LJMU HOSPITAL PHARMACY PLACEMENTS

Guidance document

Instructions

This booklet will guide you through all of the steps needed to undertake a thorough pharmaceutical review of a newly admitted patient. You should work through each section one at a time and in the order presented. Follow the instructions in each section carefully and document your findings in the corresponding section of the Patient Booklet. Some tasks are peer assessed and this is explained as you progress through the guidance document.

You must NOT include any patient identifiable information at any point in any of your work. Patient identifiable information is ANY information that could be used to identify a patient either directly or indirectly such as name, date of birth, address or hospital/NHS number.

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Section 1: Consent

Task 1.1 - Gaining consent

Prior to starting any of the other tasks in this workbook, you must gain consent from the patient. If the patient refuses to give consent, you must not access their records and you should find another patient.

Complete this task as a pair; one person speaks with the patient and one person confirms that all steps have been completed.

Sten
Introduce yourself to the patient
Explain that you are a pharmacy student from LJMU and would like their consent to look at
their medical records and to speak with them for your learning
Explain that they do not have to consent but that this will greatly help with your studies
Explain that you will not be recording any of their personal information (name, address or
hospital number)
Explain that you will look at their GP records, clinical case notes, observations, medication
and blood results but that you will not need to undertake any physical exam
Explain that as a student, you will not make any direct contributions to their care and any
suggestions that you have will be reviewed by a pharmacist
Record the patient's consent in Section 1 of your Patient Booklet

Section 2: Data collection

Task 2.1 – Gathering Admission Information

You will need to access a patient's case notes to gather the information you require.

Work through the checklist and document your thoughts within Section 2.1 of your Patient Booklet. You must <u>NOT</u> include any patient identifiable information.

Step	Considerations
Access the patient's case notes and find the point at which the patient was admitted to hospital	Ensure you are reviewing the patient from the beginning of their admission
	Most patients are admitted via A&E / ambulatory care, although some come from other places such directly from clinics, or as a transfer from another hospital
Find the patient's demographic information – record the patient's initials and age	Do not record patient identifiable data
Identify and record the patient's presenting complaint (PC)	What needs treating and how long has it been a problem? Could this admission be due to an adverse drug reaction?
	Are there any hospital guidelines/treatment pathways that can be followed?
Identify and record the patient's history of presenting complaint (HPC)	Has the patient been recently discharged? If so, Is previous discharge summary available as a source for a drug history.
	Recent admission may affect treatment choices (e.g. hospital acquired infections)
Identify and record the patient's past medical history (PMHx)	PMHx will give us clues to other medication the patient might/should be on.
	The patient's other conditions may affect drug choices (contra-indications/drug-disease interactions, cautions or doses)
Identify and record any relevant social history – think about what might be important from a pharmacist's point of view	Who looks after the patient's medication at home?
and ignore anything that won't aid in the delivery of pharmaceutical care (e.g., is the patient a nursing home resident?)	Who will be the best source of information patient/carers/family? For example for nursing home patients, MAR charts would be best.
	Does the patient need smoking cessation advice/NRT or have alcohol dependence issues and require thiamine replacement?
Identify and record any relevant family history	Parent's and grandparent's medical conditions
Identify and record the medical team's impression/diagnosis and plan	What treatments are they initiating or stopping? Are they altering the patient's regular medication?
Complete the new conditions CPD table in Appendix C of your patient booklet for any new conditions you encounter	See Appendix C in your Patient Booklet

Task 2.2 – Performing a Medication History (Peer Assessed Activity)

Complete this task as a pair, one student should speak with the patient and record the information in the table in section 2.2 of your Patient Booklet. The other student should use the peer assessment form in Appendix A of your Patient Booklet to prompt and grade the interaction.

You should review the patient's PMHx from task 2.1, prior to speaking with the patient, as this will give you an idea of the medication the patient might be taking.

