A spoonful of education helps the medicine go down

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We live in an age where consumer choice is everything and when it comes to diabetes medication it is no different. People want to have a choice when it comes to their medication and to be able to change it if they do not like it. This can lead to non-adherence to therapeutic regimens and consequently to a reduction of diabetes control for an individual. In this article the author discusses the reasons for non-adherence and the possible solutions.

Article points

1. Failure to take medication is widespread, expensive and potentially responsible for poor health outcomes.
2. People who are prescribed preventive therapies are less likely to take their medication.
3. Simplified therapy regimens improve concordance with medication.
4. Education in self-care is the key to better concordance with medication.

Key words

- Concordance
- Once-daily medication
- Combined therapy

While advice is frequently given it is not so frequently followed. Despite national initiatives and health messages such as the 5-a-day for fruit and vegetables, people are becoming heavier and less active. Because of this sedentary lifestyle type 2 diabetes is on the increase and so, therefore, is the number of medications required to control it. There are worrying statistics available showing that many people are just not taking their medicine (Peyrot et al, 2005; Cramer, 2004; Emslie-Smith et al, 2003).

The Diabetes Audit and Research in Tayside Scotland study (DARTS; Donnan et al, 2000; Donnan et al, 2002) assessed 2849 people with type 2 diabetes who were prescribed treatment over 12 months. The study results included the following.

- Only 31% of those prescribed sulphonylureas as monotherapy took their medication as prescribed.
- Only 34% of people prescribed metformin as monotherapy took their medication as prescribed; on average only 300 days worth of diabetes tablets were collected per patient per year.
- Just 13% of people on more than one drug were taking their medication as prescribed; only 266 days worth of tablets were taken in this case.

Failure to take medication is widespread, expensive and potentially responsible for poor health outcomes. In the author's opinion current levels of non-adherence imply a failure to address the needs and preferences of people with diabetes and represent a fundamental inefficiency in the delivery and organisation of the NHS. Peyrot and colleagues (2005) emphasise that psychological problems, including depression, anxiety, stress and burnout, may be the underlying causes for poor concordance with medication. The author also believes that an individual's understanding of their treatment options and prescribed medication is fundamental to improvements in health and well-being. Adequate self-care takes time to achieve and it is only through supporting and engaging people with diabetes in the education process that a beneficial effect will be seen.

Approximately 95% of diabetes care is provided by the individual with the condition. These people need to understand not only what they are taking but why they are taking it – yet a recent survey found only 17% were given information about their treatment every time they were given a prescription (Association of the British

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Page points

1. Simplified therapy regimens improve concordance with medication.
2. There are two main therapeutic options for improving concordance with diabetes control regimens.

Box 1. Medicines Use Review (MUR).

In a MUR, accredited pharmacists periodically undertake structured concordance centred reviews with patients receiving medicines for long term conditions, to establish a picture of their use of the medicines – both prescribed and non-prescribed. The review will help patients understand their therapy and it will identify any problems they are experiencing along with possible solutions. A report of the review will be provided to the individual and to their GP.

Pharmaceutical Industry [ABPI] et al, 2006a).

People who are prescribed preventive therapies are less likely to take their medication (Emslie-Smith et al, 2003). They may have negative beliefs about taking a substance they see as harmful or they may feel no different while they are taking it and see it as being of little value. Worse still, they may associate unpleasant side-effects with the medication and be reluctant to return to the GP or nurse to explain these as a reason for their discontinuation.

Simplified therapy regimens (*Table 1*) improve concordance with medication. People converting from multiple doses to combined doses appear to be more likely to take their medication (Cramer, 2004).

Strategies to improve concordance

There are various methods that can be used in practice to improve concordance rates.

- Agree a suitable treatment schedule with the individual and enter it in their care plan or patient-held record.
- Provide *Ask about your diabetes medicines* (ABPI et al, 2006b) to encourage participation in education on therapy options
- Find out if local community pharmacies are able to offer Medicines Use Review (MUR; see *Box 1*) to people with diabetes.
- Check computer records for those with poor control to see if they are ordering fresh supplies when expected.
- Boxes with compartments for each dose may be available through your local community pharmacy. This is especially useful for those with deteriorating memory.

In their report on *Interventions to facilitate adherence* Horne and Kellar (2005) found that no single model for ensuring concordance to medication prescriptions could fit all circumstances. However they stressed 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.'*

Treatment options

Two of the therapeutic options available for improving concordance with diabetes control regimens by reducing pill burden are: switching to

Table 1. Examples of simplified regimens.

