

Hindley, B, Wright, S and Peasley, M

**Developing a feasible model for delivering quality hospital-based experiential learning for pharmacy undergraduate students funded by the healthcare education and training tariff**

<http://researchonline.ljmu.ac.uk/id/eprint/19488/>

#### Article

**Citation** (please note it is advisable to refer to the publisher's version if you intend to cite from this work)

**Hindley, B, Wright, S and Peasley, M (2023) Developing a feasible model for delivering quality hospital-based experiential learning for pharmacy undergraduate students funded by the healthcare education and training tariff. *Pharmacy Education*. 23 (1). pp. 205-207. ISSN 1560-2214**

LJMU has developed [LJMU Research Online](#) for users to access the research output of the University more effectively. Copyright © and Moral Rights for the papers on this site are retained by the individual authors and/or other copyright owners. Users may download and/or print one copy of any article(s) in LJMU Research Online to facilitate their private study or for non-commercial research. You may not engage in further distribution of the material or use it for any profit-making activities or any commercial gain.

The version presented here may differ from the published version or from the version of the record. Please see the repository URL above for details on accessing the published version and note that access may require a subscription.

For more information please contact [researchonline@ljmu.ac.uk](mailto:researchonline@ljmu.ac.uk)

SHORT REPORT

# Developing a feasible model for delivering quality hospital-based experiential learning for pharmacy undergraduate students funded by the healthcare education and training tariff

Ben Hindley<sup>1</sup>, Sally Wright<sup>1</sup>, Mark Peasley<sup>2</sup>

<sup>1</sup> Liverpool John Moores University, Liverpool, England, United Kingdom

<sup>2</sup> Liverpool University Hospitals NHS Foundation Trust, Liverpool, United Kingdom

## Keywords

Entrustable professional activity  
Experiential learning  
Hospital placement  
Pharmacy education

## Correspondence

Ben Hindley  
Liverpool John Moores University  
Liverpool  
England  
United Kingdom  
b.hindley@ljmu.ac.uk

## Abstract

The Department of Health and Social Care (UK) provides funding to support clinical placements for healthcare students in England through their education and training tariff, which is administered by Health Education England (HEE). From September 2022, undergraduate pharmacy students became eligible for this funding to support their experiential learning. Development of quality, feasible experiential learning for pharmacy students within the context of the tariff proved challenging for both higher education institutions (HEIs) and hospital placement providers. Barriers to delivery were identified and addressed, such as no HEE published strategy for placement delivery, as well as the financial constraints of the tariff payments which made placements unattractive to providers. Pharmacy school inexperience of arranging longer placements and a substantial administrative burden added to the challenge. This report outlines the developmental process behind the experiential learning that is now delivered by Liverpool John Moores University and the local hospital providers.

## Introduction

The importance of experiential learning (EL) is recognised by the General Pharmaceutical Council (2021), and the pharmacy undergraduate degree must include real-life practical experience to enable students to develop their competence. It is expected that EL is progressive and increases with complexity as the student moves through the course (General Pharmaceutical Council, 2021). The benefits of EL on students' confidence and communication have been demonstrated in numerous studies, and practising pharmacists appreciate the importance of EL in undergraduate pharmacy education (Hendry *et al.*, 2016; Winn & Turner, 2016).

The existing provision of EL varies; Jacob and Boyter (2020a) found that placement hours over the four-year

MPharm programme varied between 54 and 496 hours across different UK higher education institutions (HEIs). HEIs have identified several challenges to the provision of EL, the most cited being: obtaining and retaining hospital placement sites, financial support and quality assurance of workplace tutors (Jacob & Boyter, 2020a).

The Department of Health and Social Care education and training tariff (the tariff) offers a standard reimbursement for all providers offering high quality, participative placements enabling learners to develop the required skills and knowledge to meet their professional competencies. Following confirmation that undergraduate pharmacy placements would be included in the list of professions eligible for the tariff from September 2022, HEIs began planning for funded placements as part of the undergraduate degree (Department of Health and Social Care, 2022). This

provided a fresh opportunity to engage with placement providers, develop their approach to EL, and overcome the perceived barriers. However, the limited funding available may negatively impact the willingness of EL providers to offer placements (Burns, 2022).

