Risk of premature ovarian failure health and social care essay

PHARMACEUTICAL CARE PLAN BMR MOHAMMED OUGRADAR 20403295

Fall

Long term use of steroidsPatient is taking steroids for treatment of Addison's disease (hydrocortisone and fludrocortisone) and asthma (fluticasone propionate in seretide 125 evohaler)BNF (2011)Long term corticosteroids can cause many adverse effects depending on: the type of corticosteroid – inhaled corticosteroids are less likely to cause side effects than oral corticosteroidscorticosteroid strength – as the dose increases, the likelihood of side effects developing increaseslength of treatment they are to be used – highly likely to experience side effects if oral corticosteroids are used for more than three monthsTherefore the patient should be counselled appropriately regarding their corticosteroids treatment and any preventative/monitoring measures should be arranged forAs this patient will be taking corticosteroids for more than three week, they should be given a steroid card (if they do not already have one) along with appropriate counsellingBNF (2011)Long term use of corticosteroids can increase the patient's susceptibility to infections, especially chickenpox and measles (see Addison's disease section)The patient is taking inhaled corticosteroids (fluticasone propionate in seretide 125 evohaler) that can cause thrushSee asthma sectionCorticosteroids taken longer than 3 weeks should not be withdrawn abruptly as that can cause an adrenal suppression for more than a year but should be reduced by the GP/doctor if necessary e. g. to reduce inhaled corticosteroid dose if asthma symptoms are controlled. Steroid withdrawal should be individualised for patient taking into account their addison's disease control, likelihood of adrenal crisis if steroids stopped and

asthma control. Corticosteroids also have psychiatric side effects including nightmares, insomnia, behavioural disturbancesPatient may possibly be suffering form insomnia as a side effect of her corticosteroid medication therefore zopiclone 3. 75-7. 5 mg ON prn was prescribedAs insomnia subsided zopiclone treatment was stopped on dischargeInsomnia may not have been due to a side effect of the corticosteroids and been due other reasons (such as patient being nervous to stay in hospital or worried about her condition, leading to short term insomnia) as patient has been on corticosteroids prior to admission without complaints of insomniaPatient should be counselled on the side effects relating to mineralocorticoid (fludrocortisone) and glucocorticoids (hydrocortisone) that is used to treat their Addison's disease: MineralocorticoidHypertension – usually has no obvious symptoms so regularly (more often as BP nears reference ranges) monitor (at home, pharmacy or GP) blood pressure to ensure it is within reference range less than 140/90 mmHg clnic BP or less than 135/85 for home monitoringIf above reference ranges contact GPGlucocorticoidDiabetes – counsel patient on symptoms of steroid induced diabetes (dry mouth, blurred vision, increased thirst) and to regularly monitor (at home or GP) their blood glucose levels (reference range – before meals 4-5. 9 mmol/L and after meals ynder 7. 8 mmol/L)Arrange for annual blood glucose check with patient's GPOsteoporosis – see steroid induced osteoporosis sectionCorticosteroid treatment is weakly linked to peptic ulceration and soluble/EC preparations' advantages are speculative only (BNF, 2011)Therefore do not initiate GI protection medication immediately but advise patient that if they experience a burning pain travelling upwards from their abdomen, indigestion or abdominal pain then to seek medial attention

and their GP/doctor may prescribe a proton pump inhibitorE. g. omeprazole 20 mg once dailyA steroid treatment card will be given to the patient which contains the warnings for effects of corticosteroids listed above (e. g. abrupt withdrawal is to be avoided and patient should avoid exposure to chickenpox and measles)The steroid card will also contain the patient's dose, conditions and treatment details in case of emergencies (doctors need to know patient takes regular corticosteroids)Counsel patient to always carry their steroid card with themThe patient could also be given a MedicAlert bracelet which contains the same information as the steroid card(BNF, 2011)Potential Stage 3 Renal ImpairmentPatient's test results shows a calculated creatinine clearance (cCrCl) (using Cockcroft & Gault equation shown below) of 54 mL/min which falls into the category of Stage 3– moderate renal impairment (30-59 mL/min) as stated in the BNF (2011); NICE 73 (2008) further classifies this patient renal impairment to be stage 3A (45-59 mL/min)Cockcroft & Gault equation: cCrCl = (140-Age) x Weight x 1. 04(mL/min) Serum creatinineNICE 73 (2008); Patient is at stage 3A (45-49 mL/min) which is described as moderate decrease in eGFR, with or without other evidence of kidney damage and should be typically tested 6 monthly. As cCrCl is less than 60 mL/min in first test; retest within two weeks. Quantify urinary albumin/protein excretion and confirm first abnormal result on an early morning sample (if not previously obtained). Patient has no risk factors of chronic kidney disease (diabetes, hypertension, cardiovascular disease, structural or renal tract disease, multisystem disease with potential kidney involvement). Progression as a decline in eGFR needs to be established and is classified when eGFR decreases by > 5 mL/min within 1 year – take at least three eGFRs over at least 90 days, for a new finding of reduced eGFR