Step	Done Y/N/NA
Review patient's PMHx – consider what medication you expect the patient to be on based on their PMHx	
Determine where the patient has been admitted from – if they have been transferred from a nursing home or another hospital then you will need these records	
Introduce yourself by name and role, confirm that you have the right patient (ask name and date of birth), and ask the patient what they would like to be referred to as	
Explain the reason for the consultation and ask for consent to access their SCR (if available) – you can get this from your supervising pharmacist	
Ask about any allergies and any reactions to allergens – ensure you ask for details of the reaction (rash/anaphylaxis/angioedema are true allergic reactions whereas vomiting/diarrhoea are not)	
Ask how the patient normally manages their medicines at home: Does anyone help them with their medication at home? Do they have a compliance aid (e.g. blisterpack)? If someone else helps them, consider getting the contact details of these, informing the ward pharmacist and closing the consultation here.	
Ask about their regular/repeat medication and confirm names, doses, frequencies, dosage form Do they have a list of medicines with them (e.g. GP repeat slip)? Have their brought in their medicines - check the names and dates on the labels make sure they are for your patient, if the dates are old confirm with the patient that they still take them.	
Ask if the patient uses and inhalers, nebulisers, oxygen, eye drops, creams/ointments, injections, contraception (as appropriate for patient age and gender), patches, etc. – These medicines that are easily forgotten by patients	
Enquire about recent courses of medication or recently discontinued medicines – e.g. course of antibiotics or steroids	
Enquire about any over the counter (OTC), herbal or supplementary medicines they take	
Ask about whether they attend any clinics or get medicines from somewhere other than their GP and community pharmacy (e.g., another hospital, private clinic?)	
Ask any other specific follow up questions – these should be based on your review of their PMHx or the answers they have already given	
Seek any further clarification as needed – is there anything you might have missed? Can always summarise to the patient if this is helpful	
Thank the patient and close the encounter properly	
Complete self-reflection based on your peer review – did you miss any steps? Did you need any prompting? See Appendix A of your Patient Booklet	
Complete a student formulary entry for any new medicines you encounter – see Appendix D of your Patient Booklet	

Task 2.3 – Patient Observations/ National Early Warning Score (NEWS)

You will need to ask one of the nurses, healthcare assistants or student nurses if you can observe them taking patient observations; you will have to wait until the next observation round for this. You can use the information gathered here to review the suitability of drugs and doses in subsequent tasks.

Work through the checklist and document your readings within Section 2.3 of the Patient Booklet. You must <u>NOT</u> include any patient identifiable information.

Step	Consideration
Observe a member of staff taking and recording the patient's observations	Note the process and equipment the staff member uses
Review and record the most recent observations and those on admission	Single readings are less useful than trends
After observing, review the observation chart (NEWS chart) and identify any abnormal readings	Consider how the medication affects observations - see table below
Calculate the patient's national early warning score (NEWS)	A high or increasing NEWS may indicate a deteriorating patient. Ask staff when the NEWS might trigger additional reviews/interventions

Observation	Considerations
Respiratory rate	Rates outside normal values may indicate uncontrolled respiratory disease,
	infection or thromboembolism (pulmonary embolism).
SpO ₂ (oxygen saturation)	Saturation targets are patient dependent (see Scale 1/Scale 2).
	Low saturations may indicate uncontrolled respiratory disease, infection or
	thromboembolism (pulmonary embolism).
Temperature	Spikes in temperature may indicate uncontrolled infection
Blood pressure	Do any antihypertensives need adjustment?
	Is the patient on fluids to help maintain blood pressure?
	In hospital, hypotension is more of a concern than hypertension.
Heart rate	Does any of the patient's medication affect heart rate?
Level of consciousness	Reduced levels of consciousness or new/worsening confusion may indicate that the
AVPU (alert, alert to voice,	patient is unwell (unable to adequately oxygenate the brain).
alert to pain, unresponsive)	Does any of the patient's medication cause sedation?
Capillary blood glucose	Does the patient have diabetes? When was the reading taken in relation to meals?
(CBG) level	Blood sugars <4 should be treated as hypoglycaemia. High levels (>14) may require
	adjustment of therapy. Very high levels (>20) may need additional tests e.g.,
	ketones and adjustment of therapy.