## Development of placement activities

Historically, local placement provision was limited to several days, but this will substantially increase to enable students to meet updated GPhC learning outcomes (2021). Initial expectations from local placement providers were that Health Education England (HEE) would offer guidance on how EL should be delivered within the structure of the tariff system, including a list of agreed entrustable professional activities (EPAs). EPAs are widely accepted in postgraduate medical education and gaining popularity in entry-level medicine as well as other professions, including pharmacy, and have many benefits, including reducing the mismatch between expected and actual performance of trainees and improving the workplace-based assessment processes (Bradley & McKenna, 2021). Despite initial expectations, a suite of EPAs was not forthcoming, and the current position of HEE is that they are “working in collaboration with the Pharmacy Schools Council to develop resources and approaches that support placement activities that are participative. This includes the exploration of Entrustable Professional Activities or EPAs” (Health Education England, 2022).

In lieu of a standardised approach, local hospitals developed their own model to facilitate placements within the financial constraints of the tariff payment, which is not sufficient to release pharmacists for direct supervision of students. Although many pharmacists appreciate the benefits of EL (Hendry et al., 2016; Winn & Turner, 2016), it is accepted that it can be a burden, given the lack of protected time and increase in workload, resulting in limited time to engage with students (Jacob & Boyter, 2020b). To overcome these barriers, a placement structure was developed; it permitted students to attend hospitals and engage in activities and provided them with an opportunity to put their knowledge and skills into practice without requiring constant direct pharmacist supervision.

A workbook was developed to provide students with a structured approach. It contained a series of practical tasks with stepwise instructions, which mimicked the process of the pharmaceutical review of a newly admitted patient. The workbook consisted of four sections: patient consent, data collection, analysis, and recommendations, with several appendices designed

to support students' learning. Singh, Morrissey and Ball (2021) have found that supervising pharmacists appreciate the use of structured activities within an EL setting, which supported our approach. Some tasks included a component of peer assessment and a focus on reflection and self-directed continuing professional development. The hospital pharmacy placement guidance document, containing detailed information about the tasks can be seen in Supplementary material 1. The hospital pharmacy placement patient booklet, to record the findings from each task outlined in the guidance document can be seen in Supplementary material 2. The workbook was piloted at one hospital with foundation pharmacist trainees, followed by level six pharmacy undergraduates, and refinements were made based on the experience. There was a close collaboration between stakeholders throughout the development process. Pharmacy education leads from participating hospital providers held a series of meetings with HEI staff to agree on the proposed format of the placements and the content of placement materials. The final agreed placement model was informed by feedback from the pilots.

Students received a pre-placement briefing and were signposted to prior learning that would benefit them whilst on placement. HEE e-learning for healthcare accounts were created, and each student was enrolled on a healthcare students e-learning package to satisfy the requirements of the key statutory and mandatory training skills of the UK Core Skills Training Framework (Skills for Health & Health Education England, 2021) and overcome the need for students to attend Trust-specific training. However, access to individual hospitals' IT systems was needed to participate in placements and students were required to undergo in-house training to facilitate this. IT hardware, primarily laptops, were ordered by providers to enable student involvement in placement activities.

A significant administrative burden was encountered during the implementation of placements, including contracts between the HEI and providers. The issue of students with criminal convictions on their disclosure and barring service certificate also required consideration, and although a satisfactory resolution to this was not reached prior to the start of the placements, a temporary solution was employed for this academic year.

Whilst on placement, students were allocated to wards along with a nominated supervising pharmacist and worked in pairs to complete the booklet for each patient they were assigned. Students would require approximately one day to comprehensively review a single patient. Although assistance and light-touch supervision were available, students were expected to

work autonomously and present one of their cases to their supervisor towards the end of their placement to receive verbal feedback.

## Conclusion

The inclusion of pharmacy undergraduates in the tariff has provided an opportunity for the provision of longer and more participative EL. Numerous barriers to offering EL in hospitals arose, primarily the administrative burden, a lack of clarity on the format and delivery of placements, and the funding constraints of the tariff. This model of structured activities supported by light-touch supervision offers potential solutions to some of these barriers. Feedback will be sought from both providers and students at the end of the academic year, with the view of expanding the suite of activities in which students participate.

