

Anaphylaxis

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Symptoms and signs of anaphylaxis

Anaphylaxis is defined as an immediate systems hypersensitivity event produced by IgE-mediated release of chemicals from mast cells and basophils. Theoretically, prior exposure to the agent is required and the reaction is not dose- or route-related, but in practice anaphylaxis to injected antigen is more frequent, severe, and rapid in onset than following exposure to oral or topical antigen.

Agents which commonly cause anaphylaxis include:

- drugs—e.g. penicillins, aspirin
- insect stings—e.g. wasp and bee venoms
- food—e.g. nuts.

Urticaria and angioedema are the most common symptoms (Table 3.1) and absence of these suggests that the reaction may not be anaphylaxis.

Airways oedema, bronchospasm, and shock are life-threatening and immediate emergency treatment is usually required.

The onset of symptoms following parenteral antigen (including stings) is usually within 5–30min. With oral antigen, there is often a delay. Symptoms usually occur within 2h, but may be immediate and life-threatening. A late-phase reaction may also occur with recrudescence of symptoms after apparent resolution. Recurrence is a fairly frequent phenomenon and healthcare workers should be aware of this. Patients should not be discharged too quickly as they may require further treatment.

End-of-needle reactions

Some patients may experience an anaphylactic-like reaction during rapid intravenous (IV) drug administration. This is known as an end-of-needle reaction. Initial symptoms may suggest anaphylaxis, but in fact this is a vasopressor effect and can be distinguished from anaphylaxis as bradycardia occurs which is rare in anaphylaxis. Skin symptoms are also rare in end-of-needle reactions. Stopping or slowing down the infusion or injection usually leads to resolution of symptoms, and administration at a slower rate usually avoids a repeat event.

Table 3.1 Signs and symptoms of anaphylaxis

F	Urticaria
R	Angioedema
E	Dyspnoea, wheeze
Q	Nausea, vomiting, diarrhoea, cramping abdominal pain
U	Flush
E	Upper airway oedema
N	
T	
R	Headache
A	Rhinitis
R	Substernal pain
E	Itch with no rash
	Seizure

Treatment of anaphylaxis

Anaphylaxis is a life-threatening condition; therefore rapid recognition and treatment is essential. The first response is to secure the airway and lay the patient flat to reduce hypotension. If the patient cannot tolerate a supine position (because this can worsen breathing difficulties), a semi-recumbent position is preferable.

In hospital and some community settings (e.g. home IV antibacterial therapy), it might be appropriate to keep an 'anaphylaxis box' for emergency use, which contains the following essential drugs:

- adrenaline (epinephrine)
- an antihistamine (usually chlorphenamine injection)
- a steroid (usually hydrocortisone injection).

Adrenaline

In adults, 500micrograms of adrenaline (1:1000 solution) should be administered intramuscularly if the patient is showing clinical signs of shock, airway swelling, or breathing difficulty (stridor, wheezing and cyanosis). The sub-cutaneous route is not used because absorption is too slow. IV adrenaline is hazardous and should only be administered in the hospital setting. The IV route is preferred if there are concerns about intramuscular (IM) absorption; however, time should not be wasted looking for IV access in the event of vascular compromise. For IV administration, use a dilution of at least 1:10 000 and administer the injection over several minutes. The 1:1000 solution is never used intravenously. In the community, patients and carers can be taught to administer adrenaline using a pre-loaded device, such as an EpiPen[®] (ALK-Abello) or AnaPen[®] (Lincoln Medical). Note that both types of pen contain a residual volume after use and patients should be warned about this (Table 3.2). Trainer pens can be purchased from the manufacturers. Adrenaline minijets are no longer recommended for self-administration. See Table 3.3 for doses of adrenaline for adults and children.

Emergency administration of adrenaline without a prescription

Adrenaline (1:1000 solution) is exempt from prescription-only control if it is used for the purpose of saving a life in an emergency. The Royal Pharmaceutical Society (RPS) considers that a pharmacist is justified in supplying and administering adrenaline without a prescription in a life-threatening situation.

Chlorphenamine

In adults, a dose of 10–20mg chlorphenamine should be given after adrenaline and continued as needed for 24–48h to prevent relapse. It should be administered intramuscularly or by slow IV injection to ↓ the risk of exacerbating hypotension.

Hydrocortisone sodium succinate

In adults, a dose of 100–300mg hydrocortisone is administered by IM or slow IV injection after severe attacks to help prevent relapse. The onset of action is delayed for several hours. Asthmatics who have previously received a steroid are at special risk of delayed symptoms.

Additional treatment

Symptomatic and supportive care as needed: salbutamol or terbutaline unit dose vials or IV aminophylline can be used to treat bronchospasm, with oxygen (O₂) or other respiratory support given as needed. Crystalloid infusion (e.g. sodium chloride 0.9%) might be needed to treat severe hypotension.

All patients treated initially in the community should be transferred to hospital for further treatment and observation.

Algorithms for the treatment of anaphylaxis in adults and children in hospital and community settings are available from the Resuscitation Council (UK) website.¹

Late sequelae

Patients should be warned of the possibility of symptom recurrence, and if necessary kept under observation for up to 24h. This is especially applicable in the following circumstances.

- Past history of a recurrence (biphasic reaction).
- Severe reaction, with slow onset.
- Possibility that allergen could still be absorbed (e.g. oral administration).
- Past history of asthma or a severe asthmatic component to the reaction.

Table 3.2 Adrenaline for self-administration (IM only)

EpiPen[®]/AnaPen[®]: for children and adults >30kg body weight, adrenaline 300micrograms

Junior EpiPen[®]/Junior AnaPen[®]: children 15–30kg body weight adrenaline 150micrograms

EpiPen[®]/Junior EpiPen[®]: 1.7mL remains in the pen after use (initial volume, 2mL)

AnaPen[®]/Junior AnaPen[®]: 0.75mL remains in the pen after use (initial volume, 1.05mL)

Table 3.3 Dose of IM adrenaline for anaphylaxis (dose can be repeated at 5min intervals, as needed)

Age	Dose	Volume of adrenaline in 1:1000 solution (1mg/mL)
<6yrs	150micrograms	0.15mL
6–12yrs	300micrograms	0.3mL
>12yrs*/adults	500micrograms	0.5mL
*If child small or prepubertal	300micrograms	0.3mL

Doses of IV adrenaline injection for anaphylaxis

Age	Dose	Volume of adrenaline in 1:10 000 solution (100micrograms/mL)
Children	10micrograms/kg	0.1mL/kg body weight
Adults	500micrograms	5mL (1mL/min; stop when response obtained)

Prevention of anaphylaxis

The risk of an anaphylactic reaction can be reduced by good drug history-taking and antigen avoidance:

- Check the patient's drug history for reports of allergy. If necessary, clarify the details of the reaction with the patient or a relative. A previous history of a mild penicillin-associated rash in infancy might not be a contraindication to future use, but bronchospasm would be.
- Be aware of cross-sensitivity between drug classes.
 - Up to 7% of people allergic to penicillin are also allergic to cephalosporins.
 - Patients allergic to aspirin are frequently also allergic to other prostaglandin inhibitors.
- Advise patients with severe allergies to carry some form of warning information (e.g. MedicAlert® bracelet).
- Some drugs (e.g. NSAIDs and ACE inhibitors) can exacerbate or ↑ the risk of a reaction. Avoid concomitant use of these drugs in situations where the patient could be exposed to the allergen (e.g. desensitization programmes).
- Remember that patients with peanut allergies should avoid pharmaceutical products containing arachis oil.

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Ward etiquette

Starting work on a new ward

- If possible, speak to the pharmacist who previously covered that ward.
- Introduce yourself to the ward manager, key medical staff, nursing staff, and other relevant staff (e.g. the ward clerk).
- Check how the ward functions.
- Find out the best time for your visit.
- Establish if there are any handover meetings or ward rounds that would be useful for you to attend.
- Check whether the ward has a pharmacy book in which nursing staff write down their supply requests or whether there is another system in place (e.g. it is the responsibility of the pharmacist or medicines management technician to check supply needs).
- Find out the ward system that the multidisciplinary team use to know which patients are in which beds.
- Explain how much time you can spend on the ward and the degree of pharmaceutical care that you can provide.
- Establish what sort of pharmaceutical care service the ward is expecting from you.
- Be aware of local policies/guidelines that pertain to your ward work.
- Comply with any rules regarding handwashing and wearing an apron, gloves, and mask.

Each ward visit

- Introduce yourself to the nursing coordinator.
- Check whether there are specific pharmaceutical care issues they would like you to follow up that day.
- Check which patients are new admissions and which ones are not, to prioritize work if necessary.
- Check which patients are being discharged that day so that take-home medication is dispensed on time, especially for patients requiring ambulance or similar transport.
- If the curtains are around a patient with whom you need to consult, check why.
- If patients in side rooms have their doors shut, knock before entering.
- Make the nursing staff aware when you leave the ward.

