Training scenarios:

Situation 1
A 45 year old patient with chronic back pain was previously stabilised on tramadol 50mg QID. He brings in a new prescription for Tramal 200mg SR QID and tells you the doctor has increased the dose as a result of his increasing pain. You contact the prescriber and recommend the dose be reduced to 200mg BD.

Categorisation of the situation

- **Over or under dose prescribed – Prescribed dose too high (O1)**
  An increase in the dose of tramadol in this patient is an appropriate course of action due to his increasing pain, but the size of the increase and the dosage frequency is too high.

- A toxicity category would be inappropriate as the higher dose has not been taken yet, therefore there are no signs or symptoms of toxicity.

- A compliance category is inappropriate as the patient intended to take the medication as instructed by the doctor.

- An undertreated category would also be inappropriate as the doctor has already addressed the inadequate treatment of his pain.

The recommendations made by the pharmacist

- Dose decrease (R2)

Significance

- Prevented or required a GP visit (S3)
  This problem would have required a GP visit if this dose of medication had been taken. It could also have ended in a hospital admission, depending on other medications and circumstances.
**Situation 2**

A 56 year old woman with hypertension comes in to ask you about the change in her diuretic tablets (Hydrene). She brings in the bottle that was dispensed elsewhere and you note that the medication is hydroxyurea (Hydrea). The medication is labelled as “Hydrene - 2 M” and you find that she has been taking these for seven days. You contact her prescriber to make them aware of the situation and for them to arrange a blood test for the patient. You provide the patient with the correct medication.

**Categorisation of the situation**

- **Drug selection - Wrong drug (D3)**
  This intervention should be categorised as wrong drug as it was dispensed in error.
- A toxicity category is not appropriate as there is no current evidence of toxicity, although there may have been if the error had not been detected.
- A monitoring category is not appropriate, as monitoring is not the cause of the problem. However, a blood test would be a recommendation in this particular case.
- An education category is not appropriate as it is not the patient’s lack of education that has resulted in the error.
- Categorisation under ‘Non-clinical’ would also be incorrect, as this is a dispensing error, not an administrative error.

**The recommendations made by the pharmacist**

- Drug change (R3) - correct medication was supplied to the patient
- Refer to prescriber (R9)
- Monitoring; laboratory (R18)

**Significance**

- Prevented or required a hospital admission (S4)
  The significance of this intervention is high, as the patient has been inappropriately supplied with a cytotoxic agent instead of a diuretic. If she had continued to take the medication, a hospital admission would have been likely.
Situation 3
A 54 year old woman arrives at your pharmacy to collect her monthly ‘omeprazole 20mg daily’ prescription. She mentions in the course of counselling that she is still experiencing reflux symptoms, especially in the evening. She has been very compliant with her medication, taking one tablet each day after breakfast. You discuss her current problems and ways to reduce the incidence of reflux, such as losing weight, eating smaller meals, avoiding certain foods etc. You encourage her to try taking the omeprazole later in the day to see if this resolves her current problems. You also advise her that if the trial is unsuccessful she should return to her doctor to discuss her therapy.

Categorisation of the situation
• **Undertreated - Condition undertreated (U1)**
  The reason that the situation was brought to the pharmacist’s attention was because the condition is not being adequately treated.
• Dosing categories such as “Prescribed dose too low (O2)” or “Other dose problem (O0)” are not appropriate, as the doctor had prescribed correctly. As this is a repeat, the doctor may not have had a chance to review this patient since the original prescription was written.
• A compliance category is inappropriate, as the patient is taking the medication as the doctor prescribed it.
• In this scenario, education is a recommendation rather than the intervention category.

The recommendations made by the pharmacist
• Dose frequency or schedule change (R6)
• Education or counselling session (R13)
• Refer to prescriber (R9)

Significance
• Prevented a mild symptom or improved compliance (S2)
The pharmacist’s suggestions should improve the patient’s therapy and/or quality of life and the patient should not require a return visit to the GP.
Situation 4
An 82 year old lady presents with a prescription for a Ventolin inhaler (1-2 puffs QID PRN). During counselling, you discover that her rheumatoid arthritis is preventing her from actuating the inhaler. After discussing the situation with the patient, you decide to contact the prescriber. You suggest that another device, such as an autohaler, would be used more successfully by this lady, which will allow her to improve her symptom control.

Categorisation of the situation

- **Compliance - Difficulty using dosage form (C5)**
  This patient has a physical problem preventing her from using this dosage form, therefore C5 is the correct category.
- “Inappropriate dosage form (D5)” is not appropriate as the patient has a physical problem that is preventing her from using the dosage form, rather than the product being an incorrect formulation selection.
- An undertreated category is correct, but the condition only has inadequate treatment because of a difficulty using the dosage form, therefore C5 would be a more appropriate intervention category.
- An education category is also inappropriate, as demonstrating the device is still not going to enable her to use it satisfactorily.

The recommendations made by the pharmacist

- Drug formulation change (R4)
- Education or counselling session (R13)

Significance

- Prevented or required a GP visit (S3)
  This intervention most likely prevented an exacerbation of asthma symptoms, which may have required a GP visit. It is difficult to be more specific than this without additional knowledge of the patients other therapy, or knowledge of the severity of her asthma.
Situation 5
A 56 year old man comes into your pharmacy complaining of drowsiness. He tells you that he commenced mirtazapine one week ago and is currently taking 30mg N. His other medications include diazepam 10mg TDS and temazepam 20mg N. You discuss the situation with the patient, counsel him on the new medication and how it combines with his current medication. You recommend that he goes back to the doctor who may adjust the dose.

