HOW DIGITAL MEDICATION ADHERENCE MONITORING INCREASES THE IMPACT OF INNOVATIVE ADHERENCE RESEARCH?

The case of **MEMS® (Medication Event Monitoring System)**, *the most used electronic measure of medication adherence in research settings.*

INTRODUCTION

As an academic researcher you have been working hard to prepare the protocol of a study investigating medication adherence.

Have you taken into account that the method to measure medication adherence can highly impact your results and conclusions?

Electronic monitoring of dosing history using MEMS® combined with the MEMS Adherence Software (MEMS AS®) enables you to:

Quantify medication adherence and differentiate its three elements (initiation, implementation, and persistence) as suggested in the Medication Adherence Reporting Guidelines (EMERGE)*.

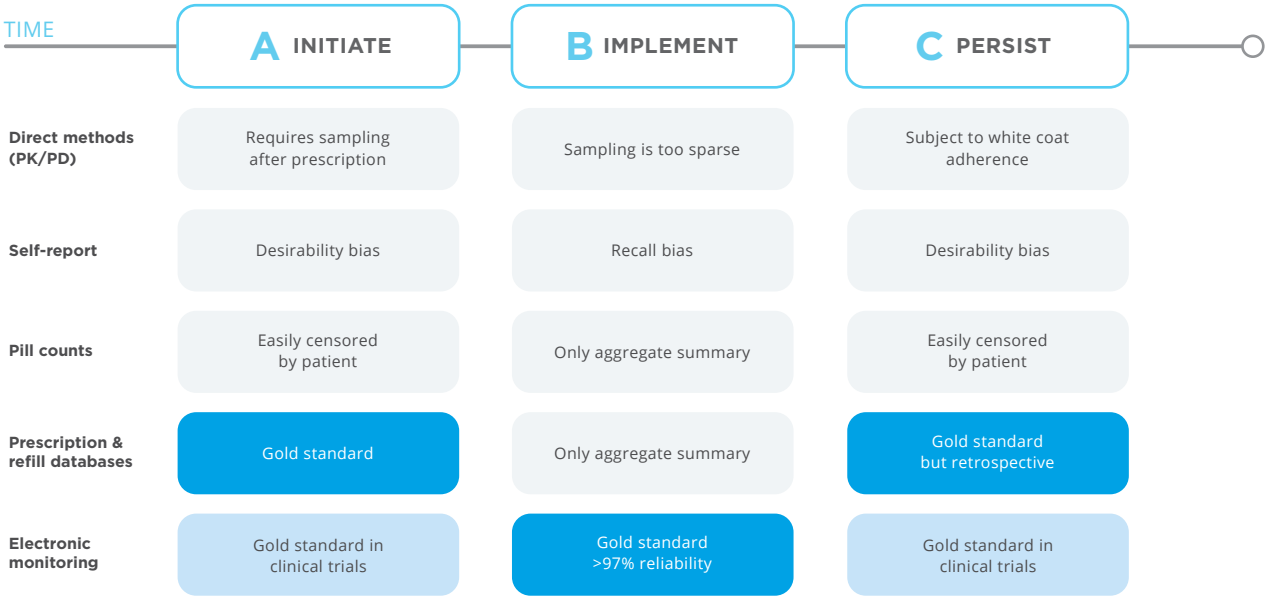
Assess the determinants of patient non-adherence to medications and determine the **causal pathway** between suboptimal drug exposure and outcomes.

Manage medication adherence in individual patients by providing feedback on the patient's drug dosing history, showing occurrences of errors that can jeopardize treatment outcomes.

*www.espacomp.eu

Stop using unreliable methods to assess medication adherence !

Non-electronic methods like pill counts, blood sampling, and subject's self-report remain widely used but do not allow to distinguish between the 3 elements of medication adherence, tend to overestimate medication, and can thus bias the results of your adherence research.



Adapted from Vrijens B, Heidbuchel H. Europace 2015

A panel of experts concluded that **electronic monitoring is the optimal measurement approach** for the detection of missed doses, extra doses and wrong time intake (Kronish et al. 2019).

Electronic monitoring is a robust indicator **with error rates of <3%** in research settings and clinical trials of when the patient took the prescribed dose of the drug (Vrijens B, Urquhart J. 2014).

Compared to electronic monitoring, **adherence is significantly overestimated using** self-report, pill count or HCP rating. Those **pre-electronic methods** are sparse and biased, leading to sloppy estimates of medication adherence (Alili ME, et al 2016).