repeat test within two weeks to exclude acute renal failure, consider whether the progressive renal function decline would consequent in renal replacement therapy within the patient’s lifetime. Chronic use of NSAIDs may be associated with progression; exercise caution and monitor GFRControl BP – keep under 140/90 mmHgPatients with renal impairment are more prone to proteinuria which can be seen by increased albumin excretion therefore measure albumin concentration. As patient’s renal function is not the same as a healthy individual, medication dosages will need to be clinically checked for their appropriateness and any unsuitable dose adjustments need to be made. Arrange for retest of cCrCl as described in previous column. Arrange for eGFR measurements to be taken to establish progression as a decline in eGFR as explained in previous column. Patient should be advised not to eat meat prior to the measurement as this can affect the results. As NSAIDs can promote CKD progression the patient must be advised to avoid OTC NSAIDs use. BP should be monitored and if not under 140/90 mmHg then consider ramipril 1. 25 mg OD. (NICE 127). ACE inhibitors (i. e. ramipril) can cause hyperkalaemia (by reducing potassium excretion) therefore monitor potassium levels before starting therapy, one week after starting therapy and at 6-12 month intervals once stable (i. e. 3. 8-5. 0)Counsel patient on initiation of ramipril: To take their first dose in the evening or just before going to bed (to avoid first-dose hypotension)Get up slowly from bed/when standing upTo attend GP appointments for monitoring potassium levels and to monitor BP and renal function if dose increased.(Brookes, 2003)Patient’s albumin levels (reference range – 30-52): 7/9/10 – 448/9/10 – 499/9/10 – 4113/9/10 – 38Patient does not have proteinuria as albumin levels (above) are within range but measure albumin regularly to ensure patient does not

develop proteinuria. Levothyroxine 75 mcg ODno adjustments neededHydrocortisone 15 mg BD plus 10 mg BD prnuse with caution in patients with renal impairmentFludrocortisone 300 mcg ODuse with caution in patients with renal impairmentAdcal D3 2 tablets ODno adjustments neededSalbutamol 100 mcg 2 puffs prnno adjustments neededSeretide 125 evohaler 2 puffs BDno adjustments requiredDomperidone 10 mg 8 hourly prndose reduction only needed if serum creatinine > 0. 6 mmol/L, not needed in this patient as throughout their stay in hospital serum creatinine was within range (0. 06-0. 12 mmol/L) as shown below: 7/9/10 – 0. 1068/9/10 – 0. 0969/9/10 – 0. 07313/9/10 – 0. 085CVD RiskPatient's records does not show evidence of previously calculated CVD risk e. g. lack of TC, HDL, LDL levels and is not any medication indicating CVD risk reduction e. g. statin therapyCalculate CVD riskCVD risk is higher is women who: SmokeHave a family history of CVDHDL cholesterol < 1. 2 mmol/LTG levels > 1. 7 mmol/LBMI > 30 kg/m2Patient is not obese as stated on PMR and weight = 52 kgimpaired fasting glycaemia (6. 1-6. 9 mmol/L)Pharmacological interventions to reduce CVD riskStatin therapy (NICE 73)Counsel patient about using statin therapyAntiplatelet drugs should not be used, as they are not secondary prevention. (NICE 73)Lifestyle advice should be given to the patient to reduce their CVD risk (SIGN, 2007)Calculate CVD riskQuery patient with regards to any family history of CVDMeasure TC, HDL, LDL levelsUsing CVD risk calculator charts (BNF, 2012) calculate the patient's CVD risk. Reduce CVD risk – primary prevention using statins such as simvastatin 40 mg OD. (NICE 73)Educate the patient when initiating statin therapyavoid grapefruit juiceside effects including muscle myopathy should be reported. Counsel the patient on lifestyle advice (SIGN, 2007) such as: giving up