Categorisation of the situation
- **Toxicity or Adverse reaction – Toxicity, allergic reaction or adverse effect present (T1)**
  In this scenario, there are two interacting drugs that have been taken and have caused an adverse effect or symptom.
- “Drug interaction (D2)” would be inappropriate as the patient is already experiencing adverse effects from taking the drug combination, therefore a toxicity category is appropriate.
- “Drug duplication (D1)” is inappropriate as the interacting medications are mirtazapine and benzodiazepines, therefore they are not in the same therapeutic class.
- A dosing category such as “Prescribed dose too high (O1)” is not appropriate, since the actual prescribed dose is not too high, the mirtazapine is interacting within the body to produce adverse effects.
- A compliance or education category would not be appropriate, as the pharmacist does not have the information to determine if the patient was told other instructions, i.e. to start at a half dose of mirtazapine to minimise side effects such as drowsiness.

The recommendations made by the pharmacist
- Refer to prescriber (R9)
- Dose decrease (R2)

Significance
- Prevented or required a GP visit (S3)
  The pharmacist has referred the patient back to the doctor, therefore the S3 category is appropriate. It is unlikely that this patient would need to be hospitalised due to the excessive drowsiness.
**Situation 6**

A 74 year old man with hypothyroidism presents with an order for “Thyroxine 50mcg 3 D” and “Thyroxine 100mcg 3 D”. Upon checking the patient’s previous records and discussion with patient, you find that he is meant to be taking 150mcg D. You contact the doctor to confirm the dose and correct the prescription as appropriate.

**Categorisation of the situation**

- **Over or under dose prescribed – Incorrect/unclear dosing instructions (O3)**
  Incorrect directions have been written on the prescription, which may have resulted in the patient taking too much thyroxine.

- The “Duplication (D1)” category is not appropriate, as it is common for a patient to be prescribed two different strengths of thyroxine. In this scenario, it is the directions that could cause an overdose.

- “Incorrect strength (D4)” is also not appropriate as the incorrect medication has not been prescribed.

- A compliance category is not appropriate as the patient has not taken any of the medication.

- An education category would not be appropriate as the patient has not requested any information about his medication or medical condition.

- A toxicity category is not appropriate since the patient has not taken any of the medication and is therefore not showing any signs or symptoms.

**The recommendations made by the pharmacist**

- Dose decrease (R2)

**Significance**

- Prevented or required a hospital admission (S4)
  Considering the age of the patient and the size of the overdose, this intervention most likely prevented a hospital admission as 450mcg of thyroxine daily may have eventually killed this patient.
**Situation 7**

The husband of a 75 year old woman brings in a prescription for amiodarone 200mg daily. You find that the prescription was last dispensed 2 weeks ago and question the early repeat. You find that his wife has been taking both Aratac and Cordarone for the last month, thinking they are different drugs. You contact the prescriber to inform them of the situation and recommend the patient makes an appointment for a GP assessment. You also provide the patient's husband with information about the generic medicine name of amiodarone.

**Categorisation of the situation**

- **Drug selection – Duplication (D1)**
  The patient is inadvertently taking two brands of the same drug, therefore the therapy is being duplicated.
- “Compliance – Taking too much (C2)” is inappropriate as the notes clearly state that “If the overuse consists of inappropriately taking two brands or forms of the same ingredient unknowingly, then use ‘Duplication (D1)’”.
- “Over or underdose prescribed” is incorrect as the prescribed dose was correct.
- An education category is not appropriate as the patient did not request any information about their medication or medical condition.
- Laboratory monitoring may be required, but it would be a recommendation rather than an intervention category.
- A toxicity category is not appropriate as the patient has not experienced any signs or symptoms of toxicity yet.

**The recommendations made by the pharmacist**

- Drug brand change (R5)
- Other written information (R16)
- Laboratory monitoring (R18)

**Significance**

- Prevented or required a hospital admission (S4)
  When all the parameters are taken into account, such as patient’s age, the bradycardic nature of the drug and its long half-life, this patient would have been admitted to hospital at some stage, therefore the intervention most likely prevented a hospital admission.
Situation 8

An 80 year old male patient presents repeat prescriptions for isosorbide mononitrate, warfarin, atenolol, ramipril, digoxin and frusemide. He mentions that he doesn’t need his amiodarone anymore, as the doctor ceased it four weeks ago. You are aware of the interaction between amiodarone and warfarin, and on questioning you discover that the patient has not had a follow-up INR test yet. You phone his doctor to discuss the situation and discover the doctor was unaware of how long amiodarone’s half-life is. You recommend that fortnightly INR testing be scheduled for the next two months. During your explanation to the patient you also provide him with a medication profile which reflects the recent changes to his therapy.

Categorisation of the situation

- **Monitoring required - Laboratory monitoring (M1)**
  It can be assumed that this patient had a stable INR whilst taking his amiodarone, therefore additional INR monitoring will be required over the next two months to restabilise his warfarin therapy at an appropriate dose. Fortnightly monitoring would be appropriate.

