



ARC BITE

Brokering Innovation Through Evidence

A review on biochemical testing for non-adherence in cardiometabolic diseases



Results

The most useful approach to accurately determine drug adherence is the biochemically test urine for drug presence.

Who needs to know?

Physicians and healthcare providers who treat people with hypertension, diabetes, and other cardiometabolic diseases



What did we do?

We reviewed literature to explore non-adherence, the behaviour of not following prescription requirement, and its impact of on hospitalisation and mortality risk. The usefulness of different tools that define adherence were compared and their influence on risk reduction was assessed.

What we found and what does this mean?

Non-adherence increased risk of hospitalisations and all-cause mortality. Identifying non-adherence through any means decreased risk, although accuracy was the most important feature of a test. Objective tools were more accurate in defining adherence compared to subjective approaches, albeit at the price of ease and invasiveness. Biochemically detecting drug presence from patient samples was the gold-standard. Acquiring blood samples for testing was deemed invasive, though drug level variability could be better accounted for. Urine was the most clinically implemented biomatrix. Sampling was less invasive, although false results were more likely due to drug excretion rates and pharmacokinetics. Critically, primary and

secondary care clinics should start objectively testing for adherence to reduce burden and risk. NHS services are available through the University Hospitals of Leicester to biochemically test non-adherence.

What next?

The review recommended testing the usefulness of drug quantifications versus a qualitative yes/no screen. Drug levels may be indicative of dosing time and could provide more information to the healthcare provider. Many screens only define medication consumption, where circulating amounts may be detected between hours and weeks after single doses. A quantification method would need to be validated against existing approaches to define its benefits.

We also recommend and are currently developing near-patient testing devices for same-visit adherence measurements. The current measures require sample delivery to a pathology lab where the result is produced. Providing clinicians fast tools could influence treatment management during the first clinic visit, rather than waiting for follow-up attendances

What is NIHR ARC EM?

NIHR Applied Research Collaborations (ARCs) support applied health and care research that responds to, and meets, the needs of local populations and local health and care systems. We do this by working collaboratively with our partners and patient groups to bring the best applied health and care evidence into practice.

Evidence

Lane D, Patel P, Khunti K, Gupta P. Objective measures of non-adherence in cardiometabolic diseases: A review focused on urine biochemical screening. Patient Preference Adherence. 2019;13:537-47. <http://dx.doi.org/10.2147/PPA.S162215>