Between 2017 and 2019, 150 NIH research grants examined adherence to prescribed medications in which the **combination of self-report and MEMS® Caps or other electronic monitoring system** were the **most common measurement** approaches (www.clinicaltrials.gov).

MEMS® in the literature

As of May 2020, there are **819 peer-reviewed papers** based on MEMS®. Peer reviewed papers which used MEMS® and MEMS AS® to measure medication adherence in research settings have a **h-index of 150**. The most-cited MEMS® paper has **> 4000 citations**.

Using MEMS® for adherence research leads therefore to a 1 chance in 5 (150/819) to have your research cited more than 150 times!

How about you ? Do you want to improve the power of your study and increase success of your publication by adopting the reliable state-of-the-art measurement of patient adherence to medications?

AARDEX Group's highest industrial standard in drug development is now available for academic research

Enabled by smart packages, electronic compilation of dosing history data is **the state-of-the art method** to identify, visualize, manage, and document patients' adherence to medications in research settings.

For over **30 years**, and with more than **1 million** electronically monitored **patients** across **70 countries**, AARDEX Group is the world leader in solutions to measure and manage medication adherence in clinical trials, research settings, and professional healthcare systems.

AARDEX Group supports academic research projects with dedicated value packages. **Over 500 prestigious universities** and well-known research centers use our MEMS® Adherence Hardware and Software all over the world.

In 2019, among the clinical trials referenced on www.clinicaltrials.gov* assessing adherence to medication using electronic measurement methods, MEMS® were used 5 times more often than the second electronic adherence measuring method*.

Success stories with MEMS®

1. Report of a MEMS® study led by the Ruedi Lüthy Foundation (formerly Swiss Aids Care International), Bern, Switzerland**, 2019 (unpublished)

> *"According to the study results, MEMS® provides a better assessment of adherence levels when compared to the pill count method or self-report. Assessing adherence with MEMS® was a better predictor of viral load outcomes compared to use of pill counts. Clinicians should not use pill counts as the sole adherence assessment technique in adolescents as it is vulnerable to manipulation.*

> *"... pill count method, which is the most frequently practiced method to estimate adherence, was shown to grossly overestimate adherence. Since pill counts were correct and discrepant to MEMS® results, we can assume that adolescents frequently dumped their pills so that they would appear as being adherent to their medication."*

> *"MEMS® had the widest distribution of adherence levels as compared to the pill count method. Only adherence measured by the MEMS® was significantly associated with the clinical outcomes of participants hence the MEMS® was shown to be a better predictor of adherence in adolescents on ART."*

**www.clinicaltrials.gov*

***https://www.ruedi-luethy-foundation.ch/en/home.html*

2. A short «story» from a study coordinator who participated in a study led by the RAND Corporation*, 2020

> *"I have been and still working on Research Projects for the last 9 years now and all these years, we have been using MEMS® for medication monitoring of adherence. MEMS® are really a wonderful innovation as it provides a scientific ground to monitor how our study participants take their medication daily. It is far better than relying on pill count or self-report which have their own shortcomings."*

> *"What is more important is that patients appreciate the MEMS® and love them to the maximum. Some of the patients were not willing to surrender the MEMS® back «because» they think without the MEMS®, their medication adherence will drop. They may not adhere well. Almost all agree that 'this' MEMS® helps them to take their medication well in a sense that it will report them if they don't take well their medication..."*

> *"... In most cases, MEMS® adherence moves in the same direction with someone's health. Patients who show high MEMS® adherence also tend to have a low viral load."*

> *"I am therefore confident that these solutions are really helpful to enable researchers do their work but they are in themselves very helpful in motivating users to improve their medication uptake."*

MEMS® and MEMS AS® at a glance

- Proven solution that is straightforward and easy to implement in your study
- Applicable to all study participants without additional burden for the patient
- Mature solution with track records in over 1 million patients in research and more than 200 phase II/III trials
- The expertise from clinical trials is offered to academic research studies in specific value packages
- MEMS® and MEMS AS® have been used by over 500 universities and prestigious research centers all over the world in more than 1,000 clinical research studies

Maximize the chances of **success** to your study by **using** an **evidence based digital adherence monitoring system**.

Discover how these **Medication Adherence Solutions** can improve your research and mitigate the effect of non-adherence.

Trial with us

**www.rand.org*

AARDEX GROUP

1 million users

70 countries

35 years

800+ Publications

200+ Clinical Trials

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