

Caring for Older People: Aids to compliance with medication

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Elderly people may need to take several forms of medication, including tablets and capsules, inhalers, insulin, and eye drops. This article describes various aids that are designed to facilitate compliance.

Old people are more likely to suffer from chronic morbidity from multiple diseases--20-30% of older people are taking three or more medications. Several diseases may require concurrent drug treatment; polypharmacy is known to be associated with an increased risk of adverse drug reactions, drug interactions, and poor compliance.

Compliance may be defined as the extent to which a person's behaviour coincides with medical advice. Few patients take their medication as intended by their practitioner; most are partially compliant. Up to 20% of patients do not present their prescription to a pharmacy within one month of issue. Non-compliance is multifactorial and may arise from:

- * Not knowing how to take medication (such as orally, twice daily, with food, etc)
- * Not understanding the importance of drug treatment in managing disease
- * Taking many drugs
- * Anticipation or experience of side effects
- * Forgetfulness
- * Impaired physical function.

Even so, elderly patients with normal cognitive function are more compliant than their younger contemporaries. Simple measures can be taken to improve compliance:

- * Educating patients about disease and treatment
- * Simplifying drug regimens: minimising the number of drugs and frequency of doses
- * Using modified or controlled release preparations to decrease dosage frequency
- * Involving carers in management of medication
- * Telling patients about common early side effects to which they may develop tolerance
- * Using drug diaries, calendars, or medication charts
- * Using ordinary bottle tops instead of child resistant containers
- * Using large print or jumbo labels on containers
- * Using compliance aids, such as dose reminders for tablets and devices to help with administration of inhalers, eye drops, etc.

Daily dose reminders and monitored dosage systems

Several types of daily dose reminders are available (see box). Most consist of a box divided into days of the week with several compartments for each day--they are suitable for tablets and capsules only. Effervescent, dispersible, buccal, and sublingual preparations or moisture sensitive medicines (such as Omeprazole) cannot be dispensed in compliance devices. Large solid tablets, or multiple tablets taken at a single time, may not fit into the individual compartments. "As required" (PRN) medication, if placed in a daily dose reminder or monitored dosage system, may be taken unnecessarily on a regular basis.

Daily dose reminders are not included in the drug tariff and therefore are not prescribable. Patients or their carers have to purchase the device unless it is dispensed from a hospital.

Some drugs are provided in calendar, "bubble" or "blister" packs. People with impaired manual function may have difficulty in manipulating the packaging.

The legal and ethical aspects of dispensing medicines into daily dose reminders or monitored dosage systems are not clear.¹ Medicines dispensed directly into daily dose reminders or monitored dosage systems should still comply with current labelling regulations. The labelling should allow identification of each drug in the monitored dosage system, and formulations that look alike should not be dispensed in the monitored dosage system.

Recent data have questioned the stability of medicinal products in compliance devices. Medicines should not be kept in sealed monitored dosage systems for more than eight weeks. They should be stored in a cool dry place, protected from light, and kept away from children as most of these devices are not child resistant.

Daily dose reminders

Dosett (Ri-med)

- * Holds 7 days' medication; marked SUN-SAT (days also marked in Braille)
- * Four compartments to each day
- * Single daily units are not detachable
- * Chart on underside for details of patient's treatment
- * Further refinements include a locking device and the Mediset Mini (a pocket sized container with 21 compartments, suitable for small tablets or capsules)
- * Though sliding lids on tablet tray have guides, they require considerable dexterity to remove and replace
- * Filled weekly by the patient, carer, or pharmacist

Monitored dosage systems

Nomad (Surgichem)

- * Cassette holds drugs for seven days, with six compartments in each day
- * Daily units are not detachable
- * Tray is sealed with transparent plastic lid and clear plastic film
- * Contains photograph and personal details of patient
- * Record of treatment and drug regimen is preprinted on underside of tray
- * Filled only under the supervision of a pharmacist

Manrex (Boots)

- * Available at Boots and some independent pharmacies
- * Medication is heat sealed in large, flat blister packs
- * Each pack contains sufficient treatment for 28 days
- * Daily units are not detachable
- * Packs are colour coded to indicate time of administration--for example, pink indicates morning tablets, white "as required" treatment
- * Each pack contains a card with drug dose
- * Filled under the supervision of a pharmacist

Inhalers

Asthma affects about one in 10 older adults. Inhalers are the first line treatment as direct delivery of a drug to the site of action reduces systemic side effects and enables bronchodilating agents to have an immediate action.

Several drug delivery systems are now available.² Metered dose inhalers, which are the most widely used, have several disadvantages and may eventually be superseded by breath actuated dry powder systems, which seem to increase the percentage of drug deposition in the lungs. The patient should be instructed in the use of whichever inhaler is prescribed; inhaler technique should be monitored regularly.

METERED DOSE INHALERS

Metered dose inhalers contain up to 200 doses. Discreet and convenient to use, this type of inhaler is preferred by patients. For patients with hand weakness, a lever attachment, Haleraid, may help. Poor inhaler technique is common and has multiple causes. Even with correct technique, up to 80% of the drug is deposited in the oropharynx; with corticosteroids this may cause oral thrush. Most metered dose inhalers use chlorofluorocarbons (CFCs) as propellants.

Breath actuated metered dose inhalers are similar to standard metered dose inhalers, but more expensive. An automatic spring mechanism is triggered by inspiratory flow rates of 22-36 l/min. Drug delivery is less dependent on inhaler technique.

