

pharmacy

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Liquid medicines can be the key that enables patients with swallowing difficulties to take their medicines

Introduction

Approximately 686 million prescriptions are dispensed by community pharmacists annually, at a cost of more than £8 billion and 30–50% of these are not taken as the prescriber intended.¹ Non-compliance potentially leads to, or exacerbates, ill health, undermines quality of life, reduces life expectancy and wastes resources. Given that adults visit a community pharmacy, on average, 12 times in one year, pharmacists are ideally placed to improve compliance² and, therefore, enhance therapeutic outcomes. Even modest improvements in compliance could save lives and reduce costs.³

The new pharmacy contracts for England, Wales and Scotland recognise this central role and have introduced medicines use reviews or compliance needs assessments. These allow pharmacists to devise a multifaceted approach tailored to the

patient that addresses the complex factors underlying non-compliance. This article focuses on the contribution made by swallowing difficulties to non-compliance^{4,5} and illustrates how liquid formulations can aid adherence.

Causes of non-compliance

The causes of non-compliance vary from person to person. However, the main factors associated with poor compliance include:⁵

- **Unwanted side-effects.** This is the most common reason given for non-compliance.⁶ Medicines cause approximately 10,000 serious adverse drug reactions (ADRs) and 1,200 deaths each year in the UK.⁷ Indeed, serious ADRs account for 4% of hospital admissions.⁸ Most of these were predictable from the pharmacology and potentially preventable. The medicines

use review offers an opportunity to ask about ADRs and to suggest modifications to prescribing where necessary.

- **Concerns about the medicine's value or appropriateness.** Patients have a natural resistance to taking medicines and often stop when they feel better, perceive their medicines as being unsafe⁹ or to avoid ADRs.¹⁰ When a patient feels no obvious benefit they are less likely to



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Liquid medicines

Table 1: Examples of drugs available in liquid formulations

Aciclovir	Cetirizine HCl	Fenbid	Ranitidine	Tamoxifen
Aldactone	Chlorphenamine Maleate	Ferrous Fumarate	Relifex	Tenormin
Algicon	Chlorpromazine HCl	Fersaday	Reminyl	Terbutaline Sulphate
Alimazine Tartrate	Ciclosporin	Fersamal	Rifadin	Teril Retard
Alu-cap	Cimetidine	Flagyl	Rifampicin	Theophylline
Aluminium HCl	Decadron	Floxapen	Risperdal	Thioridazine
Amantadine HCl	Desloratidine	Fluclouxacillin	Risperidone	Timonil Retard
Amiloride HCl	Destolit	Fluoxetine	Rivastigmine	Trifluoperazine
Amitriptylline HCl	Dexamethasone	Folic Acid	Rofecoxib	Trihexphenidyl HCl
Amoxil	Diazepam	Fucidin	Salazopyrin	Trimethoprim
Baclofen	Dicyclomine HCl	Furadantin	Salbutamol	Tegretol
Bromocriptine	Dihydrocodeine Tartrate	Furosemide	Sando-K	Temazepam
Brufen	Ditropan	Kaolin, Light	Sanomigran	Zaditen
Bumetanide	Doculate Sodium	Kemadrin	Securon (SR)	Zantac
Carbamazepine	Dolmatil	Ketotifen	Senna	Zinnat
Carbocisteine	Domperidone	Ketovite	Senokot	Zirtek
Cefaclor	Emeside	Klaricid	Septrin	Zispin
Cefadroxil	Epanutin	Kloref	Seroxat	Zithromax
Cefalexin	Epilim	Kytril	Sevredol	Zofran
Cefpodoxime	Erthroped A	Lanoxin-PG	Slo-Phyllin	Zomorpha
Cefprozil	Ertrocin	Lansoprazole	Slow-K	Zoton
Cefradine	Erymax	Largactil	Sodium Fusidate	Zovirax
Cefuroxime	Erythromycin	Lasix	Sodium Valproate	Zyvox

Key: HCl = hydrochloride

take preventive medicines such as antihypertensives than those that offer symptomatic relief.

