Drug Prescribing

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Introduction

- Approximately 7,000 individual drug doses are administered each day in a 'typical' NHS hospital, 70% of which are prescribed by first year graduates and senior house officers, i.e. the most junior of the team.
- 6% of hospital admissions are due to adverse reactions to drugs in UK. In USA 100,000 deaths a year are related to drug interactions.
- Cost to NHS due to adverse drug reactions £400 million a year, 70% of which is avoidable.

Principles

- Doctors with full registration may prescribe all medicines, except drugs in Schedule 1 of the Misuse of Drugs Regulations 2001.
- If you have provisional registration you may prescribe medicines in line with the supervisory conditions of your employment.
- You should only prescribe drugs to meet identified needs of patients and never for your own convenience or simply because patients demand them.

Principles

- Avoid treating yourself and those close to you
- Keep up to date and prescribe in patients' best interest.
- Current guidelines including BNF, NICE and other relevant practice guidelines should be followed unless sufficient reason exists to deviate.
- Know adequate history of the patient including adverse reactions, medical conditions and current drug use.
- Patient awareness and agreement on the treatment including side effects and alternatives.

Principles

- Make sure that the patient is aware how to take the drug and is able to take the drug as prescribed.
- Prescribe dose appropriate for the patient and their condition.
- Make arrangements for appropriate follow-up and monitoring where relevant and ensure that patient is aware of these.
- Clear record of prescription.
- If you prescribe at the recommendation of another healthcare professional – make sure it is appropriate and that the other person is competent to recommend.

Principles

- Keep the patient's GP informed with the patient's knowledge.
- If you are the doctor signing and issuing the prescription you bear responsibility for that treatment.
- You also bear responsibility for the aftercare of the patient and recognising adverse events unless another healthcare professional takes over.

The process of rational treatment

- Step 1: Define the patient's problem
- Step 2: Specify the therapeutic objective
- What do you want to achieve with the treatment?
- Step 3: Verify the suitability of your treatment
- Check effectiveness and safety Step 4: Start the treatment
- Step 5: Give information, instructions and warnings
- Step 6: Monitor (and stop?) treatment

Practical Prescribing

- Know what you are prescribing.
- Knowledge of h/o adverse reactions and drug interactions.
- Legible and accurate. Use capital letters.
- Use approved names and avoid trade names unless bioavailability varies between preparations.
- Route of administration should be clear, check doses for different routes.
- Date it and write times of administration accurately.
- Sign and print name.

Practical Prescribing

- Use well known and accurate abbreviations only.
- Avoid abbreviations where dose can be misread eg. u for units, i.e. write 10 units instead of 10u.
- Write quantities in grams if over a gram.
- if less than a gram, write as milligrams; if less than a milligram write as micrograms.
- Acceptable abbreviations are g and mg, but ug, mcg are not. They may be mistaken for mg, and so the full word microgram should be used. Nanograms –do not abbreviate.
- Decimal points - avoided preferably as they may be easily missed. If cannot be, use a zero before i.e. 0.5 mg.

Hospital prescription

- Always write a new prescription if you are changing doses and date it.
- Write the no. of charts existing for the patient on each chart.
- Fluid charts are usually separate, but mention on main chart.
- Setting up infusions and syringe drivers – look up dose, concentration and rate of infusion and indication prior to prescribing.

Hospital prescribing

- Think about the timing of drugs around food and sleep – eg. don't give frusemide at night, or steroids after lunch.
- PRN drugs – prescribe judiciously and pro-actively i.e. analgesics and anti-emetics for eg. if on opioids.
- Always write maximum dose for PRN drugs.
- On discharge ensure drugs are rationalised and information on new drugs and discontinued ones are given to the GP.

Warfarin

- Warfarin charts are usually separate, mention on main chart.
- Follow hospital guidelines regarding dosing.
- New patients need counselling – lots still drink alcohol
- Use LMWH with Warfarin for at least 5 days, until there have been two consecutive therapeutic INRs
- Arrange an INR appt around 2 days after discharge
- Sort out who will monitor INR (GP/clinic), and make sure patients knows what dose he is going to take and what clinic to go to.