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Patient etiquette

When delivering pharmaceutical care to patients, it is essential that pharmacists follow an appropriate code of conduct:

- Introduce yourself to the patient, stating your name and job title or role.
- Ask if it is convenient for you to speak to the patient about their medication.
- Check the patient's identity against the drug chart/notes.
 - In accordance with guidance from the national patient safety agency, before taking a history from any patient, the patient should always be asked to confirm their name, date of birth, and allergy status. This should correspond to what is written on their wrist band. If they have any form of allergy the patient should have a red wrist band confirming what they are allergic to. The wrist band will also have a hospital number. The name, date of birth, hospital number, and allergy status should then be cross-checked with the details on the drug chart and the patient notes. If any of these details are inaccurate or missing you should not proceed until either you or the nursing staff have made the necessary amendments. Additionally, patients admitted through Accident & Emergency (A&E) will often be admitted under an A&E attendance number. However, as soon as the patient's Medical Records Number (MRN) and/or NHS number is known the drug chart and wrist band should be amended accordingly. If the patient has multiple MRN numbers these should be merged into one clinical record by the clinical records team. A large number of clinical incidents and patient deaths have been directly attributed to this check not being properly carried out (e.g. two patients with similar names on the ward have medication for one patient prescribed on the other patient's drug chart, patients are administered penicillin-based antibiotics when they are penicillin allergic because they did not have a wristband or had the wrong coloured wrist band).
- Ask the patient how they would like to be addressed—e.g. by first name or Mrs/Mr.
- Explain what you will be doing—e.g. checking the medicine chart, checking the patient's own drugs (PODs), taking a medicines history, counselling patients on their new medicine. Use the term 'medicine' rather than 'drug' when talking to patients.
- Check whether the patient has any questions at the end of the consultation.
- If you are sorting out any problems with the medication, ensure that the patient is kept fully informed.
- Avoid consultations while patients are having their meals. If it is essential to speak to the patient at that time, check that it is acceptable with the patient to interrupt their meal.
- If patients have visitors present, check with the patient if it is all right to interrupt. If so, check with the patient whether they are happy for the visitors to be present during the consultation. If the patient does not want the visitors present, ask the visitors to return after a set period of time.

- If the curtains are around the patient's bed, check with the ward staff as to the reason. If necessary, speak to the patient from outside the curtain to check whether it is all right for them to see you or whether you should return later.
- If the patient becomes distressed, or is too unwell, try to sort out the task with the help of the notes/ward staff/relative or return later when the patient can be involved with the consultation.
- Be polite at all times.
- Respect the patient's privacy.

Dealing with medical staff

Medical hierarchy

In the UK, doctors must complete a five-year medical degree (or 6 years including an intercalated BSc/BMedSci degree) which leads to provisional registration with the General Medical Council. They then undertake a two-year period of foundation training. During the foundation training, doctors will be known as 'foundation house officer 1' (F1) in year 1 and 'foundation house officer 2' (F2) in year 2. The important distinction within the two-year foundation programme is that FY1 doctors are working under direct supervision, whereas FY2 doctors can work without direct supervision. This is important because a number of NHS Trusts now require FY1 doctors to pass a prescribing examination or may have restrictions imposed as to what drugs they can or cannot prescribe, whereas FY2 doctors will not.

Foundation training is almost universally followed by a period of 2–3 years of core training (the CT1 and CT2 grades) followed by a period of run-through training (starting at ST3 and extending up to ST8 depending on speciality) which leads to a CCT (Certificate of Completion of Training) at which point the doctor is able to apply for consultant posts. Junior doctors are often *not* training to work in the consultant's speciality, but rotate into that speciality for a 3–6-month post as part of their training programme. GP trainees will rotate through hospital medical specialities as part of their Vocational Training Scheme (VTS) training programme.

A consultant leads a team of junior doctors who are rotating through or training to work in the consultant's specialty. Other doctors who work in the team include clinical assistants, clinical fellows, and staff grade doctors. The specialist registrars often rotate between teams of the same speciality to ↑ their experience.

Dealing with medical staff

- Deal with the correct team of doctors. Ideally, talk directly to the prescriber if a change in the prescription is required.
- Be aware of the medical hierarchy, and deal with the appropriate grade of doctor.
- Be assertive.
- Be confident with your knowledge of the subject. If necessary, do some background reading.
- Try to anticipate questions and have answers ready.
- Explain succinctly.
- Repeat, if necessary.
- Understand and explore their viewpoint.
- Be prepared with alternative suggestions.
- Come to a mutual agreement.
- Do not be bullied.
- Be honest.
- Acknowledge if you 'don't know', and be prepared to follow up.
- If necessary, walk away from a difficult situation and seek the support of a more experienced colleague.
- Occasionally, you might need a discussion with a more senior grade of doctor if you are unhappy with the response from the junior doctor. This should be approached with tact and diplomacy.

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Understanding medical notes

When a patient is first admitted to hospital, a fairly standard series of questions, investigations, and results relating to their physical examination is recorded in the notes. This is known as ‘medical clerking’ and is essentially the story (history) of the patient’s illness to date. After interpretation of the initial clerking is mastered, it is usually fairly easy to understand subsequent entries in the notes because these are mostly brief updates. Notes written by GPs follow a similar format but are generally less detailed.

Medical clerking

Clerking usually uses the following format, although not every history includes every step.

- General information about the patient—name, age, gender, marital status and occupation.
- ‘Complaining of’ (C/O) or ‘presenting complaint’ (PC)—a statement of what symptoms or problems have led to the patient’s admission or attendance, ideally using the patient’s own words.
- ‘History of presenting complaint’ (HPC)—more detail about the symptoms (e.g. timing, whether they have occurred previously, whether anything improves or worsens them, severity and character).
- ‘Past medical history’ (PMH)—does the patient have a past history of any medical complaint, including the following:
 - previous hospital admission
 - surgery
 - chronic disease (e.g. diabetes mellitus or asthma).
- ‘Drug history’ (DHx)—the patient’s current drugs and any drugs stopped recently are listed. Ideally, this should include any frequently used over-the-counter and herbal medicines. ADRs and allergies are also recorded here.
- ‘Social history’ (SH) and ‘family history’ (FH)—relevant details of the patient’s occupation, home circumstances, and alcohol and tobacco consumption are recorded. Significant information about the medical history of close family members is noted.
 - Whether parents and siblings are alive and well (A&W).
 - Does anyone in the family have a medical problem related to the presenting complaint?
 - If close family members have died, at what age and what was the cause of death?

All the information in this section is found by asking the patient questions before the doctor examines the patient. This is known as ‘systems review’ (S/R). Negative findings are recorded, in addition to positive findings.

- On examination (O/E)—this is a general comment about what the patient looks like (e.g. pale, sweaty, or short of breath (SOB)).
- The doctor examines each body system in turn, recording what they have found by looking, listening, and feeling. They concentrate on any systems that are most relevant to the symptoms described by the patient (e.g. if the patient has complained of chest pain, the cardiovascular system (CVS) and respiratory system (Resp) are most relevant). The following body systems are usually covered:
 - CVS
 - Resp
 - gastrointestinal system (GI, GIT or abdo)
 - central nervous system (CNS)
 - peripheral nervous system (PNS)
 - bones and joints (ortho).

Much of the information is recorded using abbreviations and medical 'shorthand' (Table 4.1).

- 'Investigations' (Ix)—the results of any investigations, such as chest X-rays (CXR), are recorded.
- 'Diagnosis' (Dx or Δ)—the doctor now draws a conclusion from the history and examination and records the diagnosis. If it is not clear what the diagnosis is, they might record several possibilities. These are known as 'differential diagnoses' (DDx or $\Delta\Delta$).
- The doctor now writes a plan for treatment, care, and further Ix.
- Finally, the doctor signs the report and writes down their bleep number or other contact details.

Other clinical information

Remember that the complete clinical record is much more than the medical notes. To obtain a complete picture of the patient's history and progress you might need to use other information.

- Admission form (includes the patient's address, next of kin, and GP details).
- GP's referral letter.
- Nursing notes.
- Observation charts—e.g. temperature, BP, blood glucose levels, and fluid balance.
- Laboratory data—may be paper copies in notes or on computer.
- Results of investigations, e.g. X-ray, MRI, ECG—may be paper copies in notes or on computer.
- Notes from previous admissions or out-patient attendances (including discharge summaries and clinic letters).
- Old drug charts.
- The current drug chart.

Table 4.1 Abbreviations commonly found in medical notes

+	increased, enlarged, or present (more +s indicates increased severity)
↑	increase
↓	decrease
→	normal
⬡	represents the thoracic and abdominal areas
↔	normal
♀	female
♂	male
#	fracture
○	normal or none
†	dead or died
ABG	arterial blood gases
ACTH	adrenocorticotrophic hormone
ADH	antidiuretic hormone
AF	atrial fibrillation
AFB	acid-fast bacilli
Ag	antigen
AIDS	acquired immunodeficiency syndrome
ALL	acute lymphoblastic leukaemia
AML	acute myeloid leukaemia
ANF	antinuclear factor
APTT	activated partial thromboplastin time
ARDS	acute respiratory distress syndrome
ASD	atrial septal defect
AST	aspartate transaminase
A&W	alive and well
AXR	abdominal X-ray
Ba	barium
BBB	bundle branch block
BMT	bone marrow transplant

Table 4.1 (Contd.)