- “Non-laboratory monitoring (M2)” is not a suitable category as INR is a blood test, therefore the laboratory needs to be involved. Please note that if the patient has an INR self-monitor (such as the CoaguChek monitor), then M2 would be a suitable category (same category as BSL testing).

- “Drug interaction (D2)” is not a suitable category as ceasing a medication does not cause an interaction.

- A toxicity category is not suitable as the patient has not experienced any signs or symptoms of toxicity yet.

The recommendations made by the pharmacist

- Laboratory monitoring (R18)
- Written summary of medications (R14)

Significance

- Prevented or required a GP visit (S3)
  The pharmacist has recommended the patient return to his GP for INR monitoring, therefore the S3 category would be appropriate. If the monitoring does not take place, he may have a thromboembolic event which would lead to hospitalisation.
**Situation 9**

A 55 year old woman presents to the pharmacy feeling generally unwell and has started to notice her eyes and skin becoming yellow. On questioning, you discover she has been taking methotrexate 5mg weekly on Tuesdays for several years. She states she was having blood tests every month until 3 months ago, when it changed to every 8 weeks and she also thinks she may have forgotten to have her most recent blood test. You recognise that the lady most likely has impaired liver function and insists she sees the doctor or visits the hospital immediately for diagnostic blood tests.

**Categorisation of the situation**

- *Toxicity or Adverse reaction – Toxicity, allergic reaction or adverse effect present (T1)*
  
  The patient has been experiencing signs and symptoms suggesting she may have methotrexate-induced liver impairment that requires immediate attention.
  
  - A dosing category such as “Dose too high (O1)” is not strictly correct, as the dose has been fine until now. Liver toxicity is generally related to cumulative dose, however the patient is already experiencing toxicity symptoms therefore the intervention is more appropriately categorised under ‘Toxicity’.
  
  - Monitoring is not appropriate as the intervention category as it is a recommendation of the pharmacist due to toxicity being present.

**The recommendations made by the pharmacist**

- Refer to prescriber (R9) or Refer to hospital (R10)
- Laboratory monitoring (R18)
- Drug change (R3) – dose may need reviewing or medication may need to be ceased

**Significance**

- Prevented or required a hospital admission (S4)
  
  This intervention most likely prevented a hospital admission. The patient most likely has liver damage that requires medical assistance. If the pharmacist had not insisted the patient seek medical attention immediately, she may have gone into liver failure resulting in hospitalisation or worse.
Situation 10

A 61 year old, overweight man has had type 2 diabetes mellitus for 10 years and also has ischaemic heart disease. He has been prescribed glipizide each morning and metformin TDS. He admits that he misses his medication sometimes (approximately 3-6 doses per week) because he simply forgets. You discuss the situation with the patient, who seems to have a good understanding of why he should be taking the metformin and glipizide, but admits that he forgets to take them. You recommend that he start using a dosage administration aid to act as a reminder to take his tablets. You recommend he start monitoring his BSLs at home and you remind him that diabetic patients also need to have regular blood tests and other screening tests completed.

Categorisation of the situation

- **Compliance - Taking too little (C1)**
  This patient has an identified problem with compliance and it can be quantified as taking too little.
- A monitoring category is not the intervention category, but rather a recommendation that may arise due to his compliance problem.
- An education category is also not appropriate, as the patient understands what his medication is for, but admits he does not remember to take the tablets.

The recommendations made by the pharmacist

- Recommend dose administration aid (R15)
- Non-laboratory monitoring (R17) – BSLs, eye checks, feet, BP
- Laboratory monitoring (R18) – HbA1c, cholesterol, renal function etc.

Significance

- Prevented a mild symptom or improved compliance (S2)
  The intervention has improved this gentleman’s therapy by explaining the importance of taking his medications regularly and providing a dose administration aid.
Situation 11
A 55 year old man with diabetes and ischaemic heart disease presents a new prescription for sildenafil (Viagra®) 50 mg. His other medications include isosorbide mononitrate, metformin, glipizide, amiodarone, aspirin, perindopril and metoprolol. You are aware that sildenafil should not be used with nitrates. You contact his doctor to discuss the situation, suggesting that the Viagra not be used and other alternatives investigated (such as addressing lifestyle factors or switching to the intracavernosal prostaglandin injection).

Categorisation of the situation

- **Drug selection - Drug interaction (D2)**
  There is the potential for serious consequences if this patient took Viagra with his existing drug therapy, therefore an intervention category of “Drug interaction (D2)” is most appropriate.

- “Wrong drug (D3)” would be inappropriate as the prescriber intended to prescribe Viagra, however it is contraindicated with his current medication therapy, therefore D2 is more appropriate.

- A toxicity category is inappropriate, as the patient has not taken the medication and therefore does not have any signs or symptoms of toxicity.

The recommendations made by the pharmacist

- Prescription not dispensed (R7)
- Refer to prescriber (R9)
- Drug change (R3)

Significance

- Prevented or required a hospital admission (S4)
  This combination of drugs is contraindicated and can lead to very serious consequences if they are taken together, therefore it is reasonable to indicate that this intervention prevented a hospital admission.
**Situation 12**

A mother presents a prescription for a 12 year old boy for amoxycillin 250mg/5mL, 4mL TDS for acute otitis media. You check the dose in the ‘Paediatric Pharmacopoeia’ and find that it is meant to be 500mg TDS. You discuss the situation with the boy's mother and contact the prescriber to suggest that the dose be increased.