Once-daily medication	Dose	Notes
Metformin sustained release (Glucophage SR; Merck, West Drayton)	500 mg once daily with evening meal; increased every 10–15 days; maximum 2 g once daily with evening meal.	Individuals taking less than 2 g daily of the standard release metformin may start with the same daily dose of metformin sustained release if dose of standard release tablets is more than 2 g daily.
Gliclazide modified release (Diamicron MR; Servier, Wexham)	30 mg daily with breakfast; adjusted according to response every 4 weeks or after 2 weeks if no decrease in blood glucose; maximum dose 120 mg daily.	Glicazide modified release 30 mg may be considered to be approximately equivalent in therapeutic effect to standard release glicazide 80 mg.
Glimepiride (Amaryl; Hoechst Marion Roussel, Guildford)	1 mg daily, adjusted according to response in 1 mg steps at 1–2 week intervals; usual maximum 4 mg daily (in exceptional cases up to 6 mg daily)	Taken shortly before or with first main meal.
Combination therapy		
Rosiglitazone and metformin (Avandamet; GlaxoSmithKline, Uxbridge)	Single tablet containing 2 mg rosiglitazone and 1 g metformin twice daily; increased after 8 weeks.	Maximum 8 mg rosiglitazone and 2 g metformin hydrochloride daily.
Pioglitazone and metformin (Competact; Takeda, Wooburn Green)	Single tablet containing 15 mg pioglitazone/850 mg metformin twice daily.	

Combined tablets which may help reduce the total daily pill count are available for the treatment of hypertension, such as ACE-inhibitors and diuretics in modified release forms. Further information is available from the British National Formulary (BNF).

once-daily medication and combination therapy.

Once-daily medication

This method of control appeals to people with diabetes as it is easier for them to remember to take their medication and may interfere less with their day-to-day activities (*Box 2*). This has also been shown to improve adherence to treatment regimens (Kardas, 2005).

Combination therapy

Having two or more agents combined into one tablet will considerably reduce the pill burden of the individual with diabetes and this may help to improve concordance (*Box 3*).

Summary

The most expensive drug is not that which costs us the most money. It is the one which is prescribed and then is not taken. Reducing the total daily pill count has been shown to improve adherence to medication and can be achieved by combining two therapies into one tablet or by extending the duration of action enabling once-daily dosing. Side effects of drugs should be included in education plans and alternatives sought for those that are not well tolerated. Education in self-care is the key to better concordance but needs to be planned and structured in a format suitable to the individual. People with diabetes have the power to decide whether to take a particular medication – we should make sure they have the education to allow them to make that choice based on accurate information. It is clear that simplified medication options should be used if possible wherever non-adherence with medication is an issue. ■

Box 2. A case study using once-daily modified release medication.

Mr J, age 72 years, was diagnosed with type 2 diabetes when he attended the practice hypertension clinic. His GP prescribed metformin 500 mg twice-daily and advised a low sugar, low fat diet and weight loss. Mr J lives alone, his wife having died 5 years ago. He is fairly active and attends his bowls club each week.

Mr J is invited to have a review after 3 months when his blood pressure is found to be well controlled but his HbA_{1c} is 9%. His metformin is increased to 500 mg three times daily.

Shortly afterwards Mr J attends his local structured education group session and is able to find out more about his medication. He realises the importance of taking his medication but tells the nurse of uncomfortable side effects of the metformin which limit the number of times he has been taking it. Fear of gastrointestinal disturbances prevents him taking his metformin at all on his bowls days.

The nurse, patient and GP agree a trial of Glucophage SR to be taken with Mr J's main meal instead of his usual metformin. After learning at his local education group about the advantages and disadvantages of metformin, Mr J felt that he would tolerate the side-effects and was commenced on 1 g Glucophage SR. He decides to do some blood glucose monitoring to see the effect of this change in therapy and leaves with information in a form he understands to reinforce his education.

At his next clinic appointment his HbA_{1c} is down to 7.4% and he feels in control of his condition.

Box 3. A case study where combined therapy would be advantageous.

Mrs S, age 81 years, has type 2 diabetes treated with metformin and rosiglitazone, as well as an ACE inhibitor, a diuretic and a statin. She copes with life well with the aid of her family who live nearby. Her grand-daughter usually puts out her pills for her as she often forgets which ones to take at what time. She does not like taking so many pills and sometimes does not take all of them.

By using tablets that combine drugs her total pill count could be reduced; rosiglitazone and metformin combination is available and there are several ACE-inhibitors and diuretic combinations available.

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