## References

- Bramley, A.L., McKenna, L. (2021). Entrustable professional activities in entry-level health professional education: a scoping review. *Medical Education*, **55**(9), 1011-1032. DOI: <https://doi.org/10.1111/medu.14539>
- Burns, C. (2022). Undergraduates may struggle to secure clinical placements owing to low payment tariff, say pharmacy schools council. *The Pharmaceutical Journal*, 309 (7966). <https://doi.org/10.1211/PJ.2022.1.167098>
- Department of Health and Social Care. (2022). Education and training tariffs: tariff guidance and process for the 2022 to 2023 financial year. Retrieved from [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1064526/Education-and-Training-Tariff-Guidance-2022-23.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1064526/Education-and-Training-Tariff-Guidance-2022-23.pdf)
- General Pharmaceutical Council. (2021). Stands for the initial education and training of pharmacists. Retrieved from <https://www.pharmacyregulation.org/sites/default/files/document/standards-for-the-initial-education-and-training-of-pharmacists-january-2021.pdf>
- Health Education England. (2022, October). Clinical tariff for the pharmacy profession: frequently asked questions. Retrieved from <https://www.hee.nhs.uk/sites/default/files/documents/Clinical%20tariff%20for%20pharmacy%20FAQs%20-%20October%202022.pdf>
- Hendry, G., Winn, P., Wiggins, S., Turner, C.J. (2016). Qualitative evaluation of a practice-based experience pilot program for Master of Pharmacy students in Scotland. *American Journal of Pharmacy Education*, **80**(10), 165. <https://doi.org/10.5688/ajpe8010165>
- Jacob, S.A., Boyter, A.C. (2020a). Nationwide survey of experiential learning in MPharm programmes in UK universities. *International Journal of Pharmacy Practice*, **28**(2), 121-129. <https://doi.org/10.1111/ijpp.12521>
- Jacob, S.A., Boyter, A.C. (2020b). Survey of undergraduates' perceptions of experiential learning in the MPharm programme: the TELL project. *Pharmacy Practice*, **18**(2), 1856. <https://doi.org/10.18549/PharmPract.2020.2.1856>
- Singh, A., Morrissey, H., Ball, P.A. (2021). Structured experiential learning placement for pharmacy undergraduate students – a pilot study. *Journal of Advanced Pharmacy Education and Research*, **11**(4), 1-6. <https://doi.org/10.51847/bWUeWOINce>
- Skills for Health, Health Education England. (2021, June). Core skills training framework (England). Statutory/mandatory subject guide: version: CSTF (England) v1.1. Retrieved from <https://www.skillsforhealth.org.uk/wp-content/uploads/2021/07/CSTF-Eng-Subject-Guide-v1.1.pdf>
- Winn, P., Turner, C.J. (2016). Description and evaluation of an MPharm practice-based experience pilot program. *American Journal of Pharmacy Education*, **80**(9), 151. <https://doi.org/10.5688/ajpe809151>



# 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.

Hindley, Ben  
b.hindley@ljmu.ac.uk

## Table of Contents

Section 1: Consent .....	2
Task 1.1 - Gaining consent .....	2
Section 2: Data collection.....	3
Task 2.1 – Gathering Admission Information .....	3
Task 2.2 – Performing a Medication History (Peer Assessed Activity).....	4
Task 2.3 – Patient Observations/ National Early Warning Score (NEWS) .....	5
Task 2.4 – Reviewing Patients Weight and Height Using the Malnutrition Universal Screening Tool (MUST)...	6
Task 2.5 – Reviewing the Patient’s Laboratory Results .....	7
Section 3: Analysis.....	8
Task 3.1 – Calculating Renal Function .....	8
Task 3.2 – Patients with Acute Kidney Injury (AKI) .....	9
Task 3.3 – Reviewing a Venous Thromboembolism (VTE) Risk Assessment.....	10
Task 3.4 – Medicines Reconciliation (Reviewing Prescribed Medication Against Medication History) .....	12
Task 3.5 – Reviewing Treatments for Current Admission .....	13
Section 4: Recommendations .....	14
Task 4.1 – Summarising your Contribution to Care and Recommendations for the patient .....	14