smokingCan start smoking cessation by using nicotine replacement therapy (form dependant on patient choice e. g. gum) or by prescribed treatment e. g. bupropion (150 mg for six days then 300 mg for 7-9 weeks) or vanrenicline (500 mcg daily for 3 days then 500 mcg BD for 4 days then 1 mg BD for 11 weeks) (BNF, 2011)limiting alcohol consumption to less than 14 units per week, no more than three units in any one day and have two alcohol-free days in the weekhave a healthy balanced dietDiets low in total and saturated fats should be recommended to all for the reduction of cardiovascular risk. exercise regularlyPhysical activity of at least moderate intensity (e. g. makes person slightly out of breath) is recommended for the whole population (SIGN, 2007)VTE PROPHYLAXIS (NICE 92)VTE occurs as a result of thrombus formation in a vein (BNF, 2011)All patients should undergo a VTE risk assessment upon admission (BNF, 2011)A VTE risk assessment is needed to identify is the patient is at risk of VTE and prevent its occurrenceVTE is the immediate cause of 10% of all patient who die in hospital, costing the NHS £640 million a year (to treat long-term disability caused by VTE) (NPSA, 2011)Complete risk assessment form authorised by Department of Health based on NICE CG 92; Step one - All patients should be risk assessed on admission to hospital. Step two - Review the patient-related factors shown on the assessment sheet against thrombosis risk. Factors for this patient include; DehydrationDue to vomitingOne or more significant medical co-morbiditiesHypothyroidism, asthma, Addison’s diseaseSignificantly reduced mobility for 3 days or moreDuration of stay in hospital - 08/09/2010 – 14/09/2010Patient was feeling weak and suffered from generalised fatigue upon admission. Step three - Review the patient-related factors against bleeding risk such as active bleeding, acute stroke

and thrombocytopenia. This patient has no factors against bleeding risk. Start pharmacological VTE prophylaxis as soon as possible after risk assessment has been completed. Continue until the patient is no longer at increased risk of VTE (NICE 92). Actions that need to be taken to reduce VTE risk: Patient should be encouraged to regain mobility as soon as possible at their own pace. Patient should not become dehydrated (unless indicated for clinical reasons)If bleeding risk is greater than VTE risk then offer mechanical prophylaxis, or else pharmacological prophylaxis [NICE 92]Mechanical prophylaxis offered according to patient preference and clinical conditions. They include: anti-embolism stockingsnot contraindicated in this patient as they do not suffer from established peripheral arterial disease or diabetic neuropathy. foot impulse devicesmimics the natural physiological processes which maintains blood circulation in the legs and arms. Intermittent pneumatic compression devices. Employs pressure to a limb to force blood out of that area then periodically reduces pressure to allow increased blood flow to that limb. Pharmacological - Choice depends on co-morbidities (e. g. renal failure), patient preference and local policies. Options include: Fondaparinux sodium. Low molecular weight heparin (LMWH)E. g. Enoxaparin sodium 40mg (4000 units) every 24 hours for at least six days until patient is mobile. synthetic alternatives may be more acceptable to patients who want a non-animal based product. Unfractionated heparin (UFH) (for patients with renal failure). Patients should be reassessed within 24 hours of admission and whenever the clinical situation changes. This ensures the chosen option is: Suitable for the patientBeing used correctly for maximum benefitNot causing any adverse effectsMonitoringMonitor daily for signs and symptoms of VTE e. g. swelling, pain, and redness. Non-invasive

