

MEDICATIONS AND THE Older Traveller

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Older travellers are likely to have age related medical conditions, pre-existing disease and be on medications. Many will be taking routine drugs often taking several pills per day and others will be self-prescribing with over the counter (OTC) medicines. The addition of prophylactics for malaria, travel sickness, travellers' diarrhoea and altitude sickness may be contraindicated, or bring adverse interaction. The ageing process with, impairment of hepatic and renal function may interfere with drug uptake and excretion and diminish drug efficacy and clearance. The impact of the local environment, and travel- related infection, with possible dehydration and electrolytic and metabolic disturbance may also have an impact on drug absorption. Routine and OTC medications should be reviewed at pre travel consultation and particularly when prophylactics are being recommended.

This chapter considers professionally prescribed and OTC prescriptions, self-treatment, overseas medication purchase, cross border carriage of drugs and the travel first aid kit. Malaria chemoprophylaxis and immunisation are covered in chapter ten.

Differences in drug effects in older travellers

Pharmacokinetic effects Pharmacokinetics study the way that a drug is absorbed and distributed by the body. In older people, there are changes in bodily drug response due to general declining homeostatic mechanisms and absorption, distribution, metabolism and excretion require consideration. Absorption of drugs by the gastrointestinal tract is not particularly impaired in the elderly however. Gastric PH tends to be slightly higher in older people, which may make them more prone to travellers' diarrhoea. Lowered immunity to infection also makes them slightly more vulnerable to diarrhoea, with risk of electrolyte and metabolic disturbance upsetting absorption. Conditions such as heart failure can potentially reduce blood flow to the gastrointestinal system and also affect absorption. Drugs with anticholinergic properties such as hyoscine, used as an antiemetic in travel sickness, may also potentially reduce drug absorption.

Body distribution of drugs in older people can be affected by the higher proportion of fat and lower proportion of water in body composition. Reduced drug-binding to plasma albumin can markedly alter the pharmacokinetics of certain drugs and can contribute to changes in drug response for instance; drugs tend to cross the blood barrier more readily. Any drug with potential central nervous system side effects may be more likely to cause an undesirable outcome. Ageing can also reduce response in target tissues due to decline in regional blood flow resulting from fall of cardiac output. Reduction in blood flow in the elderly is the major factor contributing to a lower ability to metabolise certain drugs by the liver leading to an increased half-life. Some drugs are affected by decline in liver enzyme activity, sometimes

apparent as a reduced first pass effect. Renal decline in function brings impaired drug excretion with advanced years, manifested by an increased half-life of certain drugs, most apparent with extreme renal dysfunction, or failure. 10% of people over 70 years age will have some measure of renal dysfunction and be in category 3A of chronic renal disease.¹⁻³

Pharmacodynamic effects These are biochemical and physiological effects and older people may respond differently compared to younger people due to decline in homeostatic mechanisms. They can be at more risk to the adverse effects of drugs, for instance, proneness to postural hypertension, exacerbated by prescribing medications that can lower blood pressure. Another example would be, the elderly person taking an ACE inhibitor and diuretic who contracts prolonged travellers' diarrhoea. In such a situation there is a greater potential for serious fluid and electrolyte disturbances.¹

Polypharmacy The daily ingestion of many different pills is common in elderly people, so the medication history should always be sought at pre-travel consultation. (See chap.1) The taking of many routine drugs makes interaction more likely. If any drug has potential CNS side effects, further medication should be prescribed with caution. Pretravel the question should be whether prophylactic medication is likely to interact with that taken for chronic conditions.

Drug carriage and purchase abroad

The carriage of personal medications across international borders can meet legal obstacles. This particularly applies to those designated narcotic or psychotropic drugs, which encompasses any medicine that has an effect on the central nervous system, especially if it has abuse potential. Carrying a prescription, or note from the prescriber and keeping medication in original packaging is advocated, but some countries, e.g. United Arab Emirates, ban a range of medicines such as conventional antihistamines widely acceptable elsewhere. It is wise for travellers to acquire medications before leaving home rather than relying on a local supply even if much cheaper. Some countries of Africa and Asia, up to 60% of medicines are counterfeit and many locally produced medicines are of poor quality.⁴

Travel related prescription drugs

Contraindications Pharmacokinetics and dynamics should be considered prior to each prescription recommendation by the travel clinic health professional. Drug–drug interactions, ageing system effects, polypharmacy, the effects of pre-existing conditions such as, cardiovascular problems and diabetes and thrombotic tendencies, must be considered.

Acetazolamide. Acetazolamide has been associated with a higher risk of metabolic acidosis in the elderly, those with diabetes and in those with reduced renal function. The clearance of acetazolamide is reduced in the presence of a poor renal function resulting in higher blood levels. There is limited data on the occasional use of low dose acetazolamide in the old for preventing acute mountain sickness but it should be prescribed with caution in such individuals. Acetazolamide when used in the treatment of glaucoma can produce metabolic acidosis of clinical significance especially in elderly people and in those with other medical

problems. There is also evidence that the elderly have higher blood concentrations of acetazolamide. The BNF recommended dose is 250-1000mg daily, and many patients take a dosage towards the higher end of that range. There is little evidence on the beneficial effects of low dose acetazolamide (e.g. 125mg bd. as some authorities recommend for the prophylaxis of AMS). In one study of elderly glaucoma patients 75% had blood concentrations increased by a factor of 2, which would equate to a dose of 250mg bd. Extrapolating this to the use of the drug for AMS, it seems likely that elderly people taking it for AMS are indeed at risk of significant metabolic acidosis. 5.8

Analgesics – Pain killers such as codeine, tramadol, nonspecific anti-inflammatories (NSAIDs) and over the counter narcotic analgesics may also cause constipation and are best avoided when carrying medicines across international borders, NSAID induced peptic ulceration is more likely in the elderly as well as the more recently recognised risks of the cardiovascular and renal adverse effects associated with NSAIDs. For occasional use for acute pain, ibuprofen can be carried in the medical kit, with paracetamol.