## 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.

Step
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
<b>Record the patient's consent in Section 1 of your Patient Booklet</b>

## 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 NOT include any patient identifiable information.**

Step	Considerations
<b>Access the patient's case notes and find the point at which the patient was admitted to hospital</b>	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
<b>Find the patient's demographic information – record the patient's initials and age</b>	<b>Do not record patient identifiable data</b>
<b>Identify and record the patient's presenting complaint (PC)</b>	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?
<b>Identify and record the patient's history of presenting complaint (HPC)</b>	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)
<b>Identify and record the patient's past medical history (PMHx)</b>	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)
<b>Identify and record any relevant social history – think about what might be important from a pharmacist's point of view and ignore anything that won't aid in the delivery of pharmaceutical care (e.g., is the patient a nursing home resident?)</b>	Who looks after the patient's medication at home?  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?
<b>Identify and record any relevant family history</b>	Parent's and grandparent's medical conditions
<b>Identify and record the medical team's impression/diagnosis and plan</b>	What treatments are they initiating or stopping? Are they altering the patient's regular medication?
<b>Complete the new conditions CPD table in Appendix C of your patient booklet for any new conditions you encounter</b>	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
<b>Review patient's PMHx</b> – consider what medication you expect the patient to be on based on their PMHx	
<b>Determine where the patient has been admitted from</b> – if they have been transferred from a nursing home or another hospital then you will need these records	
<b>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</b>	
<b>Explain the reason for the consultation and ask for consent to access their SCR (if available)</b> – you can get this from your supervising pharmacist	
<b>Ask about any allergies and any reactions to allergens</b> – ensure you ask for details of the reaction (rash/anaphylaxis/angioedema are true allergic reactions whereas vomiting/diarrhoea are not)	
<b>Ask how the patient normally manages their medicines at home:</b> 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.	
<b>Ask about their regular/repeat medication and confirm names, doses, frequencies, dosage form</b> 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.	
<b>Ask if the patient uses and inhalers, nebulisers, oxygen, eye drops, creams/ointments, injections, contraception (as appropriate for patient age and gender), patches, etc.</b> – These medicines that are easily forgotten by patients	
<b>Enquire about recent courses of medication or recently discontinued medicines</b> – e.g. course of antibiotics or steroids	
<b>Enquire about any over the counter (OTC), herbal or supplementary medicines they take</b>	
<b>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?)</b>	
<b>Ask any other specific follow up questions</b> – these should be based on your review of their PMHx or the answers they have already given	
<b>Seek any further clarification as needed</b> – is there anything you might have missed? Can always summarise to the patient if this is helpful	
<b>Thank the patient and close the encounter properly</b>	
<b>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</b>	
<b>Complete a student formulary entry for any new medicines you encounter – see Appendix D of your Patient Booklet</b>	

## 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 NOT 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 <sub>2</sub> (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 AVPU (alert, alert to voice, alert to pain, unresponsive)	Reduced levels of consciousness or new/worsening confusion may indicate that the patient is unwell (unable to adequately oxygenate the brain). Does any of the patient's medication cause sedation?
Capillary blood glucose (CBG) level	Does the patient have diabetes? When was the reading taken in relation to meals? 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 NOT 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:  $IBW = (2.3 \times \text{every inch } >5 \text{ foot}) + 50$