testing is recommended if VTE is suspected from signs and symptoms, which includes: Venous duplex - an ultrasound examining blood flowV/Q scan - ventilation/perfusion scan that looks at circulation of air and blood within the lungsCT angiography – to view blood vessels throughput the bodyRoutine screening with these tests is not recommended in asymptomatic patients. Patients should also be monitored for bleeding as bleeding can occur at injection sites of anticoagulation therapy. Patient is at an increased risk of VTE as has risk factors outlined in the assessment (dehydration, co-morbidities, reduced mobility) and as a result VTE prophylaxis is needed. For this patient pharmacological prophylaxis should be offered as thrombosis risk is greater than bleeding risk. Appropriate option; Enoxaparin sodium 40mg daily (subcutaneous injection) for 6-14 daysAppropriate choice as; Has a longer duration of action so once daily administration is sufficientReduced risk of heparin-induced thrombocytopenia (compared to unfractionated heparins) therefore regular platelet count monitoring is not recommended (BMJ, 2012)Anti-factor Xa does not need to be monitored as patient is not at risk of bleeding i. e. renally impaired or under/overweight(patient does not have renal impairment established). The patient’s calculated creatinine clearance of 54 ml/min does not require a dose reduction of enoxaparin sodium (dose reduced if cCrCl is less than 30 ml/min) (BNF, 2011)Has the best safety feature evaluation for a safer needle device, is easy to use with one hand without any training (Santillo, 2012)Patient informationBe aware that heparins are of animal origin and this may be of concern to some patients. If this patient has concerns about using animal products, consider offering synthetic alternatives based on clinical judgement and after discussing their suitability, advantages and disadvantages with the patient.

Before starting VTE prophylaxis, offer patients and/or their families or carers verbal and written information on: Signs and symptoms suggesting VTE; e. g. swelling, pain, redness, chest pain or dyspnoeathe risks and possible consequences of VTE e. g. pulmonary embolism can be fatalthe importance of VTE prophylaxis and its possible side effects (e. g. heparin side effects include haemorrhage and thrombocytopenia)how patients can reduce their risk of VTE (such as keeping well hydrated and, if possible, exercising and becoming more mobile). symptoms suggesting a severe allergic reaction, such as breathing difficulty, wheezing, and swelling of the face, lips, tongue, or throat (patient should seek medical attention if this occurs) (BMJ, 2012)Reassess patient’s VTE risk 24 hours post-implementation of VTE prophylaxis treatment to ensure the aim of prophylaxis is being achieved and the treatment is being used correctly without any side effects experienced by the patient. If the patient’s VTE risk is not satisfactory at the time of discharge then offer VTE prophylaxis treatment the patient can take home. If VTE is suspected from observations of signs and symptoms arrange for a non-invasive test as appropriate (dependant on symptoms) (BMJ, 2012)If bleeding is suspected at LMWH injection site, haemoglobin parameters (e. g. RBC, WBC, MPV, Hb, platelets) and coagulation parameters (e. g. fibrinogen, prothrombin time) should be checked and LMWH treatment discontinued (BMJ, 2012)(Platelet count monitoring for detection of heparin induced thrombocytopenia and anti-factor Xa monitoring is not required as explained above.)Mental Health [NICE91]Patient is suffering from three chronic conditions, which could lead to depression; hypothyroidismAddison’s diseaseAsthmaPatient is taking steroids long term which has psychiatric adverse effectsDepression can become a co-morbidity with the long-term

chronic conditions the patient is suffering from; Addison’s disease, hypothyroidism and asthma. Management of these conditions can lead to the patient entering a depressed state especially when side effects are experienced. This can result in poor compliance, which can be serious especially for patients suffering from Addison’s disease as the consequences can be fatal. Patient’s steroid medication; hydrocortisone, fludrocortisone, Seretide 125 can have adverse psychiatric reactions such as euphoria, behavioral disturbances and suicidal thoughts. (BNGF, 2011)These reactions may subside by lowering the dose but may need specific management e. g. insomnia is an adverse effect which may be treated with medication (see long term steroid use section)In this depressed state the patient’s diet and lifestyle could deteriorate e. g. alcohol/drugs misuse, smoking, lack of exercise. To identify depression NICE recommends a two question approach: During the past month, have you: Felt low, depressed or hopeless? Had little interest or pleasure in doing things? Antidepressants are not recommended for the initial treatment of mild depression, because the risk-benefit ratio is poor (NICE 91). Patient should be signposted and/or referred to relevant help groups/physicians that can support the patient recognize symptoms of depression and also aim to promote behavioral changes to increase adherence (by avoiding the patient entering a depressed state)Explain to the patient the association between their chronic conditions, steroids’ psychiatric adverse reaction and possible depression as the rationale behind undertaking a mental health assessment. Patient should be advised to seek medial advice if psychiatric symptoms occur, especially depression and suicidal thoughts. Patient should also be educated that such reactions can also occur during withdrawal of corticosteroid treatment. (BNF, 2011)Counsel

