In its 2003 report on medication adherence the WHO stated that ‘increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments’.\(^1\)

Medication is by far the most common form of medical intervention. However, once a prescription is issued prescribers have little control over what patients choose to do with it. Medication non-adherence is well documented in the literature\(^2-5\) and one group in Bradford, the pharmacist-led MESH (Medicines Support at Home), is attempting to tackle the problem.

In this model the MESH team receives referrals from GPs, district nurses, social services or hospital staff for patients struggling with their medicines. Clinical pharmacists then conduct a review and prepare questions to ask at the home visit. Medication change recommendations are then made to the GP that, once approved, are implemented with patients, relatives, carers and community pharmacists as necessary. Follow-up visits are made if required to ensure changes or interventions remain effective.

The best way to see how a patient is really using their medicines is to observe them at home. In this environment it may be easier for them to tell the truth about their medicines rather than, as is often the case, what they think you want to hear. It is not unusual at the start of the visit for a patient to state they take their medicines as prescribed. Once a rapport has been established, a cupboard, drawer or box overflowing with excess medicines is often revealed. This might remain undiscovered without a home visit.

There are a variety of solutions to these problems but identification of non-adherence is the first step. Performing a clinical medication review in a person’s home has many advantages:

- Medicine supply can be looked at, presenting the opportunity to identify excess stocks, out of date medicines, clogged up AeroChambers and inappropriately stored medicines. Support can be given to the patient to prevent reoccurrence.
- Medication-taking behaviour can be observed. Their medication-taking routine can be examined and understood in the context of their daily routine, life and health beliefs establishing if non-adherence is intentional or unintentional.
- Any adherence interventions can be tailored for a particular individual in
their home, for example where to put a reminder chart or medicine supply for it to have the most impact.
• All inhaler techniques can be checked rather than just the one the patient has in their pocket at their appointment (also if they spend 10 minutes trying to find their steroid inhaler at home then it may be an indication they are not taking it regularly).
• Many people are housebound and thus have fewer opportunities to interact with healthcare professionals.
• A visit purely to talk about medicines communicates to a patient the importance of their medicines in managing their health problems.

**Adherence interventions**
**Reducing polypharmacy**
A thorough clinical medication review provides the perfect opportunity to ensure all the patient’s medicines are still necessary and appropriate. Evaluating when and why medicines were started, and discussing this with the patient and GP, often highlights medicines a patient is taking that may no longer be necessary such as nitrates in a patient who is no longer mobile, antihistamines, PPIs or statins if time-to-benefit exceeds life expectancy. A detailed discussion of this topic is outwith the scope of this article but applying the principles of de-prescribing and reducing the number of medicines a patient takes can have a positive impact on adherence and is usually welcomed by patients.3,6,9

**Simplifying the regimen**
In addition to reducing the number of medicines a patient takes, reducing the number of times a day a person has to take their medicines can improve adherence.3 Patients often forget medicines to be taken later in the day. Therefore statins can be changed to one that does not have to be given at night and once-daily or modified release preparations can be used in preference to medicines needed to be given more frequently. This enables patients to get them out of the way first thing in the morning. An entry can be made on the GP computer system to alert future prescribers to the need to prescribe medicines once daily to support adherence.

Simplifying the regimen can be particularly relevant if a patient is receiving support with their medicine taking from formal carers or family. Carer strain can be eased by reducing the complexity of a medication regimen or the number of funded home care service visits reduced, saving the patient or social services money.

**Reminder notices and reminder charts**
Reminder charts can offer structure to a patient’s medicine-taking regimen. Instead of randomly selecting medicines from memory and a jumble of boxes, patients can follow the chart and systematically select the medicines they need.

Reminder notices to take medicines can be placed in prominent places around the house such as on the fridge door or bedside cabinet, or by the kettle. Thus the prompt to take the medicine is linked to regular daily activities addressing unintentional non-adherence.

**Implementing a support system**
This is particularly relevant if a patient has memory impairment. With the

---

**CASE HISTORIES**

**Patient 1** was discharged from hospital following an exacerbation of COPD, a pharmacist visited seven days later. The patient had a multi-compartment compliance aid (MCA) which had been filled by the hospital with only two doses missing. She also had four weeks of her own chemist filled MCA which she had gone back to using on discharge from hospital. On further inspection it became clear she was only taking the night time doses (simvastatin and amitriptyline) ‘because they help me sleep’. According to her daughter this had been going on for some time.

Antibiotics and steroids had been dispensed separately by the hospital and she had taken only four days of her antibiotics but all of her steroids.

She had a Seretide MDI (salbutamol/fluticasone) and Spiriva Respimat inhaler (tiotropium). Respimat had been started in hospital following a prior admission (switched from the Handihaler). She had no idea how to use her Respimat inhaler ‘I get confused with the twisting and the buttons so I don’t bother with it’ (she had three unopened Respimat inhalers in her house). She was not using her Seretide (and had three Seretide inhalers in her house also unopened). She had her Ventolin (salbutamol) in her pocket – which, when she used it white powder escaped from the top, and she had an AeroChamber in the house but this was still in its packet.