**Categorisation of the situation**

- **Over or underdose prescribed – Prescribed dose too low (O2)**
  This patient has been prescribed a dose that is too low for the condition being treated.
- Selecting an undertreated category is inappropriate, as the reason the condition is not being treated adequately is due to the dose being too low.

**The recommendations made by the pharmacist**

- Dose increase (R1)

**Significance**

- Prevented or required a GP visit (S3)
  If this antibiotic was taken at the prescribed dose, it is likely that the infection would not resolve and a repeat visit to the general practitioner would have been required. Therefore the intervention most likely prevented a GP visit.
**Situation 13**

A mother presents to the pharmacy with a prescription for Clavulin Duo 400® suspension for her 8 year old son’s chest infection. On discussion with the patient’s mother, you discover that her son was hospitalised after experiencing an allergic reaction to the penicillin being used for a dental abscess. The mother was unaware that Clavulin Duo® was a penicillin. You call the prescriber and he states he was unaware of the allergic incident, as there was nothing mentioned on the patient history. The prescriber notes the allergy on the boy’s history and changes the prescription to roxithromycin dispersible tablets.

**Categorisation of the situation**

- **Drug selection – Contraindication apparent (D6)**
  This patient has had a previous severe reaction to amoxycillin.
- “Drug interaction (D2)” would be inappropriate as the drug is interacting with a condition the patient has, not another medication the patient is taking.
- “Wrong drug (D3)” would be inappropriate because the actual drug prescribed is correct, but the patient’s medical history contraindicates its use.
- “Toxicity, allergic reaction or adverse effect present (T1)” would be inappropriate as the patient has not started taking the medication and therefore is not experiencing any signs or symptoms of toxicity.

**The recommendations made by the pharmacist**

- Drug change (R3)

**Significance**

- Prevented or required a hospital admission (S4)
  Without intervention, the mother would not have realised this was a penicillin antibiotic and giving the antibiotic to her child could have resulted in another hospitalisation or worse.
Situation 14
An overweight, middle-aged male patient with a history of diabetes and hypertension comes into the pharmacy to collect his prescriptions. Whilst dispensing the prescriptions, you notice that he is not taking an antiplatelet or any lipid-lowering therapy, which you know are both commonly needed by diabetic patients. On discussion with the patient, you discover that he has never been on aspirin and he does not remember the last time he had a cholesterol test. You recommend the patient asks his prescriber on his next visit if he needs to be on aspirin or have his cholesterol checked. The man also requests information on what else he could do to improve his health, so you discuss the benefits of weight loss.

Categorisation of the situation
- **Undertreated – Preventative therapy required (U3)**
  This patient is diabetic and also has a history of cardiovascular disease, but is not currently prescribed an antiplatelet agent or lipid-lowering therapy.
- “Condition untreated (U2)” would be inappropriate as the patient is not currently showing any signs or symptoms of the condition, but his medical history shows that he may need preventative therapy to stop signs or symptoms occurring.
- “Prescribed dose too low (O2)” or “Taking too little (C1)” would be inappropriate as the patient has never been prescribed these items and therefore has not had the chance to take either of the medications.
- An education category is not appropriate as the prescriber must be involved to initiate these medications, therefore education alone will not lead to improved therapy for this patient.

The recommendations made by the pharmacist
- Refer to prescriber (R9)
- Laboratory monitoring (R18)
- Drug change (R3) – new medications may be initiated
- Education or counselling session (R13)

Significance
- Prevented or required a GP visit (S3)
  The pharmacist has referred the patient back to the prescriber, therefore the S3 category is appropriate. No antiplatelet or lipid-lowering therapy in a diabetic increases the risk of stroke and other cardiac disease, which would result in hospitalisation or death if it occurred.
**Situation 15**

A male patient in his 20s presents to the pharmacy with an itchy red rash, facial flushing and a slight wheeze. On discussion with the patient, you discover he does not take any medications at the moment, although he has had a very sore throat which he has been treating with gargling aspirin. His neighbour told him the aspirin would work and gave him the tablets, but he is not sure if he has ever taken aspirin before. You recommend he cease the aspirin and see his doctor if the rash does not resolve. The patient may also like to take an antihistamine to help control the itch. You also recommend that if the rash resolves, he should not to use aspirin or related drugs in the future.

**Categorisation of the situation**

- **Toxicity or adverse reaction – Toxicity, allergic reaction or adverse effect present (T1)**
  
  This patient appears to be experiencing an allergic reaction to aspirin.

- A drug selection, dosing, compliance or undertreated category would not be appropriate as the patient is already experiencing toxicity symptoms.

**The recommendations made by the pharmacist**

- Drug change (R3) – recommendation that the aspirin be ceased. Addition of an antihistamine may also be recommended.
- Education or counselling session (R13)
- Refer to prescriber (R9)

**Significance**

- Prevented or required a GP visit (S3)
  
  The patient appears to be having an allergic reaction to the aspirin that he has been taking. The symptoms will probably resolve with the cessation of the aspirin, but the patient has been advised to visit the doctor if necessary.
Optional training scenarios:
GROUP 1

Situation 16
A 74 year old woman present with a new prescription for mirtazapine. She is currently receiving sertraline 100mg daily. She was unclear about the doctor’s instructions regarding the sertraline, and was going to take both antidepressants. You contact the prescriber to confirm his intentions to switch the patient from sertraline to mirtazapine. You recommend a 1-2 day wash-out period between ceasing the sertraline and starting the mirtazapine, and then advise the patient of the outcome.

