Appendix 1: Scottish Therapeutics Utility tool reports

Report type	Explanation
Number of repeats	Patients grouped per number of repeat prescriptions
Repeatable acutes	Helps identify patients with 'repeated acutes'-acutes issued more than once in a defined time period
Duplicate issues	Repeat items issued more than once in three days, excluding reprints
All repeats issued	Patients who have had all repeats issued at latest request
Repeats not issued	Active repeats which have not been issued in a defined time period
Priority patients	Those with compliance aids/in care home
CMS	Patient registered for the Chronic Medication Service/serial prescribing
Respiratory	Searches for respiratory indicators for example >12 SABA in 12 months without COPD diagnosis
Chronic pain	Searches for pain related medication indicators for example patients prescribed opioid and benzodiazepine in last 6 months
Antidepressants, benzodiazepines and z-drugs	Patients prescribed each of these types of medication
Diabetes	Patients with diabetes taking: • A sulfonylurea • Three or more diabetic medicines • Long-acting analogue insulin • Those with SMBG on no medicines or only metformin Can be filtered by age bands
Polypharmacy	Can search by age and/or number of repeats These can be filtered by composite or individual indicators (for example on an antiplatelet and anticoagulant)
Clinical safety checks	Generates safety data e.g. 'females aged 8 - 55 on sodium valproate'

Appendix 2: Pharmaceutical modifications for patients with sight impairment

Pharmacy Environment	Bright contrast lines on the floor and on guide rails to navigate to the pharmacy counter/room
	No chairs or obstacles blocking the way
	Position signs at eye level to allow close up viewing
Communication	Verbally introduce yourself and role as they may not be able to see your badge
	Tell them their prescription number when taking in a prescription
	Ask if they prefer to have their name called out rather than having to read a visual display
	Always speak to the person directly unless they tell you they prefer otherwise (e.g. a carer)
Giving information	Ask the person with sight loss how it would be easiest for them to access information about medicines
	Consider what your pharmacy can do. For example: large print labels, braille, leaflets, screen readers
	Make a record of personalised requirements on patient record system
Dispensing	Print dispensing label in large font
	Send the wording of the dispensing information/further information by email
	Provide a personalised dosing schedule chart in accessible format
Differentiating containers	Mark the medication container with a large sign or colour
	Add a dispensing flag to identify fridge storage requirements
	Use two rubber bands tied around medicines to be taken twice a day or a long rubber band with three knots for those taken three times a day
	Adding paper clips, dispensing flags, ribbons, different coloured or textured stickers
Supporting self-administration	A non-child-resistant cap
	Offer to halve tablets if required
	Reconstitution of medicines if required
	Use of compliance aids • Easy grip bottle openers • Braille on containers
Patient information Leaflets (PIL)	X-PIL (XPIL (medicines.org.uk) provide a service to people with sight loss to increase accessibility of PILs to those with sight loss
	Patients can phone and request PILs in large print, Braille or on audio CD

Appendix 3 Interethnic differences in pharmacokinetics.

Adapted from Olafuyi et al[28] Table - PMC (nih.gov)

Drug	Ethnicity	Effect	Pharmokinetic process involved
Statins	Asians, Chinese, Philipino, Korean, Vietnamese, Japanese	Increased systemic levels compared to Caucasians	Absorption
Pravastatin	African Americans	Higher oral clearance therefore lower systemic levels compared to European Americans	Absorption, distribution and metabolism
Propranolol	Black people	Higher hepatic metabolism, higher clearance compared to White subjects	Metabolism
Propranolol	Chinese ethnicity	Lower plasma concentration due to plasma protein binding compared to Caucasians	Distribution
Losartan	Koreans, Hans, Mongolians, Hui, Uighurs	Clearance higher in Hans, compared to Mongolians and Hui Lower metabolite levels in Koreans, Hui, Uighurs	Distribution
Felodipine	Mexicans	Higher bioavailability compared to Caucasians	Metabolism
Nifedipine	Taiwanese, South Asian	Slower metabolism compared to Caucasians, so lower doses needed	Metabolism
Haloperidol	Chinese	Lower doses needed for Chinese subjects	Metabolism
Clozapine	Caucasians and Asians	Caucasians require higher doses for a similar therapeutic effect	Metabolism
Codeine	Chinese and Caucasian	Chinese are less able to metabolise codeine	Metabolism
Nicotine	European Americans and African Americans	European Americans excrete more nicotine.	Metabolism

Morphine	African Americans, Indians, Latinos and Caucasians	Lower morphine clearance in Caucasians.	Excretion
Tizanidine	Caucasians and Japanese	Clearance higher in Caucasians	Metabolism
Ciclosporin	African Americans and Caucasians	Higher bioavailability in African Americans	Absorption
Mycophenolate	Asians, Caucasians and Africans	Asians and African Americans have higher exposure to mycophenolate compared to Caucasians	Metabolism
Tacrolimus	African Americans, Latin Americans and Caucasians	Bioavailability lower in African Americans and Latin Americans compared to Caucasians	Absorption
Diphenhydramine	Oriental and Caucasian	Volume of distribution higher in Oriental subjects compared to Caucasians	Distribution
Meloxicam	German and Mexican	Clearance higher in Germans compared to Mexicans	Metabolism
Omeprazole	Chinese and Caucasians	Increased bioavailability in Chinese subjects, greater oral clearance in Caucasians	Metabolism
Ibandronate	Taiwanese and Caucasian	Greater bioavailability in Taiwanese subjects	Distribution and metabolism