patient on importance of compliance to prevent complications such as adrenal crisis that could be fatal and to maintain a healthy lifestyle, which can help decrease the chances of depression. If the patient answers ‘ yes’ to either question referral should be made to GP who should carry out a more thorough mental health assessment, which does not simply rely on symptom count. If depression is suspected severity of the depression can be further explored using a patient self-questionnaire such as PHQ-9 which can be used to make a tentative diagnosis of depression. Undertaken at discharge – see discharge issues sectionHypothyroidismPatient is recorded to be on long term medication for hypothyroidism – levothyroxine 75 mcg ODPMH – previously diagnosed hypothyroidismThere is an intrinsic relationship between thyroid function and adrenal function. Hypothyroidism often means the sympathetic nervous system that controls the adrenal glands is usually weaker (McEvoy, 2011). Patient has been diagnosed with hyopthyroidism as stated on PMH and medication has already been started prior to admission i. e. levothyroxine 75 mcg once daily. Patients PC/HPC includes increasing generalized fatigue and feels generally weak – this can be due to decreased thyroxine secretion therefore further investigation is required. Tests that can be carried out include: TSH levels in the bloodTSH levels should be checked to ensure thyroid levels are within range (0. 4-6. 0) to confirm the patients hypothyroidism is controlled. T4 levels in the bloodTest results would show high TSH levels and low T4 levels if the patient had hypothyroidism uncontrolled by their medication as the thyroid gland would be secreting reduced amounts of thyroid hormones (which includes T4). This is detected by the pituitary gland which tries to correct the imbalance by increasing TSH secretion. Treatment for hypothyroidism includes administration of thyroid

hormones to restore the deficiency; Levothyroxine sodiumInitially 50-100 mcg daily; adjusted every 3-4 weeks according to clinical response in steps of 25-50 mcg (Usual maintenance dose is 100-200 mcg daily)Liothyronine sodiumInitially 10-20 mcg daily followed by gradual increase to 60 mcg daily in 2-3 divided doses. Review patient's knowledge regarding hypothyroidism that they should have received during initial diagnosisThe patient's current medication for treatment of hypothyroidism (levothyroxine sodium 75 mcg) should not be given until the uncontrolled Addison's disease has been treated as it can lead to an Addisonian crisis. TSH levels were found to be 5. 19 on 8/9/10 which is within range. However, this is not a direct measure of hypothyroidism therefore thyroid hormones i. e. T4 levels should be checked. Arrange for a T4 test to be undertaken. Levothyroxine sodium is the appropriate choice of treatment for this patient compared to liothyronine sodium as the former is commonly used for maintenance therapy and the latter for emergencies due its rapid onset of action (e. g. hypothyroid coma) (BNF, 2012). The patient's current daily dose of 75 mcg should be investigated as it is not the usual maintenance dose but it is possibly correct is the patient's diagnosis of hypothyroidism is recent. The GP can be contacted to query the patient's length of treatment so far and the date and results of her last thyroid tests. If the last thyroid test was 3-4 weeks ago then it should be carried out now to allow appropriate dose adjustment. The patient should be counseled that she should attend 6 weekly thyroid function tests after dose changes until her condition is stable. After being stable these tests are carried out annually. The patient should be counseled that: Levothyroxine should not be concurrently taken with her calcichew D3 as absorption of levothyroxine will be reduced which is especially important as

levothyroxine has a narrow therapeutic index (keep 4 hours in between taking the two medications) (BNF, 2011)Levothyroxine sodium should be taken on an empty stomach, preferably 30 minutes - 1 hour before breakfast (to avoid any foods affecting the absorption of levothyroxine) with a full glass of water (or levothyroxine may dissolve too quickly and expand in the throat causing the patient to possibly choke)If they are unable to swallow the tablet intact, the levothyroxine may be crushed and placed in a small amount of waterSpecific diet counseling should also be given to the patient – to eat food rich in iodine content such as fish and dairy products (daily iodine requirement 1-2 ug/kg = 52-105 ug for this patient). Iodine allows efficient thyroid hormones synthesis. MSSA prophylaxisMSSA (+ve) in medical notes on 08/09/10Surveillance must be undertaken routinely as part of the hospital's infection control programme and must be a recognized element of the clinical governance process. As such, there should be clear arrangements identifying those responsible for acting on the results in individual hospital directoratesMSSA can cause infections as serious as MRSA so patient must undergo disinfection by using the prescribed mupirocin 2% nasal ointment and chlorhexidine 4% preparation. It is essential the patient is educated about how to apply the preparations and how long the treatment should last. Counseled patient that the nasal ointment was to be applied to each nostril. After two days a sample will be taken to confirm MSSA eradication. As the result on 08/09/2010 was positive treatment should continue for three more days (as treatment length is five days). Upon treatment completion another sample should be taken to ensure eradication of MSSA. If the result is positive, repeat treatment for maximum of five days (to avoid resistance (BNF, 2012)). Take a further sample; if result is positive