Categorisation of the situation
- **Drug selection – Duplication (D1)**
  Mirtazapine and sertraline are both antidepressants and although they can be used together, it is not commonly seen. The duplication category would therefore be appropriate.
- “Drug interaction (D2)” would be inappropriate, as the notes clearly state that “if the interacting drugs are of the same therapeutic class, then use “Duplication (D1)”.
- A toxicity category is also inappropriate as the drug has not been commenced yet, so there are no signs and symptoms suggesting toxicity.

The recommendations made by the pharmacist
- Education or counselling session (R13)
- Drug change (R3) - the relevant medication should be ceased

Significance
- Prevented or required a GP visit (S3)
  If undetected, this scenario was unlikely to result in a hospital admission, but may have required a GP visit due to side-effects.
**Situation 17**

A 70 year old nursing home resident has recently been in hospital for a hip replacement and the home received a summary of his medications on discharge. When the chart is faxed through to the pharmacy you note that there has been an increase in the Seretide® strength from 250/50 BD to 500/50 BD. On consultation with the nurse you determine that his asthma was well controlled on the lower dose and there are no discharge notes describing a reason why an increased dose may have been required. You suspect it is likely to be a chart error and contact his regular prescriber, who confirms the dose should still be Seretide® 250/50 BD.

**Categorisation of the situation**

- **Drug selection – Incorrect strength (D4)**
  This patient was incorrectly charted for a higher strength of Seretide® by the discharging doctor.
- “Wrong drug (D3)” would be inappropriate as the actual drug prescribed is correct, it is the strength that is unsuitable.
- “Prescribed dose too high (O1)” is correct, however since the dose is too high because the wrong item was charted, the D4 category would be more appropriate.
- A compliance or education category would be inappropriate as it is not a compliance or lack of education problem that has lead to the incorrect dosage.
- A toxicity category would be inappropriate as the patient has not started taking the medication and therefore is not experiencing any signs or symptoms of toxicity.

**The recommendations made by the pharmacist**

- Dose decrease (R2)

**Significance**

- Prevented a mild symptom or improved compliance (S2)
  It is unlikely that this intervention would have led to severe adverse effects if not corrected. However maintaining an asthmatic patient on the lowest effective corticosteroid dose is considered best practice, therefore the S2 rating would be appropriate.
Situation 18
A 76 year old woman presents a prescription for herself for roxithromycin. During the conversation you discover that her husband has a bad chest infection and that is why they visited the doctor today. You confirm with the lady that the prescription is supposed to be written in her husband’s name. You check with the doctor who tells you he must have written the wrong name on the prescription.

Categorisation of the situation
- *Not classifiable (N0)*
  This scenario is an administrative error on behalf of the doctor, however it is a clinical intervention as the error could have caused harm to the lady if she had taken medication that was not prescribed to her.

The recommendations made by the pharmacist
- No recommendation necessary (R19) – the problem was resolved by the phone call

Significance
- Consequences related to information (S1)
  It is unlikely that the lady would have taken the antibiotic as she knew it was supposed to be for her husband, therefore the intervention was really only of a minor significance.
**Situation 19**

A 65 year old woman presents a prescription for prednisolone 5mg daily for management of polymyalgia rheumatica. She is frail and appears to weigh approximately 45kg. Although she tells you that she is taking calcium supplements, you believe she is still at risk of osteoporosis. You consult the dispensing history to estimate how long she has been taking prednisolone. You discuss your concerns about osteoporosis with the patient. You recommend that she goes to see her doctor for further assessment of osteoporosis risk, including bone density scanning, and the potential for commencing additional preventative therapy.

**Categorisation of the situation**

- **Undertreated - Condition undertreated (U1)**
  The pharmacist believes this patient is still at risk of osteoporosis despite using calcium supplements, therefore “Condition undertreated (U1)” would be the most appropriate category.
- “Preventative therapy required (U3)” would also be correct, but since the patient is already taking calcium supplements in order to prevent osteoporosis, “Condition undertreated (U1)” would be more appropriate.
- A compliance category is not appropriate as the patient is not at risk of osteoporosis due to a compliance problem.
- Monitoring is not the intervention category, but suggesting a BMD scan is a recommendation.
- An education/information category is also not appropriate because the reason she requires lifestyle advice is due to a condition not being adequately treated.
- A toxicity category is not appropriate as the patient has no signs or symptoms suggesting toxicity.

**The recommendations made by the pharmacist**

- Refer to prescriber (R9)
- Laboratory monitoring (R18)
- Drug change (R3) – additional preventative medicine required

**Significance**

- Prevented a mild symptom or improved compliance (S2)
  If left unchecked, the situation may lead to a hospitalisation post fracture, but it is not likely to occur in the near future. The intervention may have improved the patient’s therapy or quality of life, therefore the S2 category is the most appropriate.
**Situation 20**

A regular patient comes in with a repeat for metformin 500mg 2 TDS. You notice from the dispensing history that it has been seven weeks since he last had this prescription filled. Your discussion with the patient reveals that he has been taking tablets only when his sugar is high. You explain to him the disease process of diabetes and provide information on metformin. You recommend he start taking the dose prescribed by the doctor and visit the doctor in three months to have his HbA1c measured.