Safety at home

- Warn patients about driving if the drug is likely to affect their ability to drive.
- Warn, if the effects of the drug is enhanced by alcohol.
- Keep medicines out of reach of children.
- If prescribing self administered injections – dispense sharps bins. For eg. with insulin.
- Warn patients of potential side-effects and adverse reaction and how to deal with them.

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PATIENT IDENTITY LABEL
WARD
CONSULTANT
DATE OF ADMISSION

INPATIENT MEDICATION AND ADMINISTRATION RECORD

BE CLEAR, BE SAFE

A PRESCRIBER

1. **Sign your name legibly to legalise prescribing.**
2. Use **approved names,** written clearly, and avoid abbreviations.
3. AS REQUIRED orders.
   Be specific on any single order – **dose** may vary but if it varies with route, prescribe separately.
4. REGULAR PRESCRIPTION
   Specify start date (and duration, if antibiotic course) and route of administration.
   Enter dose against appropriate time. Do not circle the time. Do not use "u" to abbreviate units or "mcg" to abbreviate micrograms.
   Spaces are available for two changes of dose and/or route.
5. **Any changes in dose or route must be initialled by the prescriber making the change.**
6. Doses and routes should be changed and drugs discontinued thus:

	DOSE			DATE														
	START	Change	Change	1.4	2.4	3.4	4.4	5.4	6.4	7.4	8.4	9.4	10.4	11.4				
DATE	1.4.04	3.4.04	5.4.04	DRUG – please print							SIGNATURE			INSTRUCTIONS			PHARMACIST	
ROUTE	IV	IV	PO	Furosemide														
INITIALS	Doc Phar										BLEEP No.							
06																		
09	40mg	40mg	80mg												S			
12		40mg													T			
18															O			
22															P			
24																		

Sign for any discontinuation or change across chart and put STOP for discontinuation.

7. Remember, patient may have other specialist medication records, e.g. cytotoxic, PCA, glucose monitoring.

B NURSE

1. Confirm identity of patient by matching hospital number with wrist band and/or verbally with the patient.
2. Check first that each item on the prescription is signed and dated by the prescriber.
3. Before administering a medicine ensure that each part of the prescription is complete, precise, correctly written and still valid (e.g. IV antibiotics prescription is valid for only two days unless rewritten).
4. Do not guess a medicine name or dose; if you cannot read the prescription easily or are in ANY doubt **contact the prescriber.**
5. Check all sections of the prescription sheet (e.g. as required, warfarin, once only, other charts etc.) to avoid omitting a dose.
6. Enter your initials in the administration box immediately after the administration. **A "✓" or "✗" are unacceptable.**
7. In the event of any non-administration, enter the appropriate number code in the administration box and specify the medicines and the action taken on the medicines management action plan (MMAP) on the reverse of chart.

TO TAKE AWAY MEDICINES (TTAs) – use this section when the TTA is sent to pharmacy

DATE DONE	INITIALS	COMMENTS FOR PHARMACY BY CLINICAL PHARMACIST (e.g. Information about optimising adherence and communicating with primary care, etc.)

OTHER PRESCRIPTIONS IN USE (All Staff to Tick Box) IV CHART ☐ CHART No. ☐ Chart..... of..... GLUCOSE TESTING SHEET ☐ OTHERS..... (Please state)

FOR CORRECT USE OF THIS SHEET SEE INSTRUCTIONS ON FRONT COVER

HOUSE OFFICER and Bleep No.	CONSULTANT	WARD	HOSPITAL	HOSPITAL No.

DRUG ALLERGIES / ADVERSE DRUG REACTIONS – SPECIAL PRECAUTIONS

NONE KNOWN / YES (circle) If Yes, please affix the green allergy sticker and state which drug(s) and nature of reaction.

Signature: ..... Date: .....

MUST BE COMPLETED BEFORE ANY DRUGS ARE ADMINISTERED

FULL NAME

DATE OF BIRTH

MALE / FEMALE

WEIGHT	HEIGHT	B.S.A.