the strain is mupirocin resistant so replace muporicin with chlorhexidine cream (BNF, 2012). The patient was also counseled regarding the use of the chlorhexidine 4% bathing and shampoo (hibiscrub)Bathing - applied daily directly to wet skin paying particular attention to areas around the nose, under arms and feet and between the legs. Shampoo – used twice within five days of treatment. After use rinse off well (as preparation contains chlorhexidine) and dry using a clean towel. OsteoporosisPatient is currently taking steroids long term which could induce osteoporosis i. e. hydrocortisone and fludrocortisone for treatment of Addison's disease, and seretide 125 evohaler. Patient is on medication indicating she has a risk of osteoporosis i. e. Adcal D3Steroids increases calcium excretion by affecting calcium absorption in the gastrointestinal tract which leads to lowered amounts of calcium in the body. The patient should be investigated whether she is at risk of developing this condition by: DEXA scanMeasures bone mineral density of the hip bone. If result is less than 2. 5 standard deviations of the mean value for a young adult female then a diagnosis of osteoporosis can be made. As the patient is less than 65 years old and if she has been taking steroids for more than three months, this scan is appropriate. Ultrasonography of the heelIf a diagnosis of osteoporosis is made then initiate pharmacological treatment. Options include: Bisphosphanates such as alendronic acid 5 mg dailyTeriaratide 20 mg daily subcutaneous injectionHormone replacement therapy is not considered as the patient is 33 years old so very unlikely to be post-menopausal. For prevention of hypo/hypercalcaemia during treatment, the patient's calcium levels should be measured and also because patient is taking pharmacological doses of vitamin D (i. e. Adcal D3) and recorded to have been nauseous and vomiting

(BNF, 2011)If the patient does not have a diagnosis of osteoporosis then pharmacological treatment is not necessary but counseling should be provided to reduce the risk of steroid induced osteoporosis. Arrange for a DEXA scan. Whilst waiting for the test to be carried out and to receive the results, the patient can be given Calcichew D3 Forte 1 tablet twice a day. This is to prevent osteoporosis as dietary calcium intake and vitamin D from natural sunlight will not be enough for this patient. Additionally Calcichew D3 Forte contains twice the recommended allowance of calcium which helps decrease rate of bone loss and reduce risk of fractures (BNF, 2012). If a diagnosis of osteoporosis is made then alendronic acid 5 mg daily should be initiated. Counseling should be given with regards to this medication to obtain maximum therapeutic effect: Swallowed whole with plenty of water, whilst standing or sitting in an upright position for at least 30 minutes after taking the medication (to prevent any oesophageal reactions and side effects such as abdominal pain, heartburn and bloating). Should be taken on an empty stomach at least 30 minutes before any oral medication or breakfast (BNF, 2012). To leave a two hour gap between the alendronic acid and Calcichew D3 as bisphosphanates reduce calcium absorption (BNF, 2012)Absorption of bisphosphanates is also reduced by iron supplements so these should not be taken at the same time. During bisphosphonate treatment patient should maintain good oral hygiene, receive routine dental check-ups (intervals decided by dentist) and report any oral symptoms such as dental mobility, pain or swelling (as bisphosphonates carry a risk of osteonecrosis of the jaw). Patient should be advised to notify dentist about their treatment with bisphosphonates prior to any dental surgery as it can increase the risk of osteonecrosis of the jaw (BNF, 2011)Calcichew D3 Forte