**Categorisation of the situation**

- **Compliance - Taking too little (C1)**
  This patient has made a conscious decision to take less metformin than has been prescribed either due to a lack of understanding about the medication or due to forgetfulness, therefore it is a compliance problem.

- **“Intentional drug misuse (C4)” could be considered appropriate, however this study aims to reserve this category for medications that are subject to abuse. Metformin would not be considered a drug that is likely to be abused.**

- The dose prescribed is correct but the patient is choosing to take them incorrectly, therefore it would be inappropriate to select from the “Over or underdose” category.

**The recommendations made by the pharmacist**

- Education or counselling session (R13)
- Referral to prescriber (R9)
- Laboratory monitoring (R18)

**Significance**

- Prevented or required a GP visit (S3)
  It is not unusual for a person to skip tablets and the likelihood of this action causing hospitalisation in the near future is low. It will most likely result in a visit to his prescriber, therefore the S3 category would be most appropriate.
GROUP 2

Situation 21
An elderly male patient presents repeat prescriptions for Daonil and Diamicron. His dispensing history shows he has had Daonil for over 12 months, but has only received Diamicron in previous month. You are aware that Daonil and Diamicron are both sulphonylureas and that Daonil is not recommended in the elderly. After talking with the patient you find he has been taking both the Daonil and Diamicron for a month. You contact his doctor to determine if he intended the patient to take both medications. Your recommendation is to cease the Daonil and check his BSL and HbA1c.

Categorisation of the situation
- **Drug selection – Duplication (D1)**
  This scenario is a “Drug selection – Duplication (D1)” intervention, as the patient is inadvertently taking two medications from the same therapeutic class.
- “Drug interaction (D2)” would be inappropriate, as the notes clearly state that “If the interacting drugs are of the same therapeutic class, then use “Duplication (D1)”.
- A compliance category would not be appropriate as the notes state that confusion involving a new drug in the same therapeutic class as another prescribed medication should be listed under “Duplication (D1)”.
- A toxicity category is not appropriate as the patient has not experienced any signs and symptoms suggesting toxicity.

The recommendations made by the pharmacist
- Drug change (R3) – cessation of the Daonil
- Refer to prescriber (R9)
- Laboratory monitoring (R18) – a formal laboratory BSL and HbA1c should be done

Significance
- Prevented or required a GP visit (S3)
The pharmacist has recommended the patient return to his prescriber for monitoring of the BSL/HbA1c, therefore the S3 category would be appropriate. The intervention may have prevented a severe hypoglycaemic episode requiring hospitalisation, however he has already been taking the therapy for one month without any adverse effects.
Situation 22

A 65 year old man presents to collect the repeat of an authority prescription for norfloxacin that is being used to prevent UTIs. In conversation he states that he was recently in hospital to undergo prostatic surgery. You remember that an enlarged prostate is a common cause of UTIs in older men, therefore you query the continuing need for norfloxacin. The man does not think the urologist told him to cease the antibiotic, but he is going to the doctor for a check-up later in the week so he will ask the doctor then.

Categorisation of the situation

• **Drug selection – No indication apparent (D7)**
  This patient appears to have recently had a TURP, which may have resolved the reason he was using norfloxacin in the first place.
• “Wrong drug (D3)” would be inappropriate as the actual drug prescribed is correct, but the patient’s medical history indicates that the drug may no longer be necessary.
• A compliance or education category would be inappropriate as it does not appear to be the patient’s lack of understanding that has necessitated the intervention.

The recommendations made by the pharmacist

• Refer to prescriber (R9)
• Drug change (R3) – norfloxacin might be ceased

Significance

• Prevented a mild symptom or improved compliance (S2)
  The patient was unlikely to experience any adverse effects if the norfloxacin was continued, therefore the intervention significance is mild. However, it is an important intervention, as using unnecessary antibiotics promotes resistance, therefore it is logical to cease prophylactic antibiotics that are no longer required.
**Situation 23**

A female in her 20s comes into the pharmacy complaining of ‘feeling faint’. You take her blood pressure and find it is 100/64 mmHg whilst sitting, but decreases to 90/60 on standing. On questioning, you discover that she is not taking any other medications but she has recently been at home in bed with a bad cold and has only just recovered. You encourage her to get some more rest and keep up her fluids, but to see the doctor if the faintness does not resolve. You offer to take her blood pressure again in the pharmacy tomorrow if she has not improved.

**Categorisation of the situation**

- **Monitoring – Non-laboratory monitoring (M2)**
  
  This patient was feeling unwell following a recent virus and the pharmacist intervened by taking her blood pressure. The patient was found to have symptomatic postural hypotension.

- A drug selection, dosing or compliance category would not be appropriate as this patient is currently not prescribed any medications.

- “Condition untreated (U2)” is not appropriate at this stage as the postural hypotension is most likely due to her recent virus.

- An education category is not the reason for the intervention, but education is an appropriate recommendation for this patient.