Task 2.4 – Reviewing Patients Weight and Height Using the Malnutrition Universal Screening Tool (MUST)

When patients are admitted, their height and weight must be documented. This helps with drug dosing, renal function calculations etc., as well as identifying patients who are malnourished. If not documented when you go to review the patient, you can ask the patient if they know. If they don't know ask the nursing staff to undertake the MUST when possible. Work through the checklist and document your readings and calculations within Section 2.4 of your Patient Booklet. You must <u>NOT</u> include any patient identifiable information.

Step	Considerations
Determine the patient's height	Check patient's notes. Has this already been recorded?
Determine the patient's total body weight (TBW)	Check patient's notes. Has this already been recorded?
Calculate their ideal body weight (IBW) using the equation below	Other equations for ideal body weight exist.
Calculate the patient's body mass index	BMI <18.5 Underweight 18.5-24.9 Healthy 25-29.9 Overweight 30-34.9 Obese >35 Extremely obese
If BMI >30 or if TBW is more than 20% over their ideal body weight, calculate their adjusted body weight (AdjBW) using the equation below	If the patient is significantly overweight, the adjusted weight gives a better estimate for their lean body weight.

Equations

IBW (kg):

Males: IBW = (2.3 x every inch > 5 foot) + 50Females: IBW = (2.3 x every inch > 5 foot) + 45.5

AdjBW (kg) = $IBW + 0.4 \times (TBW - IBW)$

BMI (kg/m²) = weight (Kg) / height $(m)^2$

Task 2.5 – Reviewing the Patient's Laboratory Results

Review the patient's laboratory results specifically looking for abnormal results. Normal results (i.e., those that are 'in range' do not require much attention). Work through the checklist and document the latest readings and the readings on admission within Section 2.5 of your Patient Booklet. You must <u>NOT</u> include any patient identifiable information.

Step	Considerations
Check and record the patient's full blood count (FBC) – Concentrate on: Haemoglobin (Hb), Platelets (Plts), White Blood Cell Count (WBCC)	Low Hb may indicate anaemia (see additional tests such as MCV, MCH, and iron studies. Low plts may affect drug treatments (antiplatelets/anticoagulants) Raised WBCC may indicate infection or may be due to steroids
Check and record patients clotting screen – PT/APTT and INR	Deranged clotting may be due to medication and/or may affect treatment choices and can give an indication on hepatic function
Check and record the patient's renal profile (U&Es and eGFR) – Sodium (Na), Potassium (K), Urea (Ur), Creatinine and eGFR	Creatinine, urea and eGFR, will give information about renal function Derangements in electrolyte values may require further treatment – see individual trust guidelines.
Check and record the patient's bone profile - Concentrate on Adj Calcium (adjusted calcium), Phosphate and Albumin	Derangements in calcium and/or phosphate values may require further treatment – see individual trust guidelines Albumin may be low due to liver disease or infection/acute-illness
Check and record the patient's liver function tests (LFTs) – Concentrate on Albumin, Alkaline Phosphatase (Alk Phos), Bilirubin(Bili) and the transaminase enzymes (Alanine Aminotransferase (ALT) and Aspartate Transaminase (AST))	Low albumin levels may indicate synthetic liver disease – correlate with patient's history and other LFTs Raised Alk Phos usually related to obstructive liver disease particularly if bilirubin also raised. Raised ALT usually related to liver damage/cirrhosis
Check and record the patient's acute phase reactants/inflammatory/infection markers (CRP)	CRP can be an indication of infection but may be chronically raised in patients with underlying inflammatory diseases e.g. rheumatoid arthritis
Check and record any culture results and sensitivities	Cultures and sensitivities take several days to return. This may impact antibiotic choices
Check and record any COVID swab results	Patients with COVID will require isolation and may require additional treatment – see individual trust guidelines
Check and record resistant organism screens	Presence of MRSA will required decolonisation – see individual trust guidelines Presence of ESBL/AmpC organisms may affect antibiotic choices Presence of CPE may affect antibiotic choices and will require the patient to be isolated. VRE and <i>Clostridium difficile</i> need consideration
Note any abnormalities to reference later as you may discover that drugs you recommend are impacted by these abnormalities	Complete reflection/CPD as necessary