tablets would replace the Adcal D3 tablets as the former contains more calcium (100 mg more) which is needed as oral corticosteroids that the patient is taking for Addision’s disease reduces calcium absorption (BNF, 2012). Calcium levels were found to be within the reference range (2. 12-2. 63) throughout the patient’s stay in hospital; 7/9/10 – 2. 408/9/10 – 2. 389/9/10 – 2. 4913/9/10 – 2. 47Although the measured calcium levels were within range, monitoring would still be required of plasma-calcium concentrations at regular intervals (initially once or twice weekly, or when nausea or vomiting occurs) (BNF, 2011)If osteoporosis is not diagnosed after the DEXA scan then the following counseling should be given to prevent the patient developing osteoporosis from long term steroid use: To not consume tobacco in any form e. g. smoking as tobacco can cause bone lossEat calcium rich foods e. g. milk, cheese, yoghurt. Engage in weight bearing and muscle strengthening exercises regularly according to the patient’s capacity (ideally 30 minutes daily for five days of the week). Even if osteoporosis was not diagnosed in this scan, the patient should be rescanned in 1-3 years as they will continue to be on steroids for long-term therefore the risk of developing osteoporosis is not diminished. Penicillin allergyStated on patient’s records but reaction unknown. An allergy to penicillin was noted on the patient’s records, however the reaction is unknown – therefore investigate if this was a " true" penicillin allergy by: contacting GP (to confirm allergy status)care or discuss with patient to establish whether this is a true allergy and to obtain a description of the reaction if it has occurred in the past and its severity. Skin testing and immunoassays for determining levels of specific IgE antibodies. A " true" penicillin allergy includes anaphylaxia or urticaria immediately after penicillin administration (NHS,

2005)Reactions such as GI disturbances or a rash occurring more than 72 hours after penicillin administration indicates an intolerance to penicillin rather than an allergy therefore penicillin should not be withheld unnecessarily. In the case of a true penicillin allergy the patient should avoid: AmoxicillinAugmentinAmpicillinBenzylpenicillin/Penicillin GFlucloxacillinPhenoxymethylpenicillin/Penicillin VPiperacillinPivmecillinamTicarcillin(BNF, 2011)Contact patient's GP to ask whether penicillin had been prescribed before and if any reaction experienced was due to a true penicillin allergy or another factor e. g. side effect of another medication. A description of the reaction can be obtained from the GP and/or patient. Once the patient's allergy status has been confirmed, notify patient and record it on PMR detailing nature of reaction. Advice patient for future reference to avoid all medication containing penicillin as prescribers may overlook this. A list of penicillin-containing medications can be given to the patient for reference (as stated in previous column)AnaemiaPatient's test resultshaemoglobin levels were lower (10. 9) than reference range (11. 5 – 16. 5) on 13/9/10MCV was lower than reference range (79-97) on 07/09 (78) and 08/09 (78. 9)(Note: RBC levels are within range)Low Hb levels (anaemia) with low MCV levels indicates patient has iron deficiency anaemia: Iron deficiency anaemia should be confirmed by measuring sodium ferritin levelsIron deficiency can be caused bypatient not including enough iron in their dietMeat contains more iron than vegetables so if patient is vegetarian this might be the cause of their iron deficiencyor from heavy menstrual periodscorticosteroids could also induce iron deficiencyFerritin levels less than 12 mcg/L confirms iron deficiency anaemiaInvestigate if patient has a diet with poor iron intake. If they do

then: Patient will be offered referral to a dietician who can advise on specific dietary advice such as eating iron rich foods e. g. dried apricots, beans, nuts. Ask patient if they are having heavy menstrual periods. If they are then iron supplements can be advisedIf the above two cause are ruled out after asking patient then consider iron deficiency may be caused by the patients corticosteroids (hydrocortisone, fludrocortisone, seretide)Patient should be started on ferrous sulphate 200 mg daily to raise Hb levels back within range. Patient should be counseled with the following: Take medication with plenty of water, preferably with or after meals. Be mindful of side effects (which reduce with time) such as constipation, which can be treated with laxatives (e. g. Senna 2 tablets ON)Arrange to check FBC in 2-4 months to check HB levels have returned to normalOnce Hb levels have returned to normal continue treatment for three and arrange regular FBC every three months for one year (then again after a year)(Harper, et al., 2011)RISK OF PREMATURE OVARIAN FAILURE (POF): Patient is 33 years old and suffers from autoimmune Addison’s disease(medical notes)POF must be investigated in females who have been diagnosed with Addison’s disease as it compromises the functioning of the ovaries due to a reduction in the adrenal dehydroepiandrosterone (DHEA) precursor which is essential for synthesising oestrogen (Brunton et al., 2008). POF is characterised by ammenorhoea (absence of the menses) therefore enquire regarding the regularity of the patient’s menstrual cycle. If POF is suspected then it is important to investigate further to establish a diagnosis. Tests include: Pregnancy test- this is the first test that must be carried out in all women of child-bearing age in order to rule out pregnancy. It involves detecting the human chorionic gonadotropin (hCG) hormone in the blood or urine. Blood tests- this will