**The recommendations made by the pharmacist**

- Education or counselling session (R13)
- Non-laboratory monitoring (R17) - the pharmacy will take her blood pressure again if necessary

**Significance**

- Prevented a mild symptom or improved compliance (S2)
  
  The patient will most likely recover with adequate rest and fluids, therefore the S2 category would be most appropriate.
Situation 24
A 34 year old female presents to collect a temazepam prescription 25 days after the previous dispensing. The prescription directions clearly state ‘one tablet 3x weekly’ and when you check the dispensing history, the instructions on all the previous prescriptions are also the same. It is clear that the patient is taking temazepam every night, when she should only be using it three times weekly. When you discuss this with the patient, she admits that she has never read the prescription label and did not realise she should not use it every night. You explain how temazepam works and offer her with a ‘Self-Care Care’ on other sleep techniques. She agrees to try decreasing the number of nights she uses the temazepam each week.

Categorisation of the situation
- **Compliance – Taking too much (C2)**
  This patient was incorrectly taking temazepam every night, when her doctor intended her to only use the medication three times a week.
- “Prescribed dose too high (O1)” would be inappropriate as the prescribed dose is correct, but the patient is not using the drug as intended by the doctor.
- “Condition undertreated (U1)” is also not appropriate, since the sleeplessness is due to the patient not following the prescriber’s directions, resulting in the temazepam no longer being effective. Therefore C2 is a more appropriate category.
- An education category is not the reason for the intervention, but education is an appropriate recommendation for this patient.

The recommendations made by the pharmacist
- Dose frequency/schedule change (R6)
- Education or counselling session (R13)
- Other written information (R16)

Significance
- Prevented or required a GP visit (S3)
  The patient appears to have become dependent on temazepam to sleep each night. Without intervention, she would have continued to see her doctor to get a new prescription each month and may have requested a stronger benzodiazepine.
Situation 25
A middle-aged woman asks to see the pharmacist because she is sick of taking so many medications as she feels it is impacting on her quality of life. On discussion, you discover she is a smoker, looks about 20kg overweight and is currently being treated for hypertension and diabetes. You emphasise that both conditions can be improved significantly though smoking cessation and maintaining a healthy weight. You provide her with written information on smoking cessation and weight loss strategies, but advise her to not stop taking any medications without first consulting her doctor.

Categorisation of the situation
• Education or information – Patient requests disease management or advice (E2)
  This patient requested information about how to cut down on the number of medications that she is taking, which could be achieved through adequate weight management and smoking cessation.
• A drug selection, dosing, compliance or undertreated category would not be appropriate as the patient is requesting information on management of her conditions.

The recommendations made by the pharmacist
• Education or counselling session (R13)
• Other written information (R16)

Significance
• Prevented a mild symptom or improved compliance (S2)
  If the patient lost weight and quit smoking, she would greatly improve her diabetes and hypertension management. This may result in a decrease in the number of tablets she needs to take and decrease the risk of diabetic- or hypertension-related morbidities. Therefore, although the short-term implications of this intervention are of a low significance, the long-term benefits would be considered mild.
GROUP 3

Situation 26
A 72 year old lady presents with a chesty cough and a handwritten prescription from a locum doctor for prednisolone 5mg suppositories. You review her dispensing history and find no apparent history of any inflammatory bowel disease, but you have dispensed several bottles of prednisolone 5mg tablets over the past two years. On discussion with the patient, you discover that the patient has an exacerbation of her COPD and she did not realise the prescription was for suppositories rather than tablets. You call the locum doctor and recommend changing to tablets for patient comfort, and also because not enough dose from the suppositories will be absorbed systemically to provide adequate management of her COPD.

Categorisation of the situation
  - **Drug selection – Inappropriate dosage form (D5)**
    This patient was incorrectly prescribed prednisolone suppositories when tablets would be more appropriate.
  - “Wrong drug (D3)” would be inappropriate as the actual drug prescribed is correct, it is the dosage form that is unsuitable.
  - A compliance category would be inappropriate as it is not a lack of compliance that has lead to the intervention.
  - A toxicity category would be inappropriate as the patient has not started taking the medication and therefore is not experiencing any signs or symptoms of toxicity.

The recommendations made by the pharmacist
  - Drug formulation change (R4)

Significance
  - Prevented or required a GP visit (S3)
    Without intervention, this lady would not have received adequate treatment for a COPD exacerbation which could have lead to a doctor’s visit or even hospitalisation.
**Situation 27**

A 35 year old woman was commenced on amoxycillin 500mg TDS 3 days ago following the removal of an infected tooth. She presents to the pharmacy to enquire about her swollen, increasingly painful jaw. You refer her back to the prescriber as it appears the infection has not been controlled and you believe a change in her antibiotic regimen is required.

**Categorisation of the situation**

- **Undertreated - Condition undertreated (U1)**
  This patient is receiving antibiotics following an extraction of an infected tooth, but it does not appear to have worked, therefore the condition is being inadequately treated.
- A drug selection category is not appropriate as amoxycillin is a recommended antibiotic for dental infections. The drug is not a “Wrong drug (D3)”, as the dentist intended to prescribe amoxycillin.

**The recommendations made by the pharmacist**

- Refer to prescriber (R9)
- Drug change (R3)

**Significance**

- Prevented or required a GP visit (S3)
  The patient will require a return visit to the prescriber for additional treatment to rectify the problem.
**Situation 28**

A 45 year old man arrives for a repeat prescription of metoprolol for his hypertension that has previously been dispensed at another pharmacy. He has a history of asthma and tells you he has been using his salbutamol inhaler 3 times a day in the last couple of weeks. He also uses a fluticasone 250mcg inhaler BD and presents a new prescription for a salmeterol accuhaler. It seems that he is suffering from an increase in his asthma symptoms and you believe this could be due to the metoprolol. You contact his prescriber with your concerns and a more suitable antihypertensive is selected.