Section 3: Analysis

Task 3.1 – Calculating Renal Function

You will need to calculate the patient's renal function as this will affect the patient's medication. You will use your estimate of renal function when reviewing the suitability of drug doses and choices in subsequent tasks. If available, you should review previous creatinine values, you will need this to determine if the patient is in acute kidney injury (AKI). Work through the checklists document your calculations within Section 3.1 of your Patient Booklet **You must NOT include any patient identifiable information.**

Step	Considerations
Review previous creatinine values	If there is a significant change in the creatinine values from previous readings or if the creatinine values are elevated in patient without history of kidney disease, consider the possibility of AKI – see task 3.2
Calculate the patient's estimated Creatinine Clearance (CrCl) using the Cockcroft and Gault equation based on their most recent creatinine values	Use the most appropriate weight for this. If significantly overweight or obese, use the AdjBW
Compare this to the patient's estimated Glomerular Filtration Rate (eGFR)	This is usually included in the patient's results. Calculations for this are specific to the hospital
Document your findings in the Patient Specific Proforma	You will need to use this value when reviewing the patient's medication

Equations:

Males: eCrCl (mL/min) = $(140 - age) \times 1.23 \times weight$ (Kg) SrCr (micromol/L)

Females: $eCrCl (mL/min) = (140 - age) \times 1.04 \times weight (Kg)$ SrCr (micromol/L)

Task 3.2 – Patients with Acute Kidney Injury (AKI)

Only complete this task if you identify that your patient has an AKI from section 3.2. Document your findings (if applicable) in Section 3.2 of your Patient Booklet.

Step	Considerations
	KDIGO (kidney disease: Improving Global
	Outcomes)
Grade the AKI and document in the patient specific	Stage 1: 1.5 – 1.9 x baseline or increase ≥27umol/L
proforma - (urine output is also used to determine AKI but	Stage 2: 2-2.9 x baseline
we will only use change in creatinine)	Stage 3: 3x increase from baseline Or creatinine ≥
	354 Or requires initiation of renal therapy such as
	dialysis/hemofiltration Or eGFR <35ml/min
Review the patient's case notes to identify the likely	Is it pre-renal, intra-renal or post-renal?
cause(s) of the AKI – discuss with the ward pharmacist.	
Does your assessment match theirs?	See below – causes of AKI
Consider if any medicines might have caused or will worsen AKI	Are any of the patients medicines "nephrotoxic"
Consider if any medication might cause accumulation of	Side effect of hyperkalaemia will be enhanced by
potassium	AKI
Consider if any medication might accumulate in AKI	Review doses of medication – use BNF and renal
leading to risk of side effects	drug handbook

Causes and management of AKI

Cause	Mechanism	Management
Pre-renal	Reduced perfusion of kidneys due	Hold medication that might reduce
	to drop in effective circulating	blood volume/pressure
	volume. This can be due to loss of	(diuretics/antihypertensives)
	volume or loss of vascular tone e.g.	Treat infection/sepsis
	infection/sepsis	
Renal	Damage to the renal cells due to	Remove any nephrotoxic medication
	drugs (common), toxins, auto-	Immunosuppressants/steroids if
	immune disease/processes (rarer)	cause is autoimmune disease
Post renal	Obstruction to the outflow of urine	Relieve obstruction with urinary
	(often diagnosed with ultrasound	catheter, suprapubic catheter,
	looking for hydronephrosis (water	nephrostomy dependent on level of
	on the kidney)	blockage

Task 3.3 - Reviewing a Venous Thromboembolism (VTE) Risk Assessment

It is thought that around 25,000 deaths from VTE occur each year in hospitals in England. Evidence however suggests that many of these deaths are avoidable if a patient is assessed for risk of VTE and prescribed appropriate prophylaxis, based on national guidelines.