DATE	TIME	ONCE ONLY & PRE-MEDICATION DRUGS	DOSE	ROUTE	SIGNATURE	GIVEN BY	DATE AND TIME GIVEN	PHARMACY

WARFARIN PRESCRIPTION CHART

WARFARIN Give at 1800 hr Drug Round	TARGET INR: INDICATION: SIGNATURE:	OTHER INSTRUCTIONS	SIGNATURE	PHARMACY
DATE				
INR Result				
Warfarin dose in mg				
Doctor's Initials				
Nurse's Initials				

Starting Warfarin

- The baseline INR must be known before warfarin is given.
- Normal doses of warfarin are given for most patients under 75 years.
- Reduced doses of warfarin are given to patients aged over 75 years or frail or with liver disease or heart failure.
- Check the INR on morning of day 4 and when result available bleep the anticoagulant nurse on 942 or if not available refer to chart below.
- Target INRs are on anticoagulant clinic referral forms.
- **All patients must be referred to the Anticoagulant Clinic and an appointment booked prior to discharge.**
- On discharge patients must be given an anticoagulant monitoring book and clear dosing instructions until their first anticoagulant clinic appointment.
- Prescribe 28 x 1mg warfarin tablets for discharge unless insufficient quantity to last until next clinic appointment.

Load with warfarin only if INR is less than 1.5	Day 1	Day 2	Day 3	Day 4
Warfarin Normal dosing	10mg	10mg	5mg	Check INR in morning
Warfarin Reduced dosing	8mg	8mg	4mg	

INR on day 4	1.4	1.6	1.8	2	2.5	3	3.5	3.7	4 or more
Normal dosing	8mg	7mg	6mg	5mg	4mg	3mg	2mg	1mg	nil
Reduced dosing	6mg	5mg	4.5mg	4mg	3mg	2mg	1mg	0.5mg	nil

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DRUG HISTORY CHECKED: From: ....

Pharmacist Sig: .... Date: ....

TRANSCRIBING CHECKED:

Pharmacist Sig: .... Date: ....

ENTER DOSE AGAINST TIME REQUIRED
USE **ONE** ROUTE ONLY FOR EACH ENTRY

REGULAR PRESCRIPTIONS

MONTH | YEAR

	DOSE			DATE
	START	Change	Change	
DATE				DRUG – please print
ROUTE				SIGNATURE / BLEEP No.
INITIALS				INSTRUCTIONS
				PHARMACIST
06				
09				
12				
18				
22				
24				
DATE				DRUG – please print
ROUTE				SIGNATURE / BLEEP No.
INITIALS				INSTRUCTIONS
				PHARMACIST
06				
09				
12				
18				
22				
24				
DATE				DRUG – please print
ROUTE				SIGNATURE / BLEEP No.
INITIALS				INSTRUCTIONS
				PHARMACIST
06				
09				
12				
18				
22				
24				
DATE				DRUG – please print
ROUTE				SIGNATURE / BLEEP No.
INITIALS				INSTRUCTIONS
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INITIALS				INSTRUCTIONS
				PHARMACIST
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12				
18				
22				
24				
DATE				DRUG – please print
ROUTE				SIGNATURE / BLEEP No.
INITIALS				INSTRUCTIONS
				PHARMACIST
06				
09				
12				
18				
22				
24				

IF DRUG IS NOT ADMINISTERED CONTACT THE PRESCRIBER STRAIGHT AWAY. RECORD THE APPROPRIATE NUMBER IN THE BOX AND FILL IN THE DETAILS AS DIRECTED OVER THE PAGE.

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AS REQUIRED PRESCRIPTIONS
WHEN DOSE VARIES WITH ROUTE, PRESCRIBE SEPARATELY

			DATE	TIME	DOSE	ROUTE	INIT	DATE	TIME	DOSE	ROUTE	INIT	DATE	TIME	DOSE	ROUTE	I
RUG and INDICATION		DOSE															
AX FREQUENCY/DOSE	PHARMACY	ROUTE															
IGNATURE		START DATE															
RUG and INDICATION		DOSE															
AX FREQUENCY/DOSE	PHARMACY	ROUTE															
IGNATURE		START DATE															
RUG and INDICATION		DOSE															
IAX FREQUENCY/DOSE	PHARMACY	ROUTE															
IGNATURE		START DATE															
RUG and INDICATION		DOSE															
IAX FREQUENCY/DOSE	PHARMACY	ROUTE															
IGNATURE		START DATE															
RUG and INDICATION		DOSE															
IAX FREQUENCY/DOSE	PHARMACY	ROUTE															
IGNATURE		START DATE															
RUG and INDICATION		DOSE															
IAX FREQUENCY/DOSE	PHARMACY	ROUTE															
IGNATURE		START DATE															