- **Complex regimens involving multiple doses and several medicines.** Apart from increasing the risk of drug-drug interactions, polypharmacy can lead to confusion as patients and carers struggle to recall complex regimens.
- **Practical difficulties taking medicines.** The remainder of this article considers this issue in detail.

Of course, the causes of non-compliance are not mutually exclusive. The case of Annie James, a 65-year-old woman who lives at home with her husband, illustrates this. Annie suffered a stroke in 2002 that affected the left side of her body and caused considerable swallowing difficulties. She is receiving treatment for type 2 diabetes and hypertension, both diagnosed in 2000. During the medicines use review with her local pharmacist, her husband said that Annie had great difficulty in swallowing tablets — indeed, she

regularly spits one of her tablets out. He added that she did not really understand why she needed so many medicines. The review identified several issues with Annie's medication:

- Annie was taking dipyridamole 100mg tablets one twice daily. Aspirin would be more appropriate. However, Annie's husband said she is sensitive to salicylates. Furthermore, 100mg twice daily is a sub-therapeutic dose. Because of the swallowing problem, the pharmacist suggested a change to liquid dipyridamole 50mg/5ml suspension 20ml twice daily to the GP in the MUR action plan.
- Her husband reported that Annie 'chokes on and then spits out' the large metformin tablets (850mg one taken twice daily). Changing to a liquid sugar-free alternative overcame this issue.
- Annie received bendrofluazide 5mg — one in the morning. This is not the minimum effective dose and the higher

concentration might contribute to the gout Annie is beginning to develop. Furthermore, bendrofluazide can lower carbohydrate tolerance and needs careful use in people with diabetes. After discussion with the GP the dose was changed to 2.5mg bendrofluazide in the morning and as a liquid formulation.



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- Polypharmacy is almost inevitable for people with several concurrent diseases. After the review, the pharmacist recommended in the MUR action plan that Annie discontinued the co-codamol 8/500 effervescent tablets that she has on repeat, but which her

Table 2. Drugs in solid-dose oral form that should never be altered — such as through crushing, chewing or opening — without authorisation¹⁴

Drug type	Notes/abbreviations	Considerations	Examples
Modified release	Often identified by m/r, LA, SA, CR, XL or SR, 'Retard', 'slow' or 'continuous' in the title	The medicine is released over a prolonged period. Crushing or opening may affect the pharmacokinetics and pharmacodynamics	Verapamil (Securon SR) Propranolol (Inderal LA) Felodipine m/r (Plendil) Tramadol (Zydol SR) Morphine (MST Continus)
Enteric coated	EN or EC at the end of the name	When the coating protects the stomach, co-administer a suitable gastro-protective product if the form is altered and there is no potential for drug interactions. When the coating delivers the drug beyond the stomach, crushing may result in the medicine not reaching its intended target again altering PK and PD	Aspirin (Nu-seals) Naproxen (Naprosyn EC) Sulphasalazine (Salazopyrin EN)
Hormonal, cytotoxic or steroidal		Drug may be dispersed in the air if crushed, exposing the patient or carer to the drug; consider risk of exposure if pregnant	Tamoxifen (Nolvadex) Methotrexate (Maxtrex) Dexamethasone Oral contraceptives/HRT
Film and sugar coated	Usually identifiable by f/c or s/c at the end of the name	Disruption of the coating may result in rapid degradation of the drug, poor tasting medicine and irritate the skin of the patient or carer	Quinine sulphate Ibuprofen

husband says she never uses. The pharmacist suggested using over-the-counter paracetamol, when necessary, instead. He also advocated using a medication administration record to remind her to take her medicines.

