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Support for prescribers to help improve patient adherence to medication

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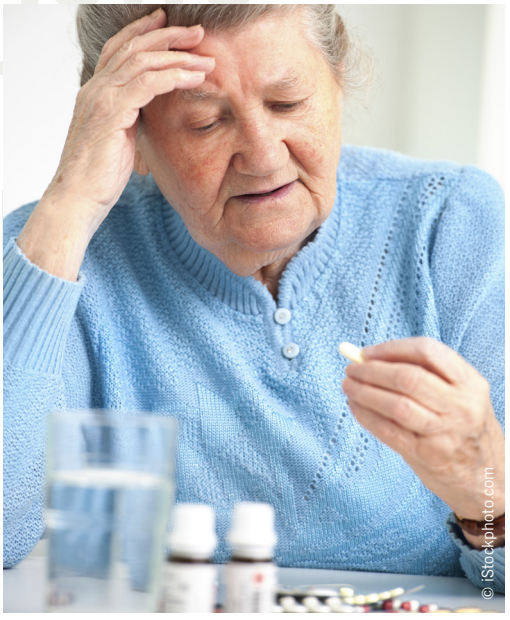
Non-adherence to medication for chronic conditions, whether this involves tablets, inhalers, injections or other drug delivery systems, is a serious healthcare problem resulting in poor clinical outcomes and high costs. Here, we review the extent of the problem and the development of a novel evidence-based digital tool to support healthcare professionals (HCPs) in assessing and potentially improving the adherence of chronic patients.

HCPs are increasingly focusing on developing interventions to address this problem. However, the development of effective adherence interventions is challenging; it involves finding the individual root causes of non-adherence, with the added difficulty of introducing and maintaining behavioural change, and offering tailored solutions that address the specific needs of a particular patient.



The non-adherence problem

Medication adherence is defined as the extent to which a patient acts in accordance with the prescribed interval and dose of a dosing regimen.[1] Subsequently, non-adherence means that the patient is not taking all their medication doses as prescribed, jeopardising the clinical outcome. Cardiovascular medications (such as statins, antihypertensives and antithrombotics) remain the most commonly prescribed agents worldwide for both primary and secondary prevention of cardiovascular diseases (CVD). Patients with low adherence rates have a significantly greater risk of sustaining cardiovascular events compared to those with high adherence rates.[2-4] Nevertheless, it has been reported that more than 60% of cardiovascular patients are non-adherent to their medication.[5] Summarising, evidence is mounting that medication non-adherence is prevalent, associated with poor clinical outcomes and higher costs of care. This forms a growing concern for clinicians, healthcare organisations and policy makers.

As a consequence of burgeoning costs and the pressure on outcome driven healthcare systems to reduce costs (the National Health Service [NHS] in the UK is under pressure to save £20 billion by 2015), healthcare organisations and policy makers are focusing on strategies to improve adherence. Increasingly, these interventions are designed as a collaborative effort between a supporting team of HCPs and an engaged patient and family. This joint endeavour plays a key role in the level of therapy adherence, and the resulting clinical outcomes. Acknowledging this 'collaboration', new adherence interventions focus on empowering chronic patients and their family caregivers to self-manage their medication and other aspects of the therapy.

You can 'take a horse to water' but….

Human behaviour is influenced by many different factors. With respect to non-adherence, two broad categories can be distinguished based on the factors that form the root cause of non-adherence: *perceptual* and *practical* non-adherence.[6] The category of *perceptual non-adherence* refers to motivational

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barriers that can hamper adherence, such as concerns about side effects or a lack of belief in the necessity and efficacy of medication, resulting in an unwillingness to take the medication.

The category of *practical non-adherence* refers to practical barriers that prevent a patient taking the medication as prescribed, for example due to physical constraints or limitations. These non-adherence barriers are influenced by factors related to the patient's physical, mental, cognitive, social and financial situation.