OXYGEN PRESCRIPTION CHART

	START	CHANGE	CHANGE	CHANGE	CHANGE	SIGNATURE
ATE						
IASAL/FLOW RATE						
'ENTURI MASK/FiO$_2$						
'ARGET SpO$_2$						
NITIALS						

ATE														
IURSE'S NITIALS CHECK 06														
09														
12														
18														
22														
24														

oxygen should be prescribed unless given in an emergency.
Flow rate for nasal 1-2 litres/minute.
Oxygen being administered must be checked by a nurse and initialled at every drug round to confirm that the prescription is being followed.

A: Regular Prescriptions

				Date / Time		
Drug: RANITIDINE						
Dose: 150 MG	Frequency: bd	Route: Po	Start date: 23/01	08[00]		
Additional instructions			Pharmacy			
Signature				18[00]		

B: As Required Medicines

					Date		
Drug: PARACETAMOL							
Dose: 1 G	Frequency: 4 hrly	Route: Po	Start date: 23/01		Time		
Additional instructions: max 4 G in 24 hrs				Pharmacy	Dose		
Signature					Route		
					Given by		

C: One off Doses

Date	Time	Drug	Dose	Route	Signature	Given			Pharmacy
						Date	Time	Initials	
23/01	1430	PHOSPHATE ENEMA	ONE	PR					

Adverse reactions

- Always ask, check the red bands and look at the drug chart!
- What is the type of adverse reaction?
- Anaphylactic vs. known side-effects.
- Does the drug still need to be prescribed i.e. is there an overwhelming clinical need? If so what precautions do you need to take.
- Report adverse events using the yellow form especially unexpected ones, rare ones and for relatively new drugs and for intensively monitored drugs.

Drug interactions

- Always be on the look out especially if there is poly-pharmacy.
- Some drugs are notorious for them especially enzyme activators.
- Anti-coagulants, anti-convulsants, hormonal agents, antibiotics and anti-arrhythmics especially.
- Look it up if you don't know, never be ashamed to open a BNF!
- Listen to the pharmacist! (within reason obviously, you make the clinical decision)

Dose adjustment

- In renal and hepatic diseases usually.
- Look at the relevant appendices in BNF if not sure.
- Creatine clearance.
- Don’t guess at body weights, ask the patient or weigh them.
- Most doses are based on average weights, if your patient is on the extremes, check before you prescribe.
- Elderly often require dose adjustment and dose titration.

Dose monitoring

- Many drugs require dose monitoring.
- Especially in cases of renal and hepatic failure.
- Either drug levels in blood or the effect of the drug can be monitored.
- INR for warfarin
- Serum levels for vancomycin or gentamicin or aminopylline.
- If you suspect toxicity due to the drug stop and check drug levels eg. Lithium and digoxin

Monitoring

- For many drugs known side effects need to be monitored.
- Amiodarone – monitor thyroid function, lung function.
- Clozapine – monitor FBC
- ACEI – monitor creatine and potassium.
- Cabergoline – monitor heart function and lung function.
- Baseline function may need to be assessed prior to starting the drug.

Pregnancy and lactation

- Avoid drugs unless absolutely necessary.
- If necessary don't hesitate to prescribe if safe.
- Check the BNF prior to prescribing.
- Always involve the patient in your decisions.
- For many drugs there isn't any accurate information available or only animal trial information is available.
- Consult an expert if you are unsure.

Additions

- Pediatric prescriptions are based on body weights and body surface area – many drugs have no safety reports in paediatric age group and are restricted.
- Remember BNF your best friend, use it frequently and wisely.
- Controlled drugs – many opiates and benzodiazepines are controlled. Prescription needs to be well documented and when you write a TTA quantities need to spelt out.

Examples

- Write a prescription and choose a drug.
- Write a fluid chart
- Write up an infusion
- Set up an insulin sliding scale
- Warfarin dose adjustment.
- Erythromycin and simvastatin – study drug interaction
- Dose adjustment in renal failure for penicillins

Thank You