As this case suggests, the medicines use review offers an opportunity to improve compliance. The most effective interventions address patient satisfaction, enhance understanding of their illness, and improve quality of life and psychological well-being. These aspects are fundamental to the notion of concordance, the aim of which is to involve patients in making decisions about their medicines, to ensure that they have enough information to make the decision, and to help resolve any problems. In the example above, switching to liquid formulations offered the opportunity to enhance patient satisfaction with treatment, quality of life and psychological well-being. However, developing concordance means discussing the possible risks and benefits of treatment.¹¹

Practical difficulties taking medicines

Patients sometimes experience practical difficulties that mean that they fail to take their medicine as prescribed. For example, some patients with arthritis experience difficulty removing child-resistant caps from medicine bottles or pushing tablets out of blister packs. Visually impaired patients often have difficulty reading instructions on the standard medicine label, while around a quarter of people can experience difficulties swallowing.¹²

Many practical difficulties can be easily resolved if they are brought to the attention of the pharmacist, particularly during the medicines use review. For example, pharmacists may be able to suggest alternative formulations, such as liquid preparations, for people experiencing difficulty swallowing. Most commonly prescribed medicines are now available in a proprietary liquid form (see Table 1).

Where patients have special clinical needs that are not met by licensed medicinal

products, the law allows for the manufacture and supply of an unlicensed medicinal product. These 'specials' must be formulated in accordance with doctor's requirement and the product must be for use by the individual patient on the prescriber's direct personal responsibility. Specials cannot, by law, be advertised and cannot be supplied if an equivalent licensed product is available that could meet the patient's needs. Nevertheless, the availability of specials means that most medicines can be formulated as a liquid. In some cases, the prescriber may need to switch between members of the same therapeutic class. A comprehensive list of medicines available in liquid and non-oral forms can be obtained at the website www.swallowingdifficulties.com.

Pharmacists need to inform GPs of the reason for their suggested changes and the importance of monitoring efficacy and adverse events after a switch. Because specials need to be made under a doctor's instruction, they need to be fully cognisant of the rationale for needing the special.

Liquid medicines

The legal position

Clinicians sometimes suggest that patients who are experiencing swallowing difficulties, or their carers, crush the tablet¹³ or open a capsule. However, as Table 2 shows, in many cases this carries significant risks that must be carefully discussed with patients. According to the *Medicines Act 1968*,¹⁵ medicinal products for human use are manufactured and used in accordance with a product licence or manufacturing authorisation. A medicine would be used in an unlicensed manner if the dose, route or form were outside the licence.

Crushing a tablet or opening a capsule would be directing the patient to use the medicine in an unlicensed form. This would remove the protection afforded by the *Consumer Protection Act 1987*¹⁶ that holds a manufacturer liable for a defective medicinal product and allow a cause of action in negligence for any harm caused against the healthcare professional that made the suggestion.

Furthermore, pharmacists may be under a legal obligation to provide liquid formulations to patients experiencing swallowing difficulties. The *Disability Discrimination Act 1995*¹⁷ gives people with disability the same right to access services as an able-bodied person. It is unlawful to discriminate against a person because of their disability. This includes the right of access to, and to benefit from, medicinal products. According to the legal definition, disability includes any physical or mental impairment that has a substantial and long-term adverse effect on a person's ability to carry out normal day-to-day activities. Patients with a disability no longer need to register as disabled — they only have to meet the definition under the *1995 Act*.¹⁷ The duty to meet the requirements of the *1995 Act*¹⁷ is engaged when the patient makes their disability known to the pharmacist.

If a person, because of their disability, had difficulty taking medicines, the pharm-

acist would have a duty to ameliorate that impairment. It may be necessary to change a bottle top to a non-safety version or remove tablets from blister packs into a bottle for a person with arthritis. Patients with visual impairment can now expect large print labels on their medicines and those with complex medicines regimens or who are forgetful may benefit from medication administration records.¹⁸ Those with swallowing difficulties may need liquid formulations.

Where no alternative is available, the pharmacist must ensure that the tablet is safe to crush. To be lawful, patients must consent to the administration of medicine. This consent must be informed by knowledge of any significant risks that might arise if the medicine is crushed.¹⁹ By ensuring that there are no suitable alternative preparations, confirming that it is safe to crush a tablet or open a capsule and verifying that the patient has given an informed consent and is aware of any risks, pharmacists will meet the requirements of

their duty of care and justify their decision.

Conclusion

Non-compliance is a pervasive problem that undermines outcomes in therapeutic and clinical areas. The medicines use review offers an opportunity to address the factors that contribute to non-compliance. However, swallowing problems are common and pharmacists have both a duty of care and legal obligation to supply liquid formulations when appropriate. ❖

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