The multi-faceted nature of the non-adherence problem creates a need for tailored adherence support solutions that address the specific situation and needs of a particular patient. Theories and scientific results gleaned from health psychology, persuasive communication and technology, illustrate that such tailored interventions are more powerful in inducing behavioural change than generic (non-tailored) interventions.[7]

The solutions range from tools and services to facilitate practical aspects of the therapy, such as properly organising the medication intake, to education and coaching programmes aimed at enhancing the knowledge, skills, motivation and self-confidence required for successful medication adherence. Nevertheless, to date, measurement of patient medication adherence and use of interventions to improve adherence are rare in routine clinical practice.[3]

HCPs often have difficulties in implementing a tailored approach because of two main limitations: (i) they lack the tools to efficiently establish a patient's non-adherence behaviour, risks and personal barriers to adherence, and (ii) HCPs also lack guidelines that prescribe how available tools, services and strategies can be combined to improve adherence. Patient reports obtained in qualitative studies (Philips Research on file) into the needs and experiences of chronic disease patients, as well as a vast body of scientific research, underscore these insights by revealing a need for improved personalised support.

Approaching the heart of the problem

The limitations and challenges of non-adherence and the resulting economic 'fall out' inspired Philips Research to investigate an evidence-based tool to support HCPs in improving treatment adherence. The tool consists of prediction algorithms translating self-assessed patient data (combined with data from the patient record) into a specific non-adherence profile including a non-adherence risk and an identification of the barriers and their underlying causes.

The non-adherence profile of the patient is fed into a decision support system that generates a tailored adherence support intervention entailing a set of specific recommendations (e.g. coaching, education, products or services). These recommendations were created based on scientific insights and co-creative research with healthcare organisations to translate specific patient profiles into advice on personalised adherence support. The prototype online tool was initially tested with HCPs and patients using small-scale qualitative methods. As a second step the tool was validated in a larger study with 593 chronic patients (at three moments in time) including a group of 234 CVD patients. A wide variety of perceptual and practical barriers and underlying causes were observed in our study sample. This suggests that there is no such thing as a typical non-adherence profile, but rather that non-adherence behaviour can result for many reasons. This implies that a tailored approach is needed to address the personal non-adherence profile of specific patients. Building a non-adherence profile that represents the combinations of underlying non-adherence causes was a first phase. In the next phase, our integrated tailored adherence support tool will be tested in a real-life healthcare setting. We will then be in a position to assess how the application of this new tailored approach can impact non-adherence rates and, thereby, improve clinical outcomes.

We are expanding this research that started in the Netherlands to other regions including the US and UK, and, on a somewhat longer term, to Asia. This will enable us to develop tools adaptable to different healthcare systems and cultures

Conflict of interest

LvdH, JL, SvD, AvH are employees of Philips.

References

1. Cramer JA, Roy A, Burrell A *et al*. Medication compliance and persistence: terminology and definitions. *Value Health* 2008;**11**:44–7.

2. Mazzaglia G, Ambrosioni E, Alacqua M *et al*. Adherence to antihypertensive medications and cardiovascular morbidity among newly diagnosed hypertensive patients. *Circulation* 2009;**120**:1598–1605. http://dx.doi.org/10.1161/CIRCULATIONAHA.108.830299

3. Ho PM, Bryson CL, Rumsfeld JS. Medication adherence: its importance in cardiovascular outcomes. *Circulation* 2009;**119**:3028–35. http://dx.doi.org/10.1161/CIRCULATIONAHA.108.768986

4. Chowdhury R, Khan H, Heydon E *et al*. Adherence to cardiovascular therapy: a meta-analysis of prevalence and clinical consequences. *Eur Heart J* 2013;**34**:2940–8. http://dx.doi.org/10.1093/eurheartj/eht295

5. Kravitz RL, Hays RD, Sherbourne CD *et al*. Recall of recommendations and adherence to advice among patients with chronic medical conditions. *Arch Intern Med* 1993;**153**:1869–78. http://dx.doi.org/10.1001/archinte.1993.00410160029002

6. Horne R, Weinman J, Barber N, Elliott RA, Morgan M. Concordance, adherence and compliance in medicine taking: a conceptual map and research priorities. London: National Co-ordinating Centre for NHS Service Delivery and Organisation R&D, 2005. Available from: http://www.nets.nihr.ac.uk/__data/assets/pdf_file/0009/64494/FR-08-1412-076.pdf

7. Noar SM, Benac CN, Harris MS. Does tailoring matter? Meta-analytic review of tailored print health behavior change interventions. *Psychol Bull* 2007;**133**:673–93. http://dx.doi.org/10.1037/0033-2909.133.4.673