Appendix 4: 7-Steps review of Meera's medicines (Case 1)

Domain	Steps	Process	Patient specific issues to address (please complete)
1. **Aims**	What matters to the patient problems	**Review diagnoses and identify therapeutic objectives with respect to:** ➢ Identify objectives of drug therapy ➢ Management of existing health problems. Prevention of future health concerns	Meera wants to manage her medicines, she wants to feel less tired, and to get out and meet some new people in her new area
2. **Need**	Identify essential drug therapy	**Identify essential drugs (not to be stopped without specialist advice)** ➢ Drugs that have essential replacement functions (e.g. thyroxine) ➢ Drugs to prevent rapid symptomatic decline (e.g. drugs for Parkinson's disease, heart failure)	Essential drugs regarded as: metformin for type 2 diabetes, bendroflumethiazide and ramipril for hypertension, isosorbide mononitrate and glyceryl trinitrate for angina, simvastatin for cardiovascular risk, fostair for asthma
3.	Does the patient take unnecessary drug therapy?	**Identify and review the (continued) need for drugs** ➢ What is medication for? ➢ with temporary indications ➢ with higher than usual maintenance doses ➢ with limited benefit/evidence of its use in general ➢ with limited benefit in the patient under review (see Drug efficacy & applicability (NNT) table)	Check that citalopram is still achieving the goal of treating depression. Explore non-pharmacological approaches Check indication for amitriptyline (and effectiveness) Check effectiveness and need for tramadol, omeprazole, movicol, ferrous fumarate and folic acid How often does Meera use her GTN spray? Does she need a Calcium channel blocker to improve angina?
4. **Effectiveness**	Are therapeutic objectives being achieved?	**Identify the need for adding/intensifying drug therapy in order to achieve therapeutic objectives** ➢ to achieve symptom control ➢ to achieve biochemical/clinical targets ➢ to prevent disease progression/exacerbation ➢ is there a more appropriate medication that would help achieve goals	**Agreed Plan** Check full blood count, HbA1C, blood pressure, asthma symptom score Is treatment for osteoporosis needed – assess risk factors (QFracture score) Is angina well controlled?

5. **Safety**	Does the patient have ADR/ Side effects or is at risk of ADRs/ side effects?	**Identify patient safety risks by checking for** ➢ if the targets set for the individual appropriate? ➢ drug-disease interactions ➢ drug-drug interactions (see ADR table) ➢ monitoring mechanisms for high-risk drugs ➢ risk of accidental overdosing	*Agreed Plan* Meera is experiencing gastrointestinal symptoms and tiredness
	Does the patient know what to do if they're ill?	**Identify adverse drug effects by checking for** ➢ specific symptoms/laboratory markers (e.g. hypokalaemia) ➢ cumulative adverse drug effects (see ADR table) ➢ drugs that may be used to treat side effects caused by other drugs **Sick Day rule cards**	Ensure Meera understands the sick day rules, as she takes various medicines for which these would apply (metformin, ramipril)
6. **Cost-effectiveness**	Is drug therapy cost-effective?	**Identify unnecessarily costly drug therapy by** • Consider more cost-effective alternatives (but balance against effectiveness, safety, convenience)	**Agreed Plan** Check that all formulations are as per the local formulary Fostair Inhaler is a DPI which Meera manages well and is more environmentally friendly, option to also change Salbutamol to a DPI (Accuhaler or Easyhaler) so that same inhaler technique for both
7. **Patient centeredness**	Is the patient willing and able to take drug therapy as intended?	**Does the patient understand the outcomes of the review?** • Consider Teach back **Ensure drug therapy changes are tailored to patient preferences by** • Is the medicine in a form the patient can take? • Is the dosing schedule convenient? • Consider what assistance the patient might have and when this is available • Is the patient able to take medicines as intended	**Agreed plan** • Agree to stop tramadol, movicol • Stop folic acid and ferrous fumarate (FBC normal) • Change salbutamol MDI to salbutamol Easyhaler (as per local formulary for DPI) • Plan to reduce amitriptylline • Review the need for omeprazole • Ensure that repeat medicines list is updated and that Meera understands this • Refer to community link worker to explore appropriate links with groups that would interest Meera

Agree and communicate plan
- Discuss with the patient/carer/welfare proxy
therapeutic objectives and treatment priorities
- Decide with the patient/ carer/ welfare proxies what medicines have an effect of sufficient magnitude to consider continuation or discontinuation
- Inform relevant healthcare and social care carers, changes in treatments across the care interfaces

Key Concepts in this case
- To reconcile Meera's medicines that she takes to have an accurate repeat medicines list at her new surgery
- To review and stop or reduce any unnecessary medicines to reduce potential gastrointestinal side effects and tiredness
- To offer effective management of her conditions including considering non-pharmacological resources