PHA-6020Y

Patient centred medicine from bench to bedside

Workshop

PHARMACEUTICAL CARE

Learning Outcomes

After this workshop you will be able to:

- Describe the structured process used to identify pharmaceutical care issues for a patient
- Identify pharmaceutical care issues/problems associated with the treatment of an individual patient
- Identify the therapeutic and toxic monitoring parameters for the drugs used in the treatment of an individual patient
- Document pharmaceutical interventions and recommendations using the SBAR tool.

Resources

- On Bb:
  - Screencast (Pharmaceutical Care Planning and Drug Monitoring) + supporting documents
  - Screencast (Documentation of Interventions in Medical Notes using SBAR Tool)
  - Year 1: Workshops: Pharmaceutical care & Clinical Management of Hypertension
  - Year 2: Clinical workshops (Respiratory, Endocrinology, Antibiotics and Cancer)

TASK 1 – "Critiquing" a drug chart

As a pharmacist working on a hospital ward, you are required to clinically check and "critique" the patient's drug chart and identify any pharmaceutical care issues.

Develop a check list of **what you need to check** to complete this process in a structured way:

Patient demographics

1. Sex
2. Age
3. Weight
4. ***ALLERGIES***
5. Pregnancy/breastfeeding

Check whether these impact on any of the patient's drug treatments

Thromboprophylaxis risk assessment

1. Has it been completed?

If no, what do you need to do about it

2. If TRA has been completed, is thromboprophylaxis indicated and has it been prescribed appropriately?

If no, what do you need to do about it

Patient's DHx

1. Are these all currently prescribed?
2. Are they correctly prescribed (strength, dose, formulation, administration instructions)?
    a. If no, is this an intentional discrepancy? (from new diagnosis)
    b. If no, is this an unintentional discrepancy?
        What do you need to do about it
3. Are all the drugs indicated?
        If no, what do you need to do about it
4. Does the patient take all medicines as prescribed?
    a. If no, is this intentional non-adherence?
    b. If no, is this un-intentional adherence?
        What do you need to do about it

PC, HPC and diagnosis

1. Do the symptoms/diagnosis need drug treatment?
2. According to evidence-based-medicine, is that drug treatment prescribed?
        If no, what do you need to do about it

PMH

1. Do all of the conditions need drug treatment?
2. According to evidence-based-medicine, is that drug treatment prescribed?
        If no, what do you need to do about it
3. Does the diagnosis impact on the appropriate, safe and effective treatment of the patients' other conditions?
        If yes, what do you need to do about it

OE

1. Are there any findings from the examination that impact on the safe provision of the patients' drugs?

If yes, what do you need to do about it

Social/family history

1. Do they drink alcohol? Is it within the recommended daily/weekly limits?
2. Do they smoke? What do they smoke? How many? When?
3. Do they use any recreational drugs? What do they use? How often?

If yes, what do you need to do about it

4. Is there any relevant family history that could impact on a patient's medication requirement?

If yes, what do you need to do about it

Special needs

1. Does the patient have any of the following, and if yes, are they taken into account with respect to their medication/devices?
    a. Swallowing issues
    b. Manual dexterity issues
    c. Visual impairment
    d. Auditory impairment
    e. Speech impairment
    f. Language issues

If no, what do you need to do about it

Interactions

1. Are there any drug-disease (cautions/contraindications), drug-food or drug-drug interactions?

How do you manage these

Near patient monitoring (Temp, pulse, RR etc) – TPR chart / Blood results

1. Are there results which affect the current prescribed medication?

How do you manage these

How to decide on appropriate course of action:

- Is it something that you can resolve, or do you require input from another HCP?
- If you require another HCP, who and how would you contact them?
- Provide a concise description of the issue and your recommended way to resolve it.
    - When recommending additional drug treatment, you should provide full information – name, strength, formulation, dose/frequency and titration/cessation information as appropriate.
    - Use SBAR tool to structure your written/verbal recommendation(s).