BP	blood pressure
BS	breath sounds or bowel sounds
C/O	complaining of
Ca	carcinoma or cancer
CABG	coronary artery bypass graft
CAPD	continuous ambulatory peritoneal dialysis
CCF	congestive cardiac failure
CHD	congenital heart disease
CHF	chronic heart failure
CLL	chronic lymphoblastic leukaemia
CML	chronic myeloid leukaemia
CMV	cytomegalovirus
CNS	central nervous system
COPD	chronic obstructive pulmonary disease
CPAP	continuous positive airways pressure
creps	crepitations
CSF	cerebrospinal fluid
CSU	catheter specimen of urine
CT	computed tomography
CVA	cerebrovascular accident
CVP	central venous pressure
CVS	cardiovascular system
CXR	chest X-ray
D&C	dilatation and curettage
D&V	diarrhoea and vomiting
DDx, $\Delta\Delta$	differential diagnoses (used if there is more than one possible diagnosis)
DHx	drug history
DIC	disseminated intravascular coagulation
DM	diabetes mellitus
DNA	did not attend or deoxyribose nucleic acid

(continued)

Table 4.1 (Contd.)

DVT	deep vein thrombosis
D/W	discussed or discussion with
Dx, Δ	diagnosis
DXT	deep X-ray therapy, i.e. radiotherapy
EBV	Epstein–Barr virus
ECF	extracellular fluid
ECG	electrocardiogram
EEG	electroencephalogram
ELISA	enzyme-linked immunosorbent assay
EMU	early morning urine
ENT	ear, nose, and throat
ERCP	endoscopic retrograde cholangiopancreatography
ESR	erythrocyte sedimentation rate
EUA	examination under anaesthesia
FBC	full blood count
FEV ₁	forced expiratory volume in 1 second
FFP	fresh frozen plasma
FHx	family history
FSH	follicle-stimulating hormone
FSHx	family and social history
FVC	forced vital capacity
G6PD	glucose 6-phosphate dehydrogenase
GA	general anaesthesia
GABA	γ-aminobutyric acid
GFR	glomerular filtration rate
GGT	γ-glutamyl transpeptidase
GH	growth hormone
GI	gastrointestinal
GU	gastric ulcer or genitourinary
GVHD	graft versus host disease
Hb	haemoglobin

Table 4.1 (Contd.)

HBV	hepatitis B virus
HCV	hepatitis C virus
HIV	human immunodeficiency virus
HLA	human leucocyte antigen
HPC	history of presenting complaint
HRT	hormone replacement therapy
HSV	herpes simplex virus
IBD	inflammatory bowel disease
ICP	intracranial pressure
IDDM	insulin-dependent diabetes mellitus
Ig	immunoglobulin
IHD	ischaemic heart disease
IM	intramuscular
INR	international normalized ratio
ISQ	<i>idem status quo</i> (i.e. unchanged)
IT	intrathecal
ITP	idiopathic thrombocytopenic purpura
IUD	intra-uterine device
IV	intravenous
IVC	inferior vena cava
Ix	investigations
JVP	jugular venous pressure
KCCT	kaolin cephalin clotting time
LBBB	left bundle branch block
LFT	liver function tests
LH	luteinizing hormone
L°K°K°S°	liver, kidneys, spleen (° = normal)
LP	lumbar puncture
LVF	left ventricular failure
MC&S	microscopy, culture, and sensitivities

(continued)

Table 4.1 (Contd.)

MCHC	mean corpuscular haemoglobin concentration
MCV	mean corpuscular volume
MI	myocardial infarction
MND	motor neuron disease
MSU	midstream urine
N&V	nausea and vomiting
NAD	nothing abnormal detected
NG	nasogastric
NIDDM	non-insulin-dependent diabetes mellitus
NKDA	no known drug allergies
O/E	on examination
OA	osteoarthritis or on admission
OC&P	ova, cysts, and parasites
OGTT	oral glucose tolerance test
PC	presenting complaint
PCP	<i>Pneumocystis jirovecii</i> (previously <i>carinii</i>) pneumonia
PCV	packed cell volume
PDA	patent ductus arteriosus
PE	pulmonary embolism
PEEP	positive end-expiratory pressure
PEFR	peak expiratory flow rate
PERLA	pupils equal reactive to light and accommodation
PID	pelvic inflammatory disease
PM	post-mortem
PMH	past medical history
PR	per rectum or pulse rate
PT	prothrombin time
PTH	parathyroid hormone
PTT	partial thromboplastin time
PUO	pyrexia of unknown origin
PV	per vaginum

Table 4.1 (Contd.)

RA	rheumatoid arthritis
RAST	radio-allergosorbent test
RBBB	right bundle branch block
RBC	red blood cell
RF	renal function
RIP	rest in peace (i.e. dead or died)
Rh	Rhesus
ROS	rest of systems
RS/RES	respiratory system
RTA	road traffic accident
RTI	respiratory tract infection
RVF	right ventricular failure
S ₁ S ₂	heart sounds (first and second)
SCD/SCA	sickle cell disease/anaemia
SIADH	syndrome of inappropriate diuretic hormone
SLE	systemic lupus erythematosus
SOA	swelling of ankles
SOB	shortness of breath
SOBOE	short of breath on exercise/exertion
ST	sinus tachycardia
SVC	superior vena cava
SVT	supraventricular tachycardia
TB	tuberculosis
TBG	thyroxine-binding globulin
TFT	thyroid function tests
THR	total hip replacement
TIA	transient ischaemic attack
TIBC	total iron-binding capacity
TLC	tender loving care
TOE	transoesophageal echocardiogram
TOP	termination of pregnancy

(continued)

Table 4.1 (Contd.)

TPN	total parenteral nutrition
TRH	thyrotrophin-releasing hormone
TSH	thyroid-stimulating hormone
TURP	transurethral resection of the prostate
U&E	urea and electrolytes
UC	ulcerative colitis
URTI	upper respiratory tract infection
UTI	urinary tract infection
VDRL	Venereal Diseases Research Lab (used to refer to the test for syphilis)
VF	ventricular fibrillation
VSD	ventricular septal defect
VT	ventricular tachycardia
W/R	ward round
WBC	white blood count
WCC	white cell count

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Guidelines for prescription endorsement of hospital or institutional drug charts by pharmacists

Administration/prescription chart review

- Pharmacists should initial and date all sections of drug charts where drugs have been prescribed when reviewing charts on the ward—this constitutes the ‘clinical check’ and assumes that all patient parameters are available to the pharmacist (i.e. drug history, medical notes, urea and electrolyte (U&E) levels, patient’s own drugs, etc).
- If the pharmacist clinically checks the drug chart in the dispensary, the following applies.
 - All drug entries should be clinically checked using the resources available in the dispensary (i.e. no access to patient’s notes, limited access to U&E levels).
 - All entries should be initialled and dated by the pharmacist, ideally in a different coloured ink to the rest of the prescription (e.g. green ink). Any items supplied should be endorsed with the quantity, strength, and form supplied.
 - The ward pharmacist should then treat the drug chart as for a new patient (i.e. check drug history, patient’s own drugs (PODs), notes, and U&E levels, as appropriate).
- Ideally, a drug history should be taken from the patient by the pharmacist or pharmacy technician. This should be indicated by DHx, date and initial, and should be documented according to local policy.
- All endorsements by pharmacists are ideally made in a different coloured ink to the rest of the prescription (e.g. green ink, to distinguish pharmaceutical input from the prescribing process), although this is not a legal requirement. Ensure that the coloured ink used can be reproduced if photocopied, in line with local policy.
- Pharmacists should check and write any identified drug allergies, sensitivities, intolerances, or ADRs, in addition to the reaction, in the appropriate space section on the drug chart.
- If the patient’s name, consultant, ward name, or hospital number is missing, illegible, or incorrect, this should be added or corrected by the pharmacist. If appropriate and if it is missing from the chart, the patient’s weight and/or surface area should be added by the pharmacist.
- All sections of the drug chart should be checked, including ‘once-only’ drugs, ‘fluids’, and ‘patient-controlled analgesia’ sections.

Drug name section

- All drugs should be endorsed by the pharmacist with their non-proprietary approved names, unless they are combination products with no approved names.
- Brand names should be added for ciclosporin, theophylline, mesalazine, interferon, and lithium as the different brands are not interchangeable. Brand names should also be added for modified release (M/R) nifedipine, diltiazem, and verapamil. They are also desirable for carbamazepine, phenytoin, oral contraceptives, hormone replacement therapy (HRT), multiple-ingredient skin products, and inhalers.
- If M/R or enteric-coated (E/C) formulations are intended but not prescribed, drug names should be endorsed M/R or E/C.
- When liquid formulations are intended but not prescribed, drug names should be endorsed as liquid. The concentration should be specified. The dose in millilitres should be calculated and specified, if possible.
- When a dose is prescribed that requires a combination of strengths, the usual combination should be clarified—e.g. digoxin 187.5micrograms, 3x 62.5micrograms or 62.5micrograms + 125micrograms tablets.
- All changes agreed with the prescriber should be endorsed 'confirmed with Dr [name]', dated, and initialled. Do not use the abbreviation 'pc'.
- Non-formulary, clinical trial, or 'named patient' items should be endorsed as such.