Although pharmacists tend to not be involved in undertaking VTE assessments, the role of clinical pharmacists will always involve reviewing assessments to ensure that they are undertaken correctly, with the correct information and at the correct times, to ensure that patients receive adequate pharmacological and non-pharmacological prophylactic management, in order to ensure that the risk of the patient developing a VTE due to a hospital admission is reduced and managed adequately and competently.

Below is a copy of a Risk Assessment for VTE (adapted from the department of Health for your information). Please follow the checklist below and document your findings in Section 3.3 of your Patient Booklet. You must <u>NOT</u> include any patient identifiable information.

Note: pharmacological thromboprophylaxis for VTE is normally with low molecular weight heparins (LMWH), the choice of which is trust dependent

Risk Assessment for Venous Thromboembolism (VTE)

All patients should be risk assessed on admission to hospital. Patients should be reassessed within 24 hours of admission and whenever the clinical situation changes.

STEP ONE

Determine if the patient already on anticoagulation prior to admission. Patients already on LMWH, warfarin, or DOACs (such as apixaban or rivaroxaban etc.) will not normally need additional LMWH

STEP TWO

Assess the patient's level of mobility (tick one box). All surgical patients, and all medical patients with significantly reduced mobility, should be considered for further risk assessment.

STEP THREE

Review the patient-related factors shown on the assessment sheet against thrombosis risk, ticking each box that applies (more than one box can be ticked).

Any tick for thrombosis risk should prompt thromboprophylaxis according to NICE guidance.

The risk factors identified are not exhaustive. Clinicians may consider additional risks in individual patients and offer thromboprophylaxis as appropriate.

STEP FOUR

Review the patient-related factors shown against bleeding risk and tick each box that applies (more than one box can be ticked).

Any tick should prompt clinical staff to consider if bleeding risk is significant enough to prevent use of pharmacological prophylaxis with anticoagulants such as LMWH.

Mobility	Tick		Tick		Tick
Surgical patient		Medical patient expected to have reduced mobility relative to normal state		Medical patient NOT expected to have reduced mobility relative to normal state	
Assess for thrombosis an	d bleeding risk k	below		Risk assessment now complete	

Factors that increase thrombosis risk (risk of PE/DVT)				
Patient related	Tick	Admission related	Tick	
Active cancer or cancer treatment		Significantly reduced mobility for 3 days or more		
Age > 60		Hip or knee replacement		
Dehydration		Hip fracture		
Known thrombophilias		Total anaesthetic + surgical time > 90 minutes		
Obesity (BMI >30 kg/m²)		Surgery involving pelvis or lower limb with a total anaesthetic + surgical time > 60 minutes		
One or more significant medical comorbidities (e.g., heart disease; metabolic, endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions)		Acute surgical admission with inflammatory or intra-abdominal condition		
Personal history or first-degree relative with a history of VTE		Critical care admission		
Use of hormone replacement therapy		Surgery with significant reduction in mobility		
Use of oestrogen-containing contraceptive				
therapy				
Varicose veins with phlebitis				
Pregnancy or < 6 weeks post-partum (see NICE				
guidance for specific risk factors)				

Factors that increase bleeding risk		
Patient related	Admission related	
Active bleeding	Neurosurgery, spinal surgery or eye surgery	
Acquired bleeding disorders (such as acute liver failure)	Other procedure with high bleeding risk	
Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with INR >2)	Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours	
Acute stroke	Lumbar puncture/epidural/spinal anaesthesia within the previous 4 hours	
Thrombocytopaenia (platelets< 75x109 /l)		

Task 3.4 – Medicines Reconciliation (Reviewing Prescribed Medication Against Medication History)

Medicines reconciliation helps ensure that people continue to receive the medicines they need and reduces the risk of harm caused by delayed or inappropriate medication changes. This is a key task for the hospital pharmacist requiring all the data that you have gathered to this point.

Work through the checklist below and document your findings in the table in Section 3.4 of your Patient Booklet. You must <u>NOT</u> include any patient identifiable information.