Categorisation of the situation

- **Toxicity or adverse reaction – Toxicity, allergic reaction or adverse effect present (T1)**
  
  This patient is displaying a symptom or adverse effect, most likely from a medication interacting with a concurrent disease state.

- A drug selection category such as “Drug interaction (D2)” or “Wrong drug (D3)” would be inappropriate as asthma is not a drug and the drug was intentionally prescribed and dispensed.

- It could be argued that metoprolol is an inappropriate drug for an asthmatic and therefore should not have been prescribed (“Contraindication apparent (D6)”) but reference to the scope notes indicates that these categories should be selected only when signs and symptoms have not yet occurred. This patient has worsening asthma symptoms, therefore an adverse effect has already occurred.

- An undertreated category is also not completely correct as there is most likely a drug cause contributing to suboptimal disease control.

The recommendations made by the pharmacist

- Drug change (R3)

Significance

- Prevented or required a GP visit (S3)
  
  This intervention will require a return visit to the GP. It is unlikely to require a hospital visit as he has been taking the metoprolol for at least a month, and has only been using the salbutamol three times a day. The deterioration of his asthma appears to be a slow process.
**Situation 29**
A middle-aged man presents with a prescription for 20 Panadeine Forte (2 tablets TDS). The dispensing history shows a long history of Panadeine Forte use, although he appears to obtain prescriptions from several different doctors in different surgeries. You contact Pharmaceutical Services and the call reveals that this man is currently being tracked by their officers due to his doctor shopping. You are advised to dispense the prescription, however they have recorded your phone call on his file. The branch intends to send a circular on this man to all the doctors and pharmacies in your area.

**Categorisation of the situation**
- **Compliance – Intentional drug misuse (C4)**
  This patient appears to be doctor shopping and your suspicion is confirmed by Pharmaceutical Services.
- “Taking too much (C2)” or “Erratic use of medication (C3)” would not be appropriate as these categories are for poor compliance, whereas this patient appears to be intentionally abusing the system.
- “Prescribed dose too high (O1)” would be inappropriate as the medication is being prescribed by different doctors and the doctors would not know they are all prescribing the same item.
- A toxicity category would not be appropriate, as the patient is not exhibiting any signs or symptoms of toxicity.

**The recommendations made by the pharmacist**
- No recommendation necessary (R19)

**Significance**
- Prevented a mild symptom or improved compliance (S2)
  The drug use may have resulted in paracetamol toxicity, however the pharmacist does not know if this man was using the medication inappropriately himself or if he was obtaining it for someone else. Therefore the S2 category would be appropriate, as the main clinical intervention was from a legal and moral perspective.
**Situation 30**

An obese male patient comes into the pharmacy and asks to see the pharmacist. He explains that the doctor has suggested he try Reductil® after a diet and exercise regimen was unsuccessful. He does not like taking tablets, so he would like more information about the medication before he decides to take it. You provide him with a CMI to take home.

**Categorisation of the situation**

- **Education or information – Patient requests drug information (E1)**
  This patient is not keen on taking medication and would like more information about Reductil® and the pharmacist provides a CMI.
- A drug selection, dosing or compliance category would not be appropriate as this patient is currently not taking the medication.
- “Condition untreated (U2)” would be relevant, however providing the CMI is the main intervention in this scenario.

**The recommendations made by the pharmacist**

- Education or counselling session (R13)
- Other written information (R16)

**Significance**

- Consequences related to information (S1)
  The patient was provided with a CMI about Reductil®, therefore the significance of the intervention is low.
Situation 31
An elderly female presents with a repeat prescription for atenolol 1 D. When you are dispensing the prescription, you notice that she only collected the atenolol two weeks ago. On discussion with the patient, you discover that she thinks she may take two tablets some days. She is forgetful, but she knows how important the atenolol is, so she takes a dose whenever she remembers. She is not on any other regular medication at the moment, so you suggest switching her to a brand that displays the days of the week written on the packaging as you are sure she is competent enough to know what day it is. You show her how to use the new packaging, but also tell her that if this is not successful or if she starts any other medications, it may be beneficial for her to commence a Webster pack to help her remember.

Categorisation of the situation
- **Compliance – Erratic use of medication (C3)**
  This patient appears to take her atenolol on an erratic basis, admitting that she may sometimes take two doses a day.
- “Prescribed dose too high (O1)” would be inappropriate as the prescribed dose is correct, but the patient is not using the drug as intended by the doctor.
- A drug selection or dosage form category would not be appropriate, as this appears to be a compliance issue.

The recommendations made by the pharmacist
- Drug brand change (R5) – a brand that has the days of the week written next to the tablet may improve her compliance
- Recommend dose administration aid (R15)

Significance
- Prevented or required a GP visit (S3)
  If the patient continued to take the increased dose, she would have most likely experienced hypotension, which would have increased her falls risk. This could have lead to hospitalisation if she had fractured any bones, therefore the intervention most likely prevented a GP visit and may have prevented a hospital admission.