**Patient 2** had been discharged from hospital where his omeprazole had been increased to 20mg twice daily but he was unaware of this change. His medication reminder chart still read one a day so this is what he was taking, despite the directions on the box from the hospital being twice a day.

**Patient 3** was a lady with Alzheimer’s disease prescribed donepezil and simvastatin but the simvastatin tablets were untouched. The reason for this was, ‘these ones are white and they are usually pink so I am not sure if they are the right tablets.’

**Patient 4** was a gentleman with six MCAs filled by the pharmacy but all were unopened. The patient explained the reason for this as: ‘I am getting a bit behind’ as he was still trying to use up his old supply in bottles and boxes first.

**Patient 5** did not hold her breath after inhaling her tiotropium Handihaler, she was on Symbicort (budesonide, formoterol) but was unable to make the placebo Turbhaler whistle, indicating she had not enough lung capacity to activate the inhaler. She was also taking isosorbide mononitrate m/r 60mg morning and night.

**Patient 6** was on insulin for type 2 diabetes. He had no idea what dose he was injecting, just said he twisted the pen and gave himself the injection. He had four boxes of pens (not stored in the fridge), there were eight unopened pens and the remaining 12 had been used, many of these were still half full.
Non-adherence | MEDICINES MANAGEMENT

Problems encountered with MCAs

• Medicines with special instructions (such as bisphosphonates) included in the box with all other medicines
• Medicines that are dispensed separately (such as GTN or inhalers) that patients should only order when needed being issued and dispensed every month, resulting in excess quantities and subsequent waste
• ‘When required’ medicines (such as analgesics or laxatives) being put in the box and then wasted each month because the patient is not taking them
• Patients unable to remove the medicines from the MCA
• Medicines dispensed separately due to stability (such as nicorandil) being forgotten

Table 1. Multi-compartment compliance aids (MCAs) can help but are not always the answer

Multi-compartment compliance aid
Tablet organisers, dispensers, boxes and MCAs have a place and can simplify the medication-taking process for patients; however Bradford MESH pharmacists frequently encounter issues with MCA systems (see Table 1) and they do not guarantee adherence.

In July 2013 the Royal Pharmaceutical Society (RPS) issued guidance on the use of MCAs which clearly states that they should not be seen as the panacea to all medication adherence problems. They advocate a patient-centred approach to best understand the barriers to medication adherence for each individual. They suggest ‘patients should be encouraged and supported to retain autonomy over their own medicines administration for as long as they feel capable of doing this. The use of original packs of medicines with appropriate support should be the preferred option of supplying medicines.’ Appropriate support involves being creative and making patient-centred interventions as discussed above. Such interventions can improve adherence without the need for a MCA, which has frequently been the experience in Bradford.

Medicines in MCA trays become a jumble of tablets and can often result in patients no longer being sure what medicines they are taking, or why they are taking them. This could hinder people from taking responsibility for their own health.

In our knee jerk reach for the MCA we often forget to consider that dispensing and storing medicines in these systems can affect their stability and this may compromise their clinical effectiveness.11

MESH service results
In the first year of the MESH service 632 patients were reviewed, 1287 interventions made (mean two per review), 139 blood tests ordered (mean 0.2 per review) and 449 medicines were stopped (12 per cent). Other outcomes include:
• Adherence problems identified in 233 (37 per cent) reviews.
• Inhalers prescribed for 219 patients. In 165 (74 per cent) patients inhaler technique was found to be incorrect. Inhaler device was changed in 61 (27 per cent) patients.
• Sedatives, anticholinergics and NSAIDs are all associated with adverse events in older people and were used as surrogate markers for reducing hospital admissions. The numbers stopped were 12 out of 33 (36 per cent) sedatives; 19 out of 40 (47 per cent) anticholinergics; and 12 out of 18 (67 per cent) NSAIDs.
• 25 patients needed home-care medicine supervision; the number of support visits for these patients was reduced by half. The service, which was well received by patients and health and social care professionals, has improved the quality of prescribing and was highly cost effective. The gross saving on prescribing was £155,476 per annum (£246 per review) of which £23,136 (15 per cent) was due to excess unused medicines.

Conclusion
Medication non-adherence continues to be a problem and we need to do more to address it. A domiciliary medication review provides an opportunity to identify medication problems, support patients and their carers, and implement medication management solutions. Solutions need to be tailored to each individual patient and can be complex to initiate.

References
2. NICE. Medicines Adherence: involving patients in decisions about prescribed medicines and supporting adherence. CG76. January 2009.

Declaration of interests
The authors are involved in the setting up and running of MESH.

Claire Standage is a Clinical Medication Review Pharmacist, Prescribing Support Services Ltd, Duncan Petty is Clinical Director, Prescribing Support Services Ltd, Research Practitioner, University of Bradford and Su Wood is Clinical Quality Director, Prescribing Support Services Ltd