provide an indication of whether the follicle stimulating hormone (FSH) levels are elevated (> 40 µIU/mL) showing that the brain is attempting to stimulate the ovaries however, they are failing to respond. This test must be carried out twice at least a month apart. Another marker for detecting POF is the serum estradaiol hormone which is expected to be low in such patients. The combination of high FSH and low serum estradiol point towards a diagnosis of POF. Treatments for POF include: hormone replacement therapyestrogen & progestinandrogens e. g. DHEA.(Popat, 2011)Enquire about the patient's menstrual cycle to spot any irregularities or absences that may indicate POF. If this is the case then the patient should be scheduled for a pregnancy test in order to rule out pregnancy followed by relevant blood tests to assess the levels of FSH and serum estradaiol. If the levels of both these hormones are high then a diagnosis of POF can be confirmed. The patient and her partner must be informed about this. It is important to counsel them as POF can be life-changing as well as emotionally challenging especially for young adult females who may not have children or want more in the future therefore the matter must be dealt with great sensitivity. The pharmacist can give the patient hope by discussing the various treatments that are available for POF such as hormone replacement therapy, estrogens, progestins and androgens (DHEA) and advise her to take some time to come to terms with the diagnosis. Meanwhile, she should be directed to sources of help like referral to a specialist or support groups where she will be able to interact with other women in the same position as her. See discharge issues sectionDischarge issuesPatient discharged on 14/9/10The drugs the patient will be discharged with should be clinically checked to ensure their dosages are correct and they have been counseled regarding all medication. Recommendations for

any relevant HCPs should also be made to ensure follow-up care is carried out. Referrals and signposting to relevant physicians or support groups should also be carried outPatient's final drug list: Levothyroxine 75 mcg ODHydrocortisone oral 15 mg OM, 10 mg midday, 10 mg evening and 10 mg ONFludrocortisone 200 mcg BDCalcichew D3 Forte 1 tab BDSalbutamol 100 mcg 2 puffs prnSeretide 125 evohaler 2 puffs BDCo-codamol 30/500 2 tablets QDS prnDomperidone 10 mg 8 hourly prnSlow sodium 2 tablets QDS(For patient counseling information see relevant sections to each medication listed)Recommendations to GP: Review slow sodium tablets treatment in one week to ensure sodium levels are back within range (if they are consider discontinuation of slow sodium tablets)Review pain therapy – see Addison's disease sectionAnnual blood glucose levels and BP checks – see long term steroid use sectionKeep reviewing patient's levothyroxine dosage – currently 75 mcg OD, to be increased in steps of 25-50 mcg every 3-4 weeks (usual maintenance dose – 100-200 mcg OD) (BNF, 2011)To explore mental health more by completing a thorough assessment not simply based on symptom count – see mental health sectionTo explore patient's CVD risk and whether statin therapy is needed to reduce risk – see CVD risk sectionIf patient smokes to possibly prescribe medication to help stop smoking – see CVD risk sectionReview patient's inhaled corticosteroid dose – if asthma is well controlled consider lowering dose of seretide 125 evohaler (fluticasone propionate dose range – 50-200 mcg BD)This could decrease possible side effects of long term steroid use – see long term steroid use sectionRecommendations to community pharmacist: Conduct annual MUR to regularly check compliance and inhaler techniqueCheck BP of patient regularlyIf patient smokes use motivational interviewing to start

smoking cessation – see CVD riskRecommendations to patient: Ensure prescriptions for medications are timely ordered to avoid running out of medicationsPatient can complete the Asthma Control test 5 questions by themselves online to check their asthma control. To follow all counseling given to them regarding Addison’s disease management and asthma inhaler technique and cleaningReferral/signposting could be made to: Addison’s disease self help groupAsthma UK – help and advice from asthma nurse specialists (online and telephone support)The Daisy Network – support group for POF patients