Females:  $IBW = (2.3 \times \text{every inch } >5 \text{ foot}) + 45.5$

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

**BMI (kg/m<sup>2</sup>) =  $\text{weight (Kg)} / \text{height (m)}^2$**

## 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 NOT include any patient identifiable information.**

Step	Considerations
<b>Check and record the patient’s full blood count (FBC) –</b> 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
<b>Check and record patients clotting screen – PT/APTT and INR</b>	Deranged clotting may be due to medication and/or may affect treatment choices and can give an indication on hepatic function
<b>Check and record the patient’s renal profile (U&amp;Es and eGFR)–</b> 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.
<b>Check and record the patient’s bone profile -</b> 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
<b>Check and record the patient’s liver function tests (LFTs) –</b> 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
<b>Check and record the patient’s acute phase reactants/inflammatory/infection markers (CRP)</b>	CRP can be an indication of infection but may be chronically raised in patients with underlying inflammatory diseases e.g. rheumatoid arthritis
<b>Check and record any culture results and sensitivities</b>	Cultures and sensitivities take several days to return. This may impact antibiotic choices
<b>Check and record any COVID swab results</b>	Patients with COVID will require isolation and may require additional treatment – see individual trust guidelines
<b>Check and record resistant organism screens</b>	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
<b>Note any abnormalities to reference later as you may discover that drugs you recommend are impacted by these abnormalities</b>	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:

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

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

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

### Causes and management of AKI

Cause	Mechanism	Management
<b>Pre-renal</b>	Reduced perfusion of kidneys due to drop in effective circulating volume. This can be due to loss of volume or loss of vascular tone e.g. infection/sepsis	Hold medication that might reduce blood volume/pressure (diuretics/antihypertensives) Treat infection/sepsis
<b>Renal</b>	Damage to the renal cells due to drugs (common), toxins, auto-immune disease/processes (rarer)	Remove any nephrotoxic medication Immunosuppressants/steroids if cause is autoimmune disease
<b>Post renal</b>	Obstruction to the outflow of urine (often diagnosed with ultrasound looking for hydronephrosis (water on the kidney)	Relieve obstruction with urinary catheter, suprapubic catheter, nephrostomy dependent on level of 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 NOT 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.

---

<b>Mobility</b>	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	
<b>Assess for thrombosis and bleeding risk below</b>				<b>Risk assessment now complete</b>	

<b>Factors that increase thrombosis risk (risk of PE/DVT)</b>			
<b>Patient related</b>	<b>Tick</b>	<b>Admission related</b>	<b>Tick</b>
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/m <sup>2</sup> )		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)			

<b>Factors that increase bleeding risk</b>			
<b>Patient related</b>		<b>Admission related</b>	
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	
Thrombocytopenia (platelets < 75x10 <sup>9</sup> /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 NOT 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 NOT 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 NOT TO BE GIVEN TO THE MEDICAL TEAM BUT FOR YOUR RECORD KEEPING.** Please follow the checklist for advice on note writing. **You must NOT 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.
---



# LJMU HOSPITAL PHARMACY PLACEMENTS

## Patient booklet

### Instructions

This booklet should be used in conjunction with the LJMU Hospital Pharmacy Placement Guidance Document to record your findings from each of the tasks outlined in the Guidance Document. You should NOT attempt to complete ANY section of this booklet without first reviewing and following the instructions in the corresponding section of the Guidance Document. Additional copies of appendices C and D can be downloaded from Canvas. Each patient you review will require a separate copy of this booklet.

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.

**Hindley, Ben**  
b.hindley@ljmu.ac.uk

## Table of Contents

Section 1: Consent .....	2
Section 2: Data collection.....	2
Task 2.1 – Gathering Admission Information .....	2
Task 2.2 - Performing a Medication History (Peer Assessed Activity) .....	3
Task 2.3 – Patient Observations/ National Early Warning Score (NEWS) .....	4
Task 2.4 – Reviewing Patients Weight and Height Using the Malnutrition Universal Screening Tool (MUST)...	4
Task 2.5 – Reviewing the Patient’s Laboratory Results .....	5
Section 3: Analysis.....	6
Task 3.1 – Calculating Renal Function .....	6
Task 3.2 – Patients with Acute Kidney Injury (AKI) .....	6
Task 3.3 – Reviewing a Venous Thromboembolism (VTE) Risk Assessment.....	7
Task 3.4 – Medicines Reconciliation (Reviewing Prescribed Medication Against Medication History) .....	8
Task 3.5 – Reviewing Treatments for Current Admission .....	9
Section 4: Recommendations .....	10
Task 4.1 – Summarising your Contribution to Care and Recommendations for the patient .....	10
Appendix A: Medication History Peer Assessment Form.....	11
Appendix B: Reflection.....	12
Appendix C: CPD - New Conditions/Diseases .....	13
Appendix D: CPD – New Medication .....	14