Spacers are an extension chamber to metered dose inhalers, usually in the form of a plastic bubble. The type of spacer is specific to the type of inhaler. With a spacer there is less deposition of the drug in the oropharynx and hence a decreased incidence of oral thrush with inhaled corticosteroids. Spacers may increase penetration of the drug into the lungs and be used to deliver larger doses in acute attacks. Larger spacers are cumbersome.

DRY POWDER INHALERS

The Spincap or Rotacap is a small device which breaks open a capsule containing the drug and the lactate carrier. An inspiratory flow rate >60 l/min is required for effective delivery of the drug, which may be difficult to achieve. Poor technique is common with these inhalers, and they need reloading after each use. The Spincap is less expensive per dose than the equivalent metered dose inhaler; the Rotacap is more expensive.

DISKHALERS AND TURBOHALERS

Diskhalers are larger than metered dose inhaler or dry powder inhalers. A single dose of drug is contained in a blister in an aluminium foil disk; there is a maximum of 8 doses per disk. A dose double that for a metered dose inhaler is usually recommended and an inspiratory flow rate >60 l/min is required. Diskhalers are expensive and complicated to load.

Turbohalers are small, disposable, breath actuated devices containing up to 200 doses. When only 20 doses remain, there is a warning. For people with arthritic hands, an attachment is available to help turn the base for loading. Turbohalers are simple to use but they are more expensive than metered dose inhalers. Because they deliver pure drug, with no lactate carrier, there is no taste; hence there could be uncertainty that the dose was taken.

Insulin

Six per cent of white people over 65 years (and a much higher proportion of older people from the Indian subcontinent) have diabetes mellitus, and 15-20% are using insulin. Treatment regimens vary from a single morning dose of insulin to four daily doses. The type of insulin used (short, intermediate, long acting, or a combination) and the frequency of administration should be tailored to the needs of the individual patients. Most elderly patients treated with insulin have once or twice daily injections of a biphasic insulin.

Insulin pens

B-D pen (Becton Dickinson)

- * Used with Humulin cartridges (5 mixes available in packs of 5 x 1.5 ml cartridges)
- * Uses B-D Micro-Fine single use needles, available on prescription and from some hospital clinics
- * Single unit dose up to 30 units
- * Simple "dial-press" operation
- * Numbers are easy to read; magnifier can be supplied by hospital clinics
- * Day and night tops are available for easy identification of different pens
- * Spare cartridge is provided in carrying case

Penmix 30/70 (5 x 3 ml) pens (Novo Nordisk Pharmaceuticals)

- * Pre-loaded--300 units of insulin (lasts 1 week on average)
- * Holds up to 78 units at one time (in multiples of 2 units)
- * Disposable
- * Novofine needle--single use

Patients are encouraged to inject themselves, if necessary with supervision from a relative or district nurse, though poor vision may cause difficulty in inserting the needle into the bottle or seeing that the correct amount of insulin has been drawn up. As well, lack of dexterity in the hands may cause problems in both drawing up and administering the insulin. Several devices are available to encourage independence.

Magnifiers clip onto the syringe, enlarging the scale and making it easier to see. One device contains two channels: a wider one for the insulin bottle and a smaller one for the syringe--sliding the syringe along the smaller channel guides the needle correctly through the rubber cap and into the bottle. One side of the device shows a magnified image of the scale. Magnifiers are not available on prescription but can be obtained through the diabetic liaison nurse at the local hospital.

Preset glass syringes--Two types of preset syringes are available. These can be set or adjusted by the diabetic liaison or district nurse. They allow the plunger to be drawn back to the set level, so patients with visual impairment can draw up their own insulin. Alternatively the nurse can draw up the dose for the next injection in an ordinary insulin syringe.

Insulin pens are designed to give the patient more flexibility. Various combinations of short and intermediate acting insulin cartridges are available; the pens are either reloaded with new cartridges or are disposable. Pens are not available on prescription but are available from hospital diabetic clinics.

Depending on the device, a single dose of insulin varies from 30 to 78 units. Doses are available in multiples of 1, 2, or 4 units.³

Accessories to insulin pens are specific to the make of the pen. All patients should have an extra pen as back up and should be able to use an ordinary syringe and insulin phial in case of pen failure. All pens require considerable dexterity and have single use needles.

Examples of a reloadable and a disposable pen are described in the box.

Eye drops

Glaucoma is the commonest preventable cause of blindness in old age. Unless the patient undergoes surgery management is by long term use of eye drops. An older person may have difficulty using eye drops because of poor eyesight, arthritis, incoordination, tremor, and fear of the bottle touching the eye. The Autosqueeze, Opticare, and Autodrop, shown in the box, may help in squeezing the bottle or positioning the drop.^{4 5} These aids are not available on prescription and have to be purchased; no studies have satisfactorily compared their ease of use and efficacy.

Help with eye drops

Autosqueeze (Owen Mumford)

- * Clips on to the neck of all bottles; wings are squeezed together to administer the drop
- * Popular with patients
- * Recommended for patients with arthritis
- * Can be used in combination with the Autodrop and Easi-drop

Opticare (Cameron Graham Associates)

- * Reusable plastic dispenser fitting most plastic eye drop bottles; fits over the eye and has a finger space for pulling down lower lid
- * Squeezing the dispenser requires 25% of the force required to squeeze the bottle
- * Difficult to load
- * Written instructions provided are poor
- * Expensive

Autodrop (Owen Mumford)

- * Clips onto most bottles (except Timolol); holds bottle at correct angle for administering drop
- * Lip holds lower lid down; cup fits over eye
- * Improves aim by preventing blink reflex during administration
- * Easi-drop is similar to Autodrop; it fits onto most bottles (including Timolol) and can be left attached to bottle; an open lattice design allows light to enter the eye during use

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