Advice for insulins

The source of insulin should be specified (i.e. human, bovine, or porcine). The device used should also be endorsed (i.e. vial, 1.5mL or 3mL penfill, or disposable pen). Lastly, the mixture of insulin should be specified, if appropriate (e.g. 50/50).

Advice for inhalers

The strength of inhaler and the device (e.g. metered-dose inhaler (MDI), Easi-Breathe[®], Accuhaler[®], etc) and whether used via a spacer should be specified.

Dose section

Doses should be endorsed as whole units when not so prescribed (e.g. 500mg not 0.5g).

Abbreviations should not be used: doses prescribed as 'micrograms' or 'µg' should be endorsed as 'micrograms', doses prescribed as 'ng' should be endorsed as 'nanograms', and similarly 'IU' or 'U' should be endorsed as 'units'.

Dose times should be amended, as appropriate.

- To suit meal times—Calcichew[®]).
- To avoid drug interactions related to absorption—e.g. ciprofloxacin and antacids.
- Dose interval—antibiotics.
- At night (nocte)—statins (not atorvastatin).
- In the morning (mane)—fluoxetine/paroxetine.
- At 8am and 2pm to avoid nitrate tolerance—isosorbide mononitrate.

Note: changes to dose time usually do not need to be referred to the prescriber, dependent on local policy.

The dose and/or route should be clarified where ambiguous, e.g. 'propranolol 1 tablet' or (sublingual) 'GTN po'. These details should be confirmed with the patient or their notes, and do not usually have to be referred to the prescriber, dependent on local policy. Endorse that the details were confirmed with patient/GP/notes etc.

- Endorsement of drugs administered weekly (e.g. methotrexate and alendronate) must be clear, specifying the day of the week the drug is usually taken.
- As required, drugs specifying multiple routes are not encouraged, but if prescribed are endorsed with the appropriate dose for each route—e.g. prochlorperazine buccal/po/im 3mg/5mg/12.5mg, respectively.
- As required, drugs should be endorsed with their maximum frequency or dose (e.g. analgesics) and/or instructions for use (e.g. anti-diarrhoeals).
- Prescriptions for IV drugs should be endorsed with injection or infusion rates or special requirements for boluses (e.g. furosemide). High-dependency areas could be exceptions from this requirement.
- The rates of currently running drug-containing infusions should be checked, initialled, and dated (as described in the 'Pharmacy annotation section', p.52) in the pharmacy box.
- Eye drops and ointments should have left/right/both eye(s) specified.

Pharmacy annotation section

All drugs should be initialled and dated by a pharmacist, constituting the 'clinical check'. Supply endorsements should then be made by the pharmacist:

- stock items (S).
- one-stop supply (28 days).
- controlled drugs (CDs).
- patient's own drugs (PODs), including details of quantity and strength brought in and highlighting the date supplies were checked.

Symbols, such as triangle, circle, and slash, are used to distinguish entries from people's initials.

- Although self-administration should be encouraged, such systems must be supported by specific protocols that have been agreed by your institution.
- 'Non-formulary', 'clinical trial', or 'named patient' should be written in full in the drug name box.
- Prescriptions should be endorsed with the date that a supply is made.
- Prescriptions should be endorsed with the quantity supplied each time a supply is made and the appropriate strength of the product supplied.
- When a chart is rewritten, the ward pharmacist should check each entry against the previous chart, initialling and dating each entry if it is correct. The pharmacist should add the appropriate endorsing information with the date of the last supply (for information).

Further information

- Drugs stored in the refrigerator should be endorsed 'Fridge'.
- Endorse prescriptions with guidance on unusual or complex administration (e.g. disodium etidronate or alendronate).
- Clarify bioavailability differences if relevant (e.g. phenytoin capsules and suspension).
- Alert the prescriber to clinically significant drug interactions that are identified. Communicate other potential interactions to the relevant doctor either by telephone or by documentation in the patient's notes.

Prescription screening and monitoring

In an ideal world, pharmacists would review prescriptions with all relevant patient information to hand and individualize drug therapy accordingly. In reality, time and circumstances do not allow this, and pharmacists must be able to identify problems with only limited information. Time rarely allows for a full examination of all patient data, even if it is available, so pharmacists must learn to determine whether or not this is necessary.

The choice of information sources available could range from just the prescription, the patient or their representative, or, possibly, prescription-medication records (PMRs) in the community pharmacy to full laboratory data and medical and nursing notes in the hospital setting. The following discussion assumes that all information is available but it can be adapted to situations in which there are more limited data.

First impressions


Look at the prescription and patient (if present). This might seem an obvious first step, but these simple observations can tell you a great deal.

- What does the prescription or chart tell you about the patient?
 - Age—think about special considerations in children (see [p.206](#)) and the elderly (see [p.218](#)).
 - Weight—is the patient significantly overweight/underweight? Will you need to check doses according to weight?
 - Ward name or consultant—may tell you the presenting illness (if this is not already obvious).
 - Other charts can also provide important information—e.g. diet sheets, blood glucose monitoring, BP, and temperature.
 - What does observation of the patient tell you?
 - Old frail patients probably need dose adjustments because of low weight or poor renal function.
 - Take extra care checking children's doses; also check that the formulation is appropriate and consider licensing issues (see [p.210](#)).
 - Unconscious patients cannot take drugs by mouth. Will you need to provide formulations that can be administered through a nasogastric or gastrostomy tube?
 - Do they have IV fluids running? Consider fluid balance if other IV fluids will be used to administer drugs (notably antimicrobials).
 - If the patient's weight is not recorded on the prescription, do they look significantly overweight/underweight. If you have concerns, ask the patient if they know their weight or weigh them.
 - Is the patient pregnant or breastfeeding?
 - Could the patient's racial origin affect drug handling—e.g. there is a higher incidence of glucose 6-phosphate dehydrogenase (G6PD) deficiency in people of African origin (see [p.200](#)).

At this point, you might already have decided on points that need to be checked or monitored. Make a note of these as you think of them. In many hospitals a ward patient list is produced each day, which gives patient names, diagnosis, and basic clinical details. This is a useful source of readily available patient information, and you can make notes and pharmaceutical care points on your copy. Remember that the information on the list is confidential and you should be careful how you handle it. Do not leave it lying around for others to see and dispose of it by shredding or in a confidential waste bin.

Review prescribed drugs

Check each drug on the prescription carefully. Newly prescribed drugs are the highest priority, but it is important to periodically review old drugs.

- Are the dose, frequency and route appropriate for this patient, their weight and their renal function?
- What is the indication for the drug?
 - Is it appropriate for this patient?
 - Does it comply with local or national guidelines or formularies?
 - Could the drug be treating a side effect of another drug—if so, could the first drug be stopped or changed?
- Are there any potential drug interactions (see  p.20)?
 - Are they clinically significant?
 - Do you need to get the interacting drug stopped or changed, or just monitor for side effects?
- Is therapeutic drug monitoring (TDM) required?
 - Do you need to check levels or advise on dose adjustment?
 - Are levels being taken at the right time?
- Is the drug working?
 - Think about the signs and symptoms (including laboratory data and nursing observations) you should be monitoring to check that the drug is having the desired effect. Are any symptoms due to lack of effect? Talk to the patient!
- Are any signs and symptoms due to side effects?
 - Do you need to advise dose adjustment, a change in therapy, or symptomatic treatment of side effects? Remember that it is sometimes appropriate to prescribe symptomatic therapy in anticipation of side effects (e.g. antiemetics and laxatives for patients on opioids).
- Check that the patient is not allergic to or intolerant of any of the prescribed drugs. This is usually recorded on the front of hospital prescription charts or you might need to check the medical notes or talk to the patient. Community pharmacy PMRs often record drug allergies or intolerance.

Ensure that you have looked at all prescribed drugs. Hospital prescription charts usually have different sections for 'as required' and 'once-only' ('stat') drugs and IV infusions. Many patients might have more than one prescription chart, and some might have different charts for certain types of drug (e.g. chemotherapy).

By now, you will probably have added to your list of points to follow up on and have some idea of which patients you should focus on.

Check the patient's drug history

When patients are admitted to hospital, it is important that the drugs they normally take at home are continued, unless there is a good reason to omit them. Check that the drugs the patient usually takes are prescribed in the right dose, frequency and form.

- Ideally, use a source of information that is different from the admission history (in case the admitting doctor has made any errors):
 - GP's referral letter or computer printout
 - copy of community prescription
 - POD supplies.
 - phone GP's surgery
 - talk to the patient/relative/carer.
- Talking to the patient often reveals drugs that might otherwise be overlooked (e.g. oral contraceptive pill, regular over-the-counter medicines or herbal medicines).
- If there are any discrepancies between what has been prescribed and what the patient normally takes that you cannot account for, ensure that the doctors are aware of this. Depending on your local practice, it might be appropriate to record discrepancies on the prescription chart or in the medical notes.
- Many patients may not remember the names and doses of medication they are taking, but they will often bring in their current tablets which can be a vital source of information. It is also important to check that they are taking their medications as directed (e.g. with or without food or at the correct time of day) rather than assuming that they are following the instructions given. Additionally, it is now best practice to ask the patient's GP to fax through a list of current medications for all in-patients as an independent cross-check.