Antihistamines Hyoscine-containing products for motion sickness are best avoided in the elderly, due to the anticholinergic side effects resulting in potential cardiovascular or other problems, such as urine retention. Hyoscine patches in particular seem to be associated with a high incidence of confusion in the elderly. Hyoscine may also potentially reduce drug absorption of other drugs and routine medications. There is also some evidence of an increased risk of death and mental decline when the over 65s take a combination of drugs with anticholinergic properties, including antihistamines such as chlorpheniramine.

Antimalarials. Some antimalarials appear to lower insulin requirements in diabetic patients and can lead to hypoglycaemia in those treated with insulin or oral hypoglycaemics such as glibenclamide. However, the evidence only relates to treatment doses of such antimalarials rather than prophylaxis. Limited case reports of an interaction between warfarin and proguanil and atovaquone/proguanil resulting in a raised INR have been reported and similar effect has been observed with doxycycline. The INR of patients taking warfarin after commencing any additional medication such as antimalarials should be monitored. INR should be self-monitored in these people if abroad for longer than 2-3 weeks due to changes in diet and difference in time zones.

Chloroquine has been reported to cause a rise in digoxin levels, but no clinically important interactions have been observed. Chloroquine and mefloquine can potentially increase the risk of arrhythmias if given with other antiarrhythmic agents such as amiodarone. Use of cardio-active drugs including beta blockers, antiarrhythmics and calcium antagonists in combination with mefloquine should be avoided due to the risk of prolonging the QTc interval and inducing other cardiac adverse effects. Chloroquine absorption is reduced by antacids based on magnesium, aluminium or carbonate compounds. Caution is recommended when prescribing chloroquine in the presence of renal impairment, but no dosage adjustment is necessary in prophylactic use. As older people are ten times more likely to die from malaria than young people special attention is needed to ensure the efficacy of their antimalarial prophylactic. 9

Anti-motility agents. The elderly may be more prone to fluid and electrolyte disturbances resulting from a moderate to severe bout of travellers' diarrhoea and the use of oral rehydration therapy and antidiarrhoeal drugs such as loperamide can be justified to control the symptoms. Prolonged therapy may result in constipation however.¹ Travellers often resort to OTC remedies to combat diarrhoea and kaolin products can constipate. Others use probiotics such as bimuno before departure and there is evidence of benefit without adverse effects.

Tetracyclines such as doxycycline can have their absorption and efficacy greatly reduced by co-administration with antacids based on magnesium, aluminium or carbonate compounds. Quinapril--ACE inhibitor- contains a magnesium carbonate in its formulation sufficient to cause a significant fall in the absorption of tetracyclines. Tetracyclines such as doxycycline can cause oesophageal damage if not swallowed sitting upright with ingestion of plenty of water a possible problem for those having difficulty swallowing tablets or prone to oesophageal reflux. Increased hypoglycaemia may develop in diabetic patients taking glibenclamide when prescribed ciprofloxacin, particularly in the old. Quinolones should not be prescribed for them or for elderly patients on chronic NSAID treatment, as there is a convulsion risk. Tendonitis and tendon rupture have been reported to occur within 48 hours of commencing ciprofloxacin treatment, with risk greater in those over 60 years of age, Usually only a single dose is needed to treat traveller's diarrhoea, but treatment should be discontinued at the first sign of tendon pain. Azithromycin and the macrolides, can cause a rise in digoxin levels, so the combination is best avoided.¹⁰

Proton pump inhibitors (PPIs) and H₂ antagonists This group of medicines are commonly used by older people for self-treatment of dyspeptic symptoms as well as prescribed for peptic ulcer disease. PPIs in particular lower the gastric pH sufficiently to allow a greater burden of potentially pathogenic organisms to reach the gastrointestinal tract and result in a higher incidence of severe forms of travellers' diarrhoea, a particular problem in the elderly. Those travellers who require continuous PPI therapy might be considered for antibiotic chemoprophylaxis to offer protection against gastrointestinal infections.¹⁰

Compliance A major problem with older travellers is that they fail to take their diuretics on days of travel as the fear limited toilet access en route or, they pack medications in hold luggage and face drug access problems when there is travel delay. Air and coach travellers frequently then go into heart failure in the absence of routine medication. The need to continue routine medication and pack medication in hand luggage has to be emphasised. Adherence to medication may be affected due to a change and disruption in routines whilst away from home and they may need advice on time zone adjustments. E.g. diabetics. (See chapter 9) ^{10,11}

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Medication Advice for Older Travellers

Have routine medication reviewed by GP if travelling to exotic destinations

Remember routine medicines can sometimes interact with antimalarials

Always carry medicines in hand luggage

Carry a list of routine medicines

Carry a note from doctor confirming the need for medicines

Keep medicines in cool dry place while abroad

Acquire doctor confirmation of need to carry inhalers, syringes and needles

Be wary of taking analgesics across borders and carry authenticated prescriptions for them

Carry a back-up letter from a GP with a yellow fever waiver certificate

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