## Section 1: Consent

<b>Patient consent obtained</b>	Signed _____ (LJMU student)	Date _____
---------------------------------	-----------------------------	------------

## Section 2: Data collection

### Task 2.1 – Gathering Admission Information

<b>Patient demographics</b>	Initials _____ Sex _____ Age _____
<b>Presenting complaint (PC)</b>	
<b>History of presenting complain (HPC)</b>	
<b>Past medical history (PMHx)</b>	
<b>Relevant social history (SHx)</b>	
<b>Relevant family history (FHx)</b>	
<b>Impression / diagnosis</b>	
<b>Medical /surgical plan</b>	

## Task 2.2 - Performing a Medication History (Peer Assessed Activity)

Document the drug history in the table below and ask your partner to complete the peer assessment form in Appendix A as you undertake the drug history

<b>Allergies and adverse reactions</b> (include non-drug allergies such as nuts, soya, etc. and details of the reaction)	
<b>Compliance aids from community pharmacy?</b> If so, confirm pharmacy name and telephone number, the quantity of compliance aids received at a time, and quantity left at home. Dosette boxes made up at home treat are not blister packs	
<b>Repeat medication</b> Include name, brand where appropriate. Ensure you include details of: <ul style="list-style-type: none"><li>• Formulation</li><li>• Device if appropriate, Strength of preparation</li><li>• Dose</li><li>• Route</li><li>• Frequency of administration</li></ul>	
<b>Recent short courses of medication (acute medicines)</b>	

<b>Recently discontinued medicines</b>	
<b>OTC/herbal/supplementary medicines</b>	

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

<b>Observations and National Early Warning Score (NEWS)</b>		<b>On admission</b>	<b>Latest/current</b>
	Respiratory rate		
	SpO2 (oxygen saturation)		
	Temperature		
	Blood pressure		
	Pulse (heart rate)		
	Capillary blood glucose		
	NEWS (total score)		

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

<b>Malnutrition Universal Screening Tool (MUST) parameters</b>		<b>Latest/current</b>
	Height	
	Total body weight (TBW)	
	Ideal body weight (IBW)	
	Adjusted body weight (AdjBW) if applicable	
	Body mass index	



## Task 2.5 – Reviewing the Patient’s Laboratory Results

Laboratory results		On admission	Latest/current
	<b>Ful blood count (FBC)</b>		
	Haemoglobin		
	Platelets		
	White cell count		
	Neutrophils		
	<b>Clotting screen</b>		
	INR (if applicable)		
	<b>Urea and electrolytes (U&amp;Es) / renal profile</b>		
	Sodium		
	Potassium		
	Urea		
	Serum creatinine (SrCr)		
	<b>Bone profile</b>		
	Adjusted calcium		
	Phosphate		
	<b>Liver function tests (LFTs)</b>		
	Albumin		
	Bilirubin		
	Alkaline phosphatase (ALP)		
	Alanine transaminase (ALT)		
	Asparate transaminase (AST)		
	Gama glutamyl transferase (GGT)		
	<b>Inflammatory / infection markers</b>		
	C-reactive protein (CRP)		
	<b>Microbiology</b>		
	Details of any relevant microbiology results		

## Section 3: Analysis

### Task 3.1 – Calculating Renal Function

Renal function		Baseline	Latest/current
	Estimated creatinine clearance (eCrCl)		
	Estimate glomerular filtration rate (eGFR)		

### Task 3.2 – Patients with Acute Kidney Injury (AKI)

Only complete this task if the patient has an AKI

Acute kidney injury	AKI stage	
	Likely cause of AKI	
	Potentially nephrotoxic drugs	
	Medicines that may accumulate in AKI	

### Task 3.3 – Reviewing a Venous Thromboembolism (VTE) Risk Assessment

<b>Is the patient at risk of a VTE and does this risk outweigh the risk of bleeding?</b>	
<b>Any contraindications to pharmacological thromboprophylaxis based on information from patient's admission? Or is the patient already on anticoagulation (e.g. warfarin, DOACs...)</b>	
<b>Will the dose need to be changed based on weight (Trust guidelines)?</b>	
<b>Does the patient's current renal function mean that amendments to treatment will be required?</b>	
<b>Are there any discrepancies between your VTE assessment and the one documented?</b>	
<b>What recommendations do you have for this patient's VTE prophylaxis and does this differ from the assessment?</b>	