Step	Considerations
Review the patients current prescription, note any discrepancies between the drug history and their currently prescribed inpatient medication	Document any missing or suspended/held medication, or any differences in doses, frequencies etc.
Review the patient's presenting complaint, would this require or explain alterations to the patient's pre-admission prescription?	For example an additional treatment is prescribed that interacts with their normal medicines.
Review the patient's presenting complaint and medication history, could any of the medication have caused this admission. Could this admission be due to an adverse drug reaction?	Review the side effect profile of the patient's regular medication.
Review the patient's observations, would this require or explain alterations to the patient's pre-admission prescription?	For example patient has low blood pressure so antihypertensives are not prescribed or are suspended
Review the patient's laboratory results task, would this require or explain alterations to the patient's pre-admission prescription?	For example low platelets or low Hb so antiplatelets (aspirin/clopidogrel) are held
Review the patient's renal function, would this require or explain alterations to the patient's pre-admission prescription?	For example, nephrotoxic medication being held due to AKI or dose adjustments due to reduced renal function. Check the renal drug database
Document your review and any suggestions you have in the medicines reconciliation table	
Complete a student formulary entry for any new medicines you encounter – see Appendix D in your Patient Booklet	

Task 3.5 – Reviewing Treatments for Current Admission

Your patient will have been prescribed medicines to manage their acute conditions. You are required to critique these and determine whether they are appropriate. The exact process varies depending on the indication and treatment but will almost always involve the review of a new medicine for a specific indication. Work through the checklist and document your thoughts within Section 3.5 of your Patient Booklet. **You must <u>NOT</u> include any patient identifiable information.**

Step	Considerations
Document any new medication that has been prescribed.	
Confirm the indication for the medicine – check the medical plan in Section 2.1 of your Patient Booklet	
Check allergies and ensure no issues with prescribed treatments	
Check for interactions and ensure no interactions with other medicines	Use the BNF and SPC Consider how to manage the interaction
Check appropriate sources (BNF, SPC, local trust guideline) and select the most appropriate to guide treatment	Ask pharmacist if there are any relevant local trust guidelines
	For antibiotic prescriptions, use the local trust antimicrobial formulary
Screen for any contraindications, cautions, etc, and determine if these apply to your patient	Use the BNF and the SPC here
Review the patient's observations, does this affect choice or dose of treatments	
Review the patient's weight, does this affect choice or dose of treatments	For example, IV paracetamol dose or dose of LMWH
Review the patient's laboratory results, does this affect choice or dose of treatments	
Review the patient's renal function, does this affect choice or dose of treatments	Check the renal drug database
If appropriate, decide on an appropriate course length	For example, antibiotic prescriptions
Document any issues identified	
Check for any drug specific or patient related monitoring or follow up requirements	
Decide whether the patient's prescription is clinically appropriate – if not, what would you recommend?	

Section 4: Recommendations

Task 4.1 – Summarising your Contribution to Care and Recommendations for the patient

Use the space provided in Section 4.1 of your Patient Booklet to summarise all the contributions you have made to the patient's care as well as any recommendations for changes to their therapy. **THIS IS** <u>NOT</u> **TO BE GIVEN TO THE MEDICAL TEAM BUT FOR YOUR RECORD KEEPING.** Please follow the checklist for advice on note writing. You must <u>NOT</u> include any patient identifiable information. Please complete self- reflection on this case see Appendix B of your Patient Booklet.

All entries must be dated, timed (using 24hr clock), with the entry started with 'Pharmacy', the ward where the entry is written, and what the entry is about e.g., Medication History.

Do not use abbreviations. If abbreviations are unavoidable ensure they are unambiguous and accepted as in general use. Use generic names of medicines wherever possible – brand names should be used for medicines where specific differences exist between products.

Ensure your entry is clear and legible. If any justifiable alterations or additions need to be made to your notes, they must be dated, timed, and signed.

Entries should be concise, accurate and written in a polite manner that is non-judgemental. Do not comment about other areas of patient care or those outside your expertise.

At the end of any paper entry sign and print your full name, profession, and contact details. You must get your supervising pharmacist to write their details on the entry.