Talk to the patient

Patients are an important source of information about their drugs, disease, and symptoms. Talk to them! You might find out important information that is not recorded in the medical notes or prescription chart. If you are reviewing charts at the bedside, always introduce yourself and explain your role and what you are doing. It is a good idea to ask the patient if they have any problems with or questions about their medicines. If the patient is on many drugs or complex therapy, check their adherence by asking if they are managing to take all their medicines at home.

Care plan

You will now have notes of various problems, questions, and monitoring that you need to do. Resolve any problems and form a plan to continue monitoring the patient. Learn to prioritize. An elderly patient with renal impairment who is taking multiple drugs is at higher risk of drug-related problems than a young fit patient who is only taking one or two drugs. If you are short of time, concentrate on the high-risk patients. Check your notes, decide what jobs are essential, and deal with these first.

In some hospitals, a formal pharmaceutical care plan is written for each patient. This can be quite time consuming, but it is good practice if you can do it (for high-risk patients if not for all).

Screening discharge prescriptions

- Are all regular drugs from all prescription charts prescribed? If not, can you account for any that are omitted?
- Are timings correct and complete (e.g. diuretics to be taken in the morning)?
- Are any 'as required' drugs used frequently and therefore needed on discharge?
- Are all the prescribed drugs actually needed on discharge (e.g. hypnotics)?
- Does the patient actually need a supply? They might have enough of their own supply on the ward or at home.
- Will the GP need to adjust any doses or drugs after discharge? If so, is this clear on the prescription or discharge letter?
- Is there any information that you need to pass on to the patient, carer, or GP (e.g. changes to therapy or monitoring requirements)?
- Does the patient understand how to take the drugs, especially any new ones or those with special instructions—e.g. warfarin (see [📖](#) p.362)?
- Are adherence aids needed (see [📖](#) p.6)?
- When is the patient being discharged? It is important to identify which patients are being discharged that day.
- If any changes are required to the discharge prescription, the junior doctor needs to be contacted.

Drug history (DHx) taking

Before taking a DHx from a patient ensure that relevant information is obtained from the medical and nursing notes that might aid the process. Consider whether it is beneficial to have the patient's carer present, particularly for very young or old patients, for those who have difficulty communicating, or if the carer administers the medication. It is preferable if the DHx taking is carried out in an area where interruptions from visitors or other healthcare professionals are minimized.

When taking the DHx, remember to obtain details of the following.

- Drug name.
- Dose.
- Frequency.
- Formulation.
- Duration of treatment.
- Indication.
- Any problems with medication, such as with administration (e.g. inhaler), ADRs, or allergies.
- Is the patient taking their medication according to the prescribed instructions?

It is essential that details of all types of medication are obtained for a DHx, including the following.

- Medicines prescribed by the GP.
- Medicines prescribed by the hospital.
- Over-the-counter medicines.
- Alternative (e.g. herbal or homeopathic) medicines.
- Recreational drugs—discuss with patient before documenting, as many patients may not want this documented.
- All forms of medicine (e.g. tablets, liquids, suppositories, injections, eye drops/ointments, ear drops, inhalers, nasal sprays, creams, and ointments).
- If a compliance aid (e.g. dosette box) is used, who fills it?

DHxs sometimes have to be verified if patients cannot remember the details of their medication and have not brought their medication with them. DHxs can be verified by the following means.


- Checking against the POD supply.
- Checking against GP letters.
- Checking records of prescriptions used in the community (FP10 prescriptions in UK).
- Telephoning the GP's practice, and requesting a faxed copy of the patient's current medication.

During the DHx-taking process, it is also useful to establish whether the patient has any drug allergies, including symptoms.

The following information recorded from the DHx taking should be entered in the medical notes or other record according to local procedure.

- Date and time.
- DHx, including the details already discussed.
- Allergies.
- Pharmacist recommendations.
- Information provided to the patient as a result of this process.
- Signature.
- Name, profession, and contact information.

Writing on drug (medicine) charts

All pharmacists should provide information to medical and nursing staff by writing on the drug chart (see  section on guidelines on prescription endorsement, p.50). Information provided on the drug chart will vary according to local practice but should ideally include the following.

- Ensure patient details (e.g. name and ward) are complete and correct.
- Document DHx information on an appropriate page of the prescription chart. (If current drug chart doesn't have a dedicated area on chart, agree local practice).
- DHx—a list of drugs, with specific details, should be recorded. Initial and date.
- ADRs/drug and food allergies.
- Additional instructions on administration:
 - IV administration
 - information about appropriate oral administration (e.g. with or after food)
 - maximum daily dose
 - 'not with' (e.g. regular prescription).
- Brand name/form—if different version affects bioavailability (e.g. Sandimmun[®]/Neoral[®], long-acting/M/R).
- Local formulary restrictions, as appropriate.
- Clarify dose if it is not clear or could cause confusion:
 - change 0.5g to 500mg
 - liquid—annotate the concentration and volume required
 - ensure clarity for unusual frequencies (e.g. weekly or alternate days).
- Clinical information:
 - drug interactions (e.g. drugs affecting warfarin levels).
- Monitoring requests or information:
 - potassium (K⁺) levels for drugs affecting/affected by potassium
 - creatinine levels for drugs affecting/affected by creatinine
 - drug levels.
- Requests to doctors to review a prescription plan:
 - length of course of antibiotics.

All information should be set out as follows.

- Written in coloured ink according to local practice (e.g. green ink).
 - Clear, legible, and in indelible ink (if handwriting is poor, please print capitals).
 - Initialled and dated, including bleep number, as appropriate.
 - Use only well-recognized abbreviations.

Writing in medical notes

Pharmacists should write in the medical notes to communicate information relating to the pharmaceutical care of the patient to the medical staff if immediate action is not required; the information should significantly influence the care of the patient, or to ensure that information is available to all members of the medical and nursing teams. The notes are a legal document, and if the pharmacist has contributed to, or attempted to contribute to, the patient's care, this should be documented.

The following is appropriate information to write in the medical notes.

- Clinically significant interactions.
- Contraindications to medicine use.
- ADRs.
- Identification of a problem that could be related to medicine use.
- Amendments to DHxs.
- General medicines information about unusual medicines/conditions.
- Counselling details and outcome.

Pharmacists who are authorized (according to local practice) to make an entry in the patient's notes include the following.

- Registered pharmacists who have received suitable training.
- Junior pharmacists and locums should discuss potential entries with their seniors or clinical supervisor before making the entry.

The pharmacist should ensure that each entry into the notes is as follows.

- Directly relevant to that patient's care.
- At the appropriate point in the notes.
- Succinct and informative.
- Follows a logical sequence.
- Subjective—e.g. records relevant patient details.
- Objective—e.g. records clinical findings.
- An assessment of the situation.
- Recommendations are clearly expressed.
- The entry should follow a standard format:

27/11/10 Pharmacist

Amiodarone will ↑ plasma concentration of digoxin. As *BNF* states—halve dose of digoxin.

Tom Smith (sign) bleep 1178

Entries in the patient's notes should be as follows.

- Clear, legible, and in indelible ink (many hospital pharmacists use green ink, provided that the ink quality can be photocopied).
- Signed, with printed name, and dated.
- Include a contact number (bleep or extension).
- Use only well-recognized abbreviations.
- Include any discussion of the issue with medical or nursing staff.
- Not be informal.
- Not directly criticize medical/nursing care.

Medication review

Definition of medication review

A structured critical examination of a patient's medicines by a healthcare professional:

- reaching an agreement with the patient about treatment
- optimizing the use of medicines
- minimizing the number of medication-related problems
- avoiding wastage.

Regular medication review maximizes the therapeutic benefit and minimizes the potential harm of drugs. It ensures the safe and effective use of medicines by patients. Medication review provides an opportunity for patients to discuss their medicines with a healthcare professional. Medication review is the cornerstone of medicines management.

What does medication review involve?

- A structured critical examination of a patient's medicines (prescription and other medicines, including alternatives) by a healthcare professional.
- Identification, management, and prevention of ADRs or drug interactions.
- Minimizing the number of medication-related problems.
- Optimizing the use of medicines.
- Simplification of regimen.
- Ensuring all drugs are appropriate and needed.
- Avoiding wastage.
- Medication counselling.
- Adherence counselling—to encourage patients to adhere to their drug regimens.
- Assessment of ability to self-medicate.
- Education of patient or carer—to help them understand their drugs better.
- Education of the patient on safe and effective medication use.
- Forum for suggesting effective treatment alternatives.
- Recommendation of compliance aids.

Principles of medication review

- Patients must be informed that their medication is being reviewed.
- Patients should have the opportunity to ask questions and highlight any problems with their medicines.
- Medication review should improve the impact of treatment for an individual patient.
- A competent person (e.g. pharmacist) should undertake the review in a systematic way.
- Any changes resulting from the review are agreed with the patient.
- The review is documented according to local policy (e.g. in the patient's notes).
- The impact of any change is monitored.

Levels of medicine review

- Level 3 (clinical medication review)—face-to-face review of medication with the patient and their notes, specifically undertaken by a doctor, nurse, or pharmacist. Provides an opportunity to discuss what medication the patient is actually taking and how medicine-taking fits in with the patient's daily life.
- Level 2 (treatment review)—review of medicines, with reference to the patient's full notes, in the absence of the patient and under the direction of a doctor, nurse, or pharmacist.
- Level 1 (prescription review)—technical review of a list of the patient's medicines in the absence of the patient and under the direction of a doctor, nurse, or pharmacist.
- Level 0 (ad hoc review)—unstructured, opportunistic review of medication.

Who to target

- Patients on multiple medications or complicated drug regimens.
- Patients experiencing ADRs.
- Patients with chronic conditions.
- Elderly patients.
- Non-adherent patients.

Potential benefits of medication review

- Identification, management, and prevention of ADRs.
- Ensuring patients have maximum benefit from their medicines.
- ↓ risk of drug-related problems.
- ↑ appropriate use of medicines.
- Improved clinical outcomes.
- Cost-effectiveness.
- ↑ quality of life.
- Optimizing therapy.
- ↓ waste of medicines.
- Enables patients to maintain their independence.
- ↓ admissions to hospital.
- ↓ in drug-related deaths.

Problems identified during a medication review

- Potential ADRs.
- Potential interactions (drug–drug or drug–food).
- Suboptimal monitoring.
- Adherence/lack of concordance issues.
- Misunderstanding of dose directions.
- Impractical directions.
- Incorrect/inappropriate dosages.
- Drugs no longer needed (e.g. one medication used to treat the side effects of another).
- Difficulties with using certain dose forms (e.g. inhaler or eye drops).

Recording medication reviews

- There is no universally agreed way of documenting medication reviews.
- Local guidance for recording medication reviews needs to be followed.
- The minimum information that should be recorded is as follows:
 - current medication history
 - problems identified
 - advice given
 - suggested time-frame for the next medication review
 - date, signature, name, position, and contact details.

Further reading

Room for Review—A Guide to Medication Review: The Agenda for Patients, Practitioners and Managers. (2002). [↗ http://www.npc.nhs.uk/review_medicines/intro/resources/room_for_review_briefing.pdf](http://www.npc.nhs.uk/review_medicines/intro/resources/room_for_review_briefing.pdf)

A Guide to Medication Review. (2008). [↗ http://www.npc.nhs.uk/review_medicines/intro/resources/agtmr_web1.pdf](http://www.npc.nhs.uk/review_medicines/intro/resources/agtmr_web1.pdf)

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Intervention monitoring

Clinical pharmacists can audit their impact on patient care by intervention monitoring. Some hospitals undertake these audits at regular intervals and present the results internally or to the multidisciplinary team.

Data collection forms or electronic hand-held systems are used to collect the relevant data on a pharmacist's interventions to improve patient care. Examples of data collected for this purpose include the following.

- Patient details and demographics.
- Area of work/specialization.
- Written details of the intervention.
- Date of intervention.
- Other healthcare professionals contacted.
- Evidence used to support the intervention.
- Who initiated the intervention—e.g. pharmacist, doctor, nurse, or patient.
- Possible effect the intervention would have on patient care.
- Outcome of the intervention.
- Actual outcome on patient care that the intervention had.
- Significance of intervention (Table 4.2 shows an example of one of the ways for deciding significance of the intervention).
- Category of intervention (examples are given in the section that follows).

Examples of the categories of pharmacist interventions in drug therapy

- ADRs
- Allergy
- Additional drug therapy required
- Medication error
- Medication without indication
- Untreated condition or undertreated condition
- Minimal or no therapeutic effectiveness
- Therapeutic duplication
- Patient adherence, compliance, or drug administration issue
- Patient education
- Communication with prescriber
- Incorrect medication prescribed
- Inappropriate or suboptimal dose, schedule, or route
- Optimization of drug therapy, including improving cost-effectiveness
- Dose advice
- Advice on drug choice
- Drug–drug, drug–food, or drug–disease interaction
- Side effect/toxicity
- Therapeutic monitoring for toxicity or effectiveness
- Formulation
- Compatibility
- Formulary or protocol adherence

An example of an intervention monitoring form is shown in Table 4.3.

Table 4.2 Example of significance definitions of pharmacist interventions^{1,2}

Significance of intervention	Definition
Minor	Unlikely to have effect on patient outcome
Moderate	Potentially undesirable for patient outcome
Severe	Potentially detrimental for patient outcome (e.g. potentially serious prescribing error)

¹ Dean B, Barber N, Schater M. (2000) What is a prescribing error? *Quality and Safety in Health Care* **9**: 232–7.

Dodd C (2003). Assessing pharmacy Interventions at Salisbury Health Care NHS Trust. *Hospital Pharmacist* **10**: 451–6.

Further reading

Becker C, Bjornson DC, Kuhle JW (2004). Pharmacist care plans and documentation of follow-up before the Iowa Pharmaceutical Case Management program. *Journal of the American Pharmacists Association* **44**: 350–7.

McDonough RP, Doucette WR (2003). Drug therapy management: an empirical report of drug therapy problems, pharmacists' interventions, and results of pharmacists' actions. *Journal of the American Pharmacists Association* **43**: 511–18.

Hoth AB, Carter BL, Ness J, et al. (2007). Development and reliability testing of clinical pharmacist recommendation taxonomy. *Pharmaco-therapy* **27**: 639–46.

Table 4.3 Example of an intervention monitoring form

Date	In-patient			TTO	Out-patient
Hospital	Ward/area				
Contact source:					
Doctor	Consultant	Specialist registrar	F2	F1	GP
Nurse	Sister	Staff nurse	Auxiliary		
Other (specify)					
Category of intervention:					
Incorrect dose					
Dose advice					
Drug choice					
Drug interaction					
Side effect/toxicity/ADR					
TDM					
Drug–disease interaction					
Formulation					

Compatibility					
Patient adherence/education					
Formulary/protocol adherence					
Cost					
Other (specify)					
Solution			Outcome		
Prescriber contacted			Advice ignored		
Nurse contacted			Advice acted upon		
Documentation in notes			Acknowledged no action		
Other			Information only		
Patient risk:					
Low	1	2	3	4	5 High
Time taken:					
<5min	5–15min		15–30min		30min
Details of intervention:					
Answer/outcome on patient care:					

Drug use evaluation (DUE)

DUE is a quality assurance tool which monitors and evaluates drug use against agreed criteria/standards and, if necessary, advises on a change of practice to improve the quality, safety, and cost-effectiveness of prescribing. It focuses on evaluating and improving the use of medication to optimize patient outcomes. The process can be carried out retrospectively, prospectively, or concurrently. It can be performed on a medication or therapeutic class, disease state, or condition. DUE is usually used as a tool in areas where prescribing practice is not consistent with agreed standards or where a new drug becomes available.

Steps to undertake a DUE cycle include the following.

- Select a drug or therapeutic area for a DUE.
- Determine objective measurable criteria and standards of use for the target area, if these are not set already.
- Design a sample data collection sheet and pilot.
- Collect the prescribing data to evaluate current practice against the standards.
- Analyse the data.
- Evaluate the practice against the standards.
- Decide what intervention needs to be introduced to improve or encourage prescribers' compliance with the agreed criteria and action plan.
- Educate staff and introduce practice to correct any inappropriate prescribing.
- Evaluate the impact of the DUE.
- Communicate the results.

To ensure an effective DUE programme, a multidisciplinary approach should be taken. Doctors and pharmacists should agree the criteria, and accurate prescribing data should be collected. There should be critical evaluation of the data and an acceptable means of correcting any deficiencies in prescribing.

Suitable drugs or areas for a DUE study are as follows.

- Commonly used drugs to ensure cost-effective prescribing.
- Drugs for which there is a high cost or volume of usage.
- New drugs or drug classes.
- High potential for toxicity or ADRs or interaction with other medication, food, or diagnostic procedures that would result in a potential significant health risk.
- Narrow therapeutic index.
- Under consideration for formulary addition, retention, or deletion.
- Used in patient population at high risk of ADRs.
- Already included in a therapeutic policy (e.g. antimicrobial policy).
- Drugs that could improve the quality of life or patient care.
- Areas where prescribing practice is not following the standards.
- To justify the use of resources.
- The drug is most effective when used in a specific manner.

Benefits of DUE

- Confirms appropriate quality of prescribing, with respect to safety, efficacy, and cost to an organization.
- Financial benefits with the ↓ of inappropriate drug use. However, costs may increase if a more expensive drug with a better therapeutic effect is recommended as a result of the DUE.
- Improved quality of clinical pharmacy service, with respect to targeting clinical pharmacy activity and educational benefits.
- Essential component of clinical audit.
- Improves credibility of reports on drug expenditure.
- Support of the development, implementation, and monitoring of drug formularies.

Pharmacist's role in DUE

- Develop a plan for DUE programmes and processes consistent with the organization's overall goals and resource capabilities.
- Work collaboratively with prescribers and others to develop criteria for specific medications and to design effective medication use processes.
- Review individual drug charts compared with DUE criteria.
- Manage DUE programs and processes.
- Collect, analyse, and evaluate patient-specific data to identify, resolve, and prevent medication-related problems.
- Interpret and report DUE findings and recommend changes in medication use processes.
- Provide information and education based on DUE findings.

Dealing with mistakes

Medication errors are 'patient safety incidents involving medicines in which there has been an error in the process of prescribing, dispensing, preparing, administering, monitoring, or providing medicine advice, regardless of whether any harm occurred'.¹ Medication errors are associated with significant unexpected drug-related morbidity and mortality.

Medicines management policies and procedures should be in place to minimize the risk of medication errors occurring during the medication process (i.e. for prescribing, dispensing and administration). Pharmacists can play a prominent role in optimizing safe medication use and preventing errors in all steps of the medication process:

Prescribing

- Adequate knowledge of the patient and their clinical condition.
- Clear multi-professional treatment plans.
- Complex calculations checked by two members of staff.
- Review drug treatments regularly.
- Implement electronic care records and prescribing systems.
- Legible prescriptions.
- Avoiding abbreviations.

Dispensing

- Training and competency assessment for checking prescriptions and dispensing.
- Checking medication with a patient when it is being issued and allowing patients the opportunity to ask questions about their medication.
- Formal dispensary procedures and checking systems.

Administration

Risk management must be built into the previous steps to ensure that medication is administered safely.

- Training of staff administering medication.
- Procedures for drug administration.
- High-risk areas of administration to have a double check by a second member of staff (e.g. for IV infusions or complex calculations).
- Involving patients or their carers in the administration process if appropriate.
- Storage of medication appropriately to minimize errors. Controlling the availability of high-risk drugs (e.g. potassium chloride ampoules).
- Using information technology to support prescribing, dispensing, and administration of medication.

Create a culture where staff can learn from their mistakes. Do not have a blame culture.

- Explore why a mistake has happened.
- Remain calm.
- Find out the facts.
- Focus on the processes that allowed the mistake to happen.
- Provide support.
- Assume that the person wants to learn from their mistakes.

- See mistakes as part of a learning process.

Harness the power of mistakes.

- Create mechanisms to provide support when mistakes occur.
- Learn to question and challenge without antagonism.
- Create personal learning contracts to promote self-managed learning.
- Acquire a habit of active reflection.

Reporting mistakes.

- Use the appropriate reporting mechanism within your hospital or institution.
- Inform a more senior member of staff of the mistake.
- Inform the multidisciplinary team of the mistake.
- Document the mistake and the steps leading up to the mistake.


Dealing with mistakes.

- Dealing with your own feelings, if you are the person who made the mistake—remember that we are all human and can make mistakes. You will probably feel remorse that you have made the mistake. Reflect on how the mistake was made, and plan how you will learn from the mistake to ensure that it isn't repeated.
- Dealing with people who don't acknowledge their own mistakes or who make repeated mistakes—the person's manager should be involved in dealing with the person who does not acknowledge their mistakes. Evidence must be used to discuss the mistakes, and performance management strategies put in place to ensure that the mistakes are acknowledged and learnt from.
- Dealing with a more senior member of staff who has made a mistake—it is difficult for a junior member of staff to deal with mistakes made by a more senior member of staff. Whenever possible, it is best to speak directly to the member of staff who has made the mistake, informing them of the outcome and any action you have taken. If necessary, involve another senior member of staff or your manager in the discussion.

Remember

Mistakes can be fatal. Ensure that you are aware of local policies and procedures to minimize the risk of mistakes occurring.

Further reading

National Prescribing Centre. Reducing Medication Errors.  http://www.npc.nhs.uk/improving_safety/improving_safety/resources/Medication_Error/Reducing_5mg.pdf

Smith J (2004). *Building a Safer NHS for Patients: Improving Medication Safety*. London: Department of Health.

Williams DJP (2007). Medication errors. *Journal of the Royal College of Physicians of Edinburgh* 37: 343–6.

Dealing with aggressive or violent patients

Most pharmacy staff experience some form of threatening behaviour from patients at some stage during their working lives. This can range from a patient becoming verbally abusive because of a long wait for medicines to be dispensed to an armed robbery of a community pharmacy. Aggressive behaviour may also be via the telephone or written communication. Even if there is no physical injury, the psychological effect of a violent or aggressive encounter can be significant and could affect the victim's attitude to work, co-workers and patients. The emotional distress can be ↑ in a healthcare setting because staff might feel unprepared for this type of behaviour from a patient or customer they are trying to help. There could be feelings of guilt, embarrassment, shame, fear of blame, or denial. Incidents should not be accepted as 'part of the job' and should be reported so that appropriate action can be taken to both protect and support the victim and other members of staff. If healthcare teams have strategies to review and discuss incidents of threatening behaviour, staff find this useful for coping and learning.

Facing an aggressive or violent patient can be a frightening and shocking experience, and often the response is a 'fight or flight' reaction. Being prepared for this type of incident, and knowing strategies to deal with or defuse such a situation, is of great value.

The safety of staff and other patients/customers is of paramount importance.

- Be aware of and develop systems to avoid vulnerable times and situations—e.g. pharmacy opening and closing times, a lone pharmacist, or dealing with patients with mental health problems.
- Don't attempt any heroics—your personal safety is far more important than the contents of the shop till. Hand over any money or goods demanded, because insurance cover can replace loss but not lives.
- Be aware of 'escape routes' and try not to let the patient get between you and the door.
- Ensure that you are aware of any safety procedures—e.g. panic buttons and how to activate them.
- Aim to avoid situations where you are on your own with a potentially difficult patient. If you have to go into a room alone with them, leave the door open and make sure a colleague is close by to give you back-up if necessary.
- When dealing with an aggressive or verbally abusive patient, good handling of the incident can help defuse the situation, or at least prevent it from escalating.

Don't

- Take the threatening behaviour personally.
- Be defensive or aggressive in return.
- Attempt to appease the patient by giving in to their demands, although be prepared to compromise if appropriate.
- Ignore or tolerate the behaviour.
- Be over-apologetic.
- Argue with the patient.
- Be overly sympathetic and take the patient's side.
- Use defensive or aggressive body language.

Do

- Remain calm and state your case clearly and concisely.
- Be assertive, without being aggressive.
- Maintain eye contact.
- Speak in a manner that is calm, clear, simple, slow, and non-confrontational.
- Listen to the patient and give them a chance to voice their complaints.
- Apologize if there clearly is some justification for the patient's complaint, without being overly apologetic or apportioning blame.
- Explain to the patient how to make a written complaint if they wish (frequently the patient will back down at this point).
- Call a more senior colleague if you feel out of your depth.

Limit setting

In some situations it might not be possible to avoid continued contact with a patient who has been aggressive or violent towards staff. This might be an in-patient who needs further medical care or someone attending for further out-patient appointments or repeat prescriptions (e.g. injecting drug users on opioid replacement therapy). In these cases, it might be possible to avoid further threatening incidents by setting limits.

An effective system is to draw up a contract detailing what is expected of the patient and what behaviour is considered unacceptable, and, in return, what the patient can expect from the healthcare team. The contract should state what will happen if the patient breaks the limits—usually a single warning, followed by withdrawal of services if the limits are broken again. These contracts can be very helpful in controlling patient behaviour, but it must be a two way process—healthcare staff must also stick to their side of the contract both in terms of providing care and being prepared to carry out the threat of withdrawing care if the limits are broken.

Further reading

'We don't have to take this' NHS Zero Tolerance Resource Pack. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4007545.

Dealing with distressed patients

Occasionally pharmacists might have to deal with patients who are distressed or agitated for one of the following reasons:

- their diagnosis
- difficulty in tolerating side effects
- witnessing an upsetting event with another patient
- the behaviour of visitors, other staff, or other patients.

If faced with this situation, even the busiest pharmacist should try to spend some time comforting or supporting the patient as best they can. Spending even a little time with the patient can bring considerable relief from distress:

- Do not ignore the patient, even if you are busy or unsure how to deal with the situation. If you feel you cannot deal with the situation yourself, acknowledge the patient's distress and ask if they would like you to call another member of staff.
- Ask the patient if they would like to talk to you about what it is that is upsetting them.
- Listen and don't interrupt.
- Never say 'I know how you feel'. Even if you have had to deal with the same situation yourself, it is presumptuous to state that you know how another person feels.
- If any misunderstandings or misconceptions are contributing to the patient's distress, try to correct these. If necessary, ask the medical team to talk to the patient.
- Answer any questions the patient has as honestly and openly as you can.
- Provide reassurance about symptoms that might be causing anxiety—e.g. pain can be controlled, morphine won't make them an 'addict', and side effects can be managed.
- If the patient's distress is caused by another colleague's behaviour, do not offer any comment or judgement. Listen and make a non-committal comment, such as 'I'm sorry that's how you feel'. As appropriate, suggest that they might like to speak to a senior member of staff—e.g. ward sister or senior doctor.
- Remember that silence is often as helpful as conversation. Just sitting with a patient for a few minutes while they get their emotions under control can be very helpful.
- As appropriate, physical contact, such as holding the patient's hand or touching their arm, can be a source of comfort.
- Offer practical comfort—e.g. tissues, glass of water, a chair, or privacy.
- Don't avoid the patient or the incident next time you see them, but be careful not to become too emotionally involved. A simple question like 'How are you today?' acknowledges the patient's previous distress and allows them to talk further if they wish.

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Dealing with dying patients

Death is an almost daily occurrence on most wards. Although in general, patients spend most of their final year of life at home, 90% of patients spend some time in hospital and 55% die there.

As a pharmacist, you might not be as closely involved in the care of a dying patient as the nursing or medical staff, but it is still a situation that affects most pharmacists at some stage. Some pharmacists, such as those working in palliative care, oncology, or intensive care units, may be quite involved in the care of both the dying patient and their family. Learning how to deal with your own feelings, in addition to those of the patient and their family, is important.

The patient

On being told that they are dying, a patient (or their relatives) usually go through the following stages (although not all people go through every stage):

- shock/numbness
- denial
- anger
- grief
- acceptance.

It is important to let these processes happen, while supporting the patient and family sensitively.

Providing information about the illness enables the patient and family to make informed decisions about medical care and personal and social issues, and this is where you can help. Patients and relatives may perceive doctors as being too busy to answer their questions or be embarrassed to ask. A pharmacist might be perceived as having more medical knowledge (and being less busy!) than the nursing staff, but being more approachable than the medical staff.

When talking to dying patients and answering their questions, bear the following points in mind.

- Be honest—don't give the patient false hope. Answer questions as honestly and openly as possible. If the patient asks you directly whether they are dying, it is probably not appropriate for a pharmacist to confirm this. An appropriate response might be to ask why they are asking you this or to enquire what they have been already told and then formulate an appropriate response.
- Be sensitive—some patients might want lots of information about their diagnosis and care, but others might not be interested. Respect the patient's need for privacy at a difficult time but do not be afraid of talking to a dying patient—sometimes patients can feel lonely and isolated, and even a discussion lasting a few minutes can be of real benefit. Remember that different cultures have different responses to death. Whatever your own views, respect patients' religious or secular beliefs.
- Be careful—patients might not wish family or friends to know the diagnosis or that they are dying, so be especially careful what you say if other people are present.

Patients often have questions about treatment.

- Will current treatment be continued or stopped?
- Can pain or other symptoms be controlled?
- Will they become 'addicted' to morphine?
- What happens if they can no longer take medication orally?

Answer these questions as fully as you can, without overloading the patient with information. Be practical with your information and remember that some cautions become irrelevant at this stage—e.g. do not insist on NSAIDs being taken with food if the patient is not eating. If you don't feel that it is appropriate for you to answer a question, tactfully tell the patient that it would be better to ask someone more appropriate—e.g. the doctors. However, you could help the patient to formulate the question so that they feel better able to ask the doctors.

The information you provide will depend on the situation and your level of expertise. If you feel out of your depth, ask a senior colleague for advice.

Carers and relatives

Carers' and relatives' needs and questions will often be the same as the patient's, and you might need to go over some issues more than once. If the patient is going to be cared for at home, there can be many practical questions and information needs that you can answer.

- A simpler (layman's) explanation of the diagnosis and symptom management (often carers, relatives, and patients find it difficult to ask doctors for a simplified explanation).
- Coping with (potentially complex) medication regimens.
- Side effects and what to do about them.
- What to do if the patient vomits soon after taking a dose.
- Medicine storage.
- Obtaining further supplies.
- What to do with unused medicines when the patient dies.
- What to do if symptoms are not controlled.
- What to do if the patient becomes too unwell to take oral medicines.

Yourself

It is important to recognize your own emotional needs, especially if your job means that you are frequently involved in the care of dying patients or if a death is especially 'close to home'. The patient or the circumstances of their illness/death might remind you of the death of a close relative or friend. This can 'open up old wounds', which you must come to terms with.

When a patient dies, you might experience various emotions.

- Sadness—a natural response to any death, but accept that it is a 'hazard' of working in healthcare.
- Relief—a prolonged or distressing illness is over.
- Grief or loss—you might have become quite attached to the patient and/or their family.
- Guilt/inadequacy—if symptoms weren't controlled or the patient's death was unexpected.

It is important to find ways to cope with this. Talking to a colleague, hospital chaplain, or close friend might help, but bear in mind that you must maintain confidentiality.

If the patient is well known to the ward/community pharmacy staff, the family might invite them to the funeral or memorial service. Attending the funeral can benefit healthcare workers, in addition to giving the family support. Consider whether your attendance could breach confidentiality. Avoid wearing a uniform, remove identification badges and bleeps, and consider whether wearing a symbol, such as a red or pink ribbon, would be inappropriate. If you are unsure whether it would be appropriate to attend, discuss it with a senior member of staff—e.g. the ward sister or your manager.

Euthanasia

It is extremely unlikely that a patient would directly ask a pharmacist to assist them to die. However, you might be aware that a patient has expressed this desire to other staff. Whatever your personal view on the morality of euthanasia, you should treat the patient the same as any other.

Euthanasia is still illegal in most countries. However, it is generally considered acceptable to give treatment that is adequate to control symptoms, even if this could shorten the duration of life, provided that the primary intent is symptom control. If you have any concerns about the appropriateness of therapy/doses in this situation, you should discuss this with the prescriber and/or a senior colleague.

What if your patient is dead in the bed?

Although not a common occurrence, clinical pharmacists can be the first to realize that a patient has died, often quietly in their bed or a chair. Here are some things to bear in mind should this happen on your round.

- Do not panic, but remain calm.
- Withdraw yourself from that patient's area and close the bed curtains, if open.
- Speak to the member of the nursing team responsible for that patient to check that they are aware of the situation.
- Consider what you feel about the incident.
- If necessary, speak to a member of the multidisciplinary team.
- Take a break to recover.
- Speak to a colleague for support.
- Continue with the day's work.
- If a relative is with the patient, they might call the pharmacist to the bed if they are concerned that the patient has died. Inform the relative that you will get a nurse to attend. Find a nurse or a member of the medical team immediately to deal with the patient, as appropriate.

It might be useful, as part of the pharmacist induction, to visit the mortuary, because dealing with death requires professional support.

Ethical dilemmas

Medical ethics deals with situations where there is no clear course of action. This might be because of a lack of scientific evidence, but it is more frequently where moral, religious, or other values have a significant influence on decision-making. Thus, medical ethics differs from research ethics; the latter is concerned with evaluating whether clinical trials are appropriate, safe, and in the best interests of the participants and/or the wider population. Many hospitals have a medical ethics committees in addition to a research ethics committee.

The issues debated by medical ethics committees are many and varied. They might produce guidelines to cover certain issues, but frequently a committee does not give a definite answer and simply provides a forum for debate. Issues debated by medical ethics committees include the following.

- Consent to or refusal of treatment, especially with respect to those unable to make decisions themselves—i.e. children or incapacitated adults.
- End-of-life issues, such as ‘do not resuscitate’ orders, living wills, and withdrawal of treatment.
- Organ donation and transplantation.
- Contraception and abortion.

Like most other healthcare professionals, pharmacists are expected to conduct their professional (and to a certain extent their personal) lives according to ethical principles. In the UK, the General Pharmaceutical Council (GPhC) gives advice in a code of ethics which covers many areas of pharmacy practice. However, there are occasions where pharmacists are faced with dilemmas for which there is no clear course of action.

- The pharmacist’s religious beliefs or moral values are in conflict with what is expected of them—e.g. over-the-counter sale of emergency hormonal contraception.
- There is no clear scientific or evidence-based treatment available—e.g. use of unlicensed or experimental treatments.
- Business or economic issues clash with patient or public interests.

Ethical decision-making attempts to deal with these dilemmas using the following considerations.

- The values or beliefs that lie behind the dilemmas.
- The reasons people give for making a moral choice.
- Duty of care—to the patient, to their family, and to other healthcare professionals or yourself.
- Medical law.

In many instances, there is not a right or wrong answer and different people might make different—but equally justifiable—decisions based on the same set of circumstances.

It is best not to attempt to deal with ethical dilemmas alone. Depending on the situation, it is advisable to discuss the situation with the following people:

- a colleague
- the multidisciplinary team
- other interested parties, such as management, patient advocates, religious leaders or legal advisers.

Consider the following points:

- What are the patient's wishes? It is good to ask yourself 'Do I know what the patient really wants?'
- What do the patient's relatives or representatives think? Are they adequately informed to make a decision? Do they have the patient's best interests at heart? (Remember that you need to have the patient's permission to discuss the situation with their family.)
- Would you be willing for a member of your own family to be subject to the same decision-making process?
- Could the decision made in this situation adversely affect the treatment of other patients?
- Do issues of public health or interest outweigh the patient's rights?
- Is the decision or course of action legally defensible