at 6:40 pm for the evening doses). After an intervention aimed at optimizing the timing adherence, the morning and evening intake hours became more balanced, with 42.3% of correct dosing intervals (+/- 3 h) for drugs with twice daily intake (vs. 0% before the intervention).

Discussion: The electronic monitoring of the entire therapy revealed an intake pattern that would have remained undiscovered with any other device and allowed a personalized intervention to correct an inadequate medication intake behavior. POEMS may guide health professionals when they need to optimize a pharmacotherapy because of suspected insufficient adherence. Further, knowing the intake pattern of the entire pharmacotherapy can elucidate unreached clinical outcome, drug drug interactions, and drug resistance. In the near future, one could imagine that medication adherence data over the entire therapy plan would be available as soon as the electronic wires are activated, so that a failure to take medication could be detected immediately and intervention could be taken if appropriate.

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