- What is right and why?
- What is wrong and why?
- What interventions/changes would you want to make and why?

Medicines, Ethics and Practice Edition 45, July 2022 page 42 (Clinical Check):

Patient characteristics	Patient type	Establish whether the patient falls into a group where treatment is contraindicated or cautioned. Specific groups of patients to be aware of include: - Children - Women who are pregnant or breastfeeding - The elderly - Certain ethnic groups – a patient's ethnic origin can affect the choice of medicine or dose (e.g. the initial and maximum dose of rosuvastatin is lower for patients of Asian origin) - For some medicines, the gender of the patient should be considered. For example, finasteride is contraindicated for women.
	Co-morbidities	Patient co-morbidities, such as renal or hepatic impairment or heart failure, can exclude the use of a particular treatment or necessitate dose adjustments.
	Patient intolerances and preferences	Other patient factors that can affect the choice of treatment include known medication adverse events (e.g. allergies), dietary intolerances (e.g. to lactose containing products), patient preferences (e.g. vegan patients may refuse products of porcine origin), religious beliefs, and patients' knowledge and understanding of medicines and why they are being taken (patient beliefs about medicines).
Medication regimen factors	Indication	Ascertain the indication for treatment to check whether the medicine prescribed is appropriate for the indication and compatible with recommended guidelines.
	Changes in regular treatment	Where there are changes in regular therapy (e.g. strength or dose), you should confirm that these are deliberate and not an error.
	Dose, frequency and strength	You should check that the dose, frequency and strength of the prescribed medicine are appropriate – having considered the patient's age, renal and hepatic function, weight (and surface area where appropriate), co-morbidities, concomitant drug treatments and lifestyle pattern.
	Formulation	Check that, for the formulation prescribed, the dose and frequency are appropriate.
	Drug compatibility	Regular and new therapies should be evaluated for any clinically significant interactions, duplications and antagonistic activity.
	Monitoring requirements	For medication or conditions that require monitoring, you should check for the latest test results and ascertain whether any dose adjustments are required.
Administration and monitoring	Route of administration	Check whether the prescribed route of administration is suitable for the patient and whether a preparation is available for the route prescribed. Also, check for compatibility issues that may arise from administering via that route (e.g. due to co-administration of food or other medicines). For example, phenytoin can interact with enteral feeds so administration via an enteral feeding tube would need to be managed accordingly.
	Aids to administration	Check whether any aids are required to support administration. For example, spacer devices, eye drop devices, Braille or large type or pictogram labels, additional information sheets or verbal information and multi-compartment compliance aids (MCAs).

TASK 2 – CASE STUDY

BG, is 60-year-old man, with Type 1 DM. You are the pharmacist who is reviewing him on the admissions ward for the first time. His medical notes, blood tests and drug chart are below:

Patient:	BG
Hospital number:	051256
DoB:	5.6.1963
Gender:	M
Address:	9 White Grove, Flatplace
PC:	Weak, drowsy, gasping for breath and vomiting
HPC:	According to wife has been feeling unwell for several days – today very difficult to rouse and not able to take insulin
PMH:	Type 1 diabetes since childhood [poorly controlled – most recent clinic HbA1C 9.7% (83mmol/mol), hypertension 10 years
DH:	Bendroflumethiazide 2.5mg od Atenolol 100mg od Humulin M3® KwikPen® 18 IU bd Penicillin allergy => rash and swelling
SH:	Bus driver, lives with wife. Minimal alcohol. Smokes 20 cigarettes/day
FH:	Father died myocardial infarction age 48 years
OE	BP 60/40 mmHg Temp 38.6°C Pulse 98bpm Weight 78kg Confused, dehydrated, ketone breath, BP 60/40, black necrotic big toe and infected ulcer on right foot
Diagnosis:	DKA
Plan:	Insulin infusion, IV antibiotics and fluids
	Dr P Nair **Bleep 5893**

His blood test results on admission are as follows:

PATHOLOGY DEPARTMENT		Consultant/GP: Dr P Ross		PATIENT LOCATION
Patient Name: BG			NHS No:	***Admissions***
Hosp no: 051256		Sex: M	Age: 58 Yr	Pathology
Patient Address:				
Lab Episode No:	7564		Date/Time Collection: Today	
Address for Report: Flatplace Hospital				

BIOCHEMISTRY Collection LAB No Today 8904	**Random Glucose** **26*** mmol/L	**HbA1c** **74*** mmol/mol	**WBC** **18.9*** (4-11) x 10^9/l	**CRP** **125*** (0-10) mg/L	
	Urea **7.9*** (1.7-7.1) mmol/L	**Creatinine** **142*** (55-125) µmol/L	**eGFR** **65** ml/min/m^2	**Na** **146*** (134-145) mmol/L	**K** **3.0*** (3.6-5.0) mmol/L

UEA Training Prescription Chart

Number of drug charts in use: 1

Date	Surname	Forename	Sex	D/O/B	Hosptial No.	Weight (kg)	Height (cm)	Surface Area (m^2)	SAM?
Day 1	**G**	**B**	M	06/06/1963	51256	78 Estimate / **Actual**			Yes / **No**

Ward/ward change:	**Renal**	**Patient address:**	
Consultant(s)	**Dr P Ross**		

DRUG SENSITIVITIES/ALLERGIES MUST BE ENTERED. If no allergies/sensitivites you must write 'NKDA' and sign and date.

Medicine/Substance	Description of allergy/sensitivity	Signature	Date
Penicllin	Rash/swelling	***Dr P Nair***	***Day 1***

PRE-MEDICATION AND ONCE ONLY DRUGS

Pharm	Date	Drug (approved name)	Dose	Directions/ route/ other	Time to be given	Signature	Administered by	
							Initials	Date
			Thromboprophylaxis Risk Assessment					
Drug thromboprophyaxis recommended			**X**					
Drug thromboprophlaxis NOT recomm								

Prescribing

- Write clearly in black, indelible ink.
- Use approved drug names.
- All prescriptions must be signed and dated.
- If a drug is to be intentionally omitted by a prescriber or pharmacist, indicate this with an 'X' in the drug administration box.
- If a drug is being stopped, or a dose altered, draw a line through the whole prescription, sign and date.
- Doctors to re-write charts as required. Start dates should be transferred to new chart. Include cross-reference to drugs on other charts.

Drug omissions

If a drug is omitted, one of the below codes must be entered into the drug administration box.

1. Nil by mouth
2. Not required
3. Patient refused
4. Drug unavailable
5. Vomiting/nausea
6. Patient off ward
7. No IV access
9. Contra-indicated
8. Other - reason must be recorded in notes

Self administration of medicines (SAM)

If a patient is suitable for SAM they can initial in the relevant drug administration box or a nurse can write 'SAM' in the box.

Prescribers

Signature	***Dr P Nair***
Bleep no.	**5893**
Print name	**Doctor P NAIR**
Signature	
Bleep no.	
Print name	
Signature	
Bleep no.	
Print name	
Signature	
Bleep no.	
Print name	
Signature	
Bleep no.	
Print name	

Pharmacy codes

Pharm: Signature confirms checked/date

TTO ✔ = from locker; **H** = at home; **R** = relabel; ★ = new supply at discharge

Supply: S = ward stock; **T** = dispensing, see date and quantity; **P** = POD, see date and quantity