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

<b>Discrepancies between drug history and current prescription</b>	<b>Medication</b>	<b>Discrepancy</b>
<b>Necessary changes to pre-admission medicines because of current circumstances</b>	<b>Medication</b>	<b>Reason for change</b>
<b>Remaining unexplained discrepancies between the medication history and inpatient medication chart (i.e., those discrepancies that cannot be explained by a need to change therapy)</b>		
<b>Suggestions for rectifying the issues identified</b>		

### Task 3.5 – Reviewing Treatments for Current Admission

<b>List of any new treatments prescribed</b>	<b>Medication</b>	<b>Indication</b>
<b>Issues identified (e.g., allergies, interactions, inappropriate therapy etc.)</b>	<b>Medication</b>	<b>Issue</b>
<b>Any monitoring or follow up required</b>	<b>Medication</b>	<b>Monitoring</b>
<b>Suggested amendments</b>	<b>Medication</b>	<b>Suggestions</b>

## Section 4: Recommendations

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

**Draft your case note entry here:**

## Appendix A: Medication History Peer Assessment Form

<b>Observer to Consider the Following Questions When Observing Student and Tick Once Actioned.</b>	
Did the student determine where the patient was admitted from?	
Did the student introduce themselves by name and role, confirm that they had the correct patient, and ask the patient what they like to be referred as?	
Was the reason for the consultation explained to the patient with limited use of jargon?	
Did the student obtain informed consent from the patient to undertake the medication history? Did the patient know that the consultation was to be undertaken by a student?	
Did the student enquire about how the patient manages their medicines whilst at home?	
Did the student enquire about any potential allergies?	
Did the student ask about their current repeat medication and confirm names, doses, frequencies of these – do they have a list, or have they brought in their medicines?	
Did the student ask the patient if they would be happy for them to access their GP records after the consultation to confirm the medication history?	
Did the student ask the patient about their repeat medications?	
Did the student confirm with the patient if they took their medications as prescribed? This is important as just because someone is prescribed a medicine, it doesn't mean they take it as prescribed which might affect the management of the patient.	
Did the student specifically ask about medicines that are easily forgotten by patients?	
Did the student enquire about acute courses or recently discontinued medicines?	
Did the student enquire about any OTC, herbal, or supplementary medicines they take?	
Did the student ask about whether the patient attended any clinics or received any medicines from someone other than their GP and community pharmacy?	
Did the student ask any other specific follow up questions – (e.g., did the patient use illicit substances/ performance enhancing drugs or buy medications from the internet?)	
Did the student seek any further clarification as needed (e.g., summarise the list to the patient?)	
Did the student thank the patient and close the encounter properly?	
Did the student utilise any other sources of information to confirm the patients medicine history?	

## Appendix B: Reflection

**State briefly what went well in regards to the task you have completed**

**State briefly what did not go well and areas in which you could improve**

**From the above, state what actions you would take to ensure that your practice has improved in line with what the task entails**

**How will you showcase the new skills learnt from undertaking this training?**

**State in your opinion how this this training will benefit the people using the NHS?**



## Appendix C: CPD - New Conditions/Diseases

Additional copies of this paperwork can be downloaded from Canvas.

<b>Condition/ disease</b>	
<b>Pathophysiology</b>	
<b>Diagnosis</b>	
<b>Management</b>	
<b>Other considerations</b>	

## Appendix D: CPD – New Medication

Additional copies of this paperwork can be downloaded from Canvas.

<b>Medication</b>	
<b>Indications and licensing</b>	
<b>Dosing in:</b> <b>Adults</b>  <b>Children</b>  <b>Renal impairment</b>  <b>Hepatic impairment</b>	
<b>Contra-indications</b>	
<b>Main side effects</b>	
<b>Pregnancy/breast feeding considerations</b>	
<b>Counselling points</b>	