REGULAR MEDICINES 1

CHECK PAGE 1 FOR ALLERGY STATUS

Date → / Tick box to indicate time of admission or add other times ↓		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
1. Drug (approved name): Actrapid® — Start date: Day 1 — End date:	08:00										
	08:00	✓	JA								
Dose: See separate — Route: IV — Frequency:	12:00										
	14:00										
Indication: — Pharm check:	18:00										
	22:00										
Prescriber's signature: P Nair — Supply:	00:00										
2. Drug (approved name): IV fluids — Start date: Day 1 — End date:	08:00										
	08:00	✓	JA								
Dose: See separate — Route: IV — Frequency:	12:00										
	14:00										
Indication: — Pharm check:	18:00										
	22:00										
Prescriber's signature: P Nair — Supply:	00:00										
3. Drug (approved name): Tazocin® — Start date: Day 1 — End date:	08:00										
	08:00	✓	9								
Dose: 4.5g — Route: IV — Frequency: 8hrly	12:00										
	14:00	✓									
Indication: — Pharm check:	18:00										
	22:00	✓									
Prescriber's signature: P Nair — Supply:	00:00										
4. Drug (approved name): Bendroflumethiazide — Start date: Day 1 — End date:	08:00										
	08:00	✓	9								
Dose: 5mg — Route: PO — Frequency: OD	12:00										
	14:00										
Indication: — Pharm check:	18:00										
	22:00										
Prescriber's signature: P Nair — Supply:	00:00										
5. Drug (approved name): Atenolol — Start date: Day 1 — End date:	08:00										
	08:00	✓	9								
Dose: 100mg — Route: PO — Frequency: OD	12:00										
	14:00										
Indication: — Pharm check:	18:00										
	22:00										
Prescriber's signature: P Nair — Supply:	00:00										

CHECK PAGE 1 FOR ALLERGY STATUS

AS REQUIRED DRUGS

CHECK PAGE 1 FOR ALLERGY STATUS

1. Drug (approved name) *Paracetamol*		Start date *Day 1*	Date										
Dose *500mg-1g*	Route *po*	Max Frequency *6hrly*	Time										
Indication *Pain/pyrexia*		Pharm check	Dose										
			Route										
Prescriber's signature *P Nair*		Supply	Given by										
2. Drug (approved name)		Start date	Date										
Dose	Route	Max Frequency	Time										
Indication		Pharm check	Dose										
			Route										
Prescriber's signature		Supply	Given by										
3. Drug (approved name)		Start date	Date										
Dose	Route	Max Frequency	Time										
Indication		Pharm check	Dose										
			Route										
Prescriber's signature		Supply	Given by										
4. Drug (approved name)		Start date	Date										
Dose	Route	Max Frequency	Time										
Indication		Pharm check	Dose										
			Route										
Prescriber's signature		Supply	Given by										
5. Drug (approved name)		Start date	Date										
Dose	Route	Max Frequency	Time										
Indication		Pharm check	Dose										
			Route										
Prescriber's signature		Supply	Given by										

CHECK PAGE 1 FOR ALLERGY STATUS

IV FLUIDS								
Date	**Fluid**	**Volume**	**Additive and dose**	**Duration of infusion**	**Prescriber's Signature**	**Given by**	**Start time**	**End time**
Day 1	1) 0.9% NaCl	500ml		15mins	P.Nair	JA	09:00	09:15
Day 1	2) 0.9% NaCl	1000ml	KCL 40mmol	60mins	P Nair	JA	10:00	
	3)							
	4)							
	5)							
	6)							
	7)							
	8)							
	9)							
	10)							
	11)							
	12)							
	13)							
	14)							
	15)							
	16)							
	17)							
	18)							
	19)							
	20)							

IV DRUG INFUSIONS

1. Drug (approved name) Actrapid®	**Amount or volume**	*Date*	Day 1						
Dilution fluid 0.9% NaCl	**Total vol.** 50ml	**Route** IV	*Time*	09:00					
Rate 0.1 unit/kg/hr	**Start Date** Day 1		*Route*	IV					
Indication/other instruction	**Pharmacy**		*Dose*	7.8 units					
Prescriber's Signature P. Nair	**Bleep no.** 5893		*Given by*	JA					
2. Drug (approved name)	**Amount or volume**		*Date*						
Dilution fluid	**Total vol.**	**Route**	*Time*						
Rate	**Start Date**		*Route*						
Indication/other instruction	**Pharmacy**		*Dose*						
Prescriber's Signature	**Bleep no.**		*Given by*						
3. Drug (approved name)	**Amount or volume**		*Date*						
Dilution fluid	**Total vol.**	**Route**	*Time*						
Rate	**Start Date**		*Route*						
Indication/other instruction	**Pharmacy**		*Dose*						
Prescriber's Signature	**Bleep no.**		*Given by*						
4. Drug (approved name)	**Amount or volume**		*Date*						
Dilution fluid	**Total vol.**	**Route**	*Time*						
Rate	**Start Date**		*Route*						
Indication/other instruction	**Pharmacy**		*Dose*						
Prescriber's Signature	**Bleep no.**		*Given by*						
5. Drug (approved name)	**Amount or volume**		*Date*						
Dilution fluid	**Total vol.**	**Route**	*Time*						
Rate	**Start Date**		*Route*						
Indication/other instruction	**Pharmacy**		*Dose*						
Prescriber's Signature	**Bleep no.**		*Given by*						

1. For each of the drugs that is prescribed for BG, complete the following tables to detail the indication and the therapeutic and toxic monitoring parameters:

Drug: Bendroflumethiazide	**Indication:** Hypertension
Monitoring parameters	
Therapeutic	**Toxic**
BP (target <140/90 unless presence of renal impairment in which case it is <130/80 – see NICE guidance for T1DM for details)	BP, RF, U&Es (K+, Na+), BG, Urate, Lipids

Drug: Atenolol	**Indication:** Hypertension
Monitoring parameters	
Therapeutic	**Toxic**
BP (target <140/90 unless presence of renal impairment in which case it is <130/80 – see NICE guidance for T1DM for details)	BP, pulse, lack of awareness of hypoglycaemia

Drug: Tazocin	**Indication:** Infected diabetic foot ulcer
Monitoring parameters	
Therapeutic	**Toxic**
Symptoms (appearance of ulcer), WBC, CRP, C&S	Allergies, S/E e.g. GI

Drug: Actrapid	**Indication:** DKA/Type 1 DM
Monitoring parameters	
Therapeutic	**Toxic**
BG	BG

Drug: NaCl 0.9%+ KCl 40mmol	**Indication:** DKA/dehydration
Monitoring parameters	
Therapeutic	**Toxic**
Fluid balance, signs of dehydration, U&Es (Na/K+), RF, BP	Fluid balance, U&Es (Na/K+), RF, BP

2. Identify any actual and potential pharmaceutical care issues for your patient. Document the issue(s) and the action(s) in the following tables.
   Where you recommend the patient to start on any **NEW** medication, please also complete details of the monitoring parameters for the new drug, otherwise leave it blank. (the workshop template contains a standard number of boxes – this does NOT give any indication to the number of issues to be identified – could be more, could be less!!)

Issue	Action required
Patient allergic to penicillin – Tazocin contains piperacillin	Ask Dr to stop tazocin and change to alternative e.g. clindamycin IV 0.6-2.7g in 2-4 divided doses + ciprofloxacin IV 400mg 8-12hrs 12hrs (7 days + dependent on clinical review). Review 24-48 hours + ongoing.
Monitoring parameters	
Therapeutic	**Toxic**
Symptoms (appearance of ulcer), WBC, CRP, C&S	Clindamycin – severe diarrhoea, thrombophlebitis, rash, LFT, renal function, FBC Ciprofloxacin - GI disturbance (N, V, D), FBC, tendonitis, renal function, LFT, (QT).

Issue	Action required
VTE assessment states thromboprophylaxis needed but not prescribed	Ask doctor to prescribe thromboprophylaxis e.g. dalteparin 5000 international units s/c od
Monitoring parameters	
Therapeutic	**Toxic**
Lack of VTE, weight	Bleeding, Hb, Plt, RF

Issue	Action required
Wrong dose of bendroflumethiazide prescribed – drug history patient was on 2.5mg om not 5mg om	
Monitoring parameters	
Therapeutic	**Toxic**

Issue	Action required
Inappropriate choice of antihypertensive - Bendroflumethiazide & Atenolol affect diabetic control, atenolol may mask symptoms of hypoglycaemia. Not according to NICE guidelines	Once hypotension resolved (with treatment of DKA) discuss choice with Dr. Suggest ACEI as alternative (Eg Ramipril 2.5mg od & adjust) (Prevents progression to diabetic nephropathy and indicated as per NICE guidance for hypertension in diabetic patients as first-line)

Monitoring parameters	
Therapeutic	**Toxic**
BP (target <140/90 unless presence of renal impairment in which case it is <130/80 – see NICE guidance for T1DM for details), RF	BP, RF, K+, dry cough

Issue	Action required
Poor diabetic control (HbA1c 74mmol/mol)	Advise Dr on change of regime e.g. basal/bolus – multiple injection regime (od long acting + tds short acting with meals). Check adherence and seek advice from Diabetes Nurse Specialist/Endocrinology if needed.

Monitoring parameters	
Therapeutic	**Toxic**
BG, HbA1c	BG, HbA1c

Issue	Action required
Need for statin as □ CV risk (QRISK>10%)	Advise Dr to consider Atorvastatin 20mg on (NICE, primary prevention)

Monitoring parameters	
Therapeutic	**Toxic**
↓CV events, lipid profile	LFTs, myopathy, CK

Issue	Action required
Counselling & education	Need for counselling and education on all new drugs and any changes in regime) - DETAILS E.g. Ramipril – take at night, lowers BP but also helps prevent kidney problems S/E: dry cough

Monitoring parameters	
Therapeutic	**Toxic**

Issue	Action required
Life-style issues	RELEVANT DETAILS: Counsel on diet (low salt, 5 a day, low fat), exercise – ideally 30mins/day – according to ability, smoking cessation

Monitoring parameters	
Therapeutic	**Toxic**

3. Document your assessment of key pharmaceutical care issues, alongside your recommendations in patient's medical notes, using the SBAR tool.

Date and Time	Clinical Notes
Date Time	Pharmacist N. Surname I reviewed inpatient medicines prescribed for this patient (DoB: 05/06/1963; 051256) admitted with a suspected DKA. PMH: Type 1 diabetes, hypertension Dhx: Bendroflumethiazide 2.5mg od, Atenolol 100mg od, Humulin M3 KwikPen® 18 units bd Allergies: Penicillin (rash and swelling) BP 60/40 mmHg HR 98bpm BG 26 mmol/L HbA1c 74 mmol/mol (target < 53 mmol/mol) Cr 142 µmol/L (baseline unclear) Prescribed piperacillin/tazobactam despite penicillin allergy VTE prophylaxis recommended but not yet prescribed Bendroflumethiazide and atenolol held due to low BP (not in line with NICE guidance and risk of hyperglycaemia in diabetes) Currently on VRII + fluids – requires review of basal insulin regime. Based on my review, I would like to recommend the following: • Stop piperacillin/tazobactam. Start clindamycin IV 0.6-2.7g in 2-4 divided doses + ciprofloxacin IV 400mg 8-12hrs (7 days + dependent on clinical review). Monitor WBC/CRP/C&S and clinical improvement in 24-48 hours. Monitor CrCl/LFTs and QT. • Prescribe pharmacological VTE prophylaxis, e.g. dalteparin 5000 units OD. Monitor Plt & Hb 48-hourly in addition to CrCl/LFTs (report any bleeding). • Stop bendroflumethiazide and atenolol. Start ACEi, e.g. ramipril 2.5 mg OD and titrate dose up with monitoring of BP, CrCl, K+ and based on tolerability. • Change insulin regime to improve control of HbA1c. Consider multiple injection regime (OD long-acting + TDS short-acting with meals). Seek further advice from Diabetes Specialist Nurse. *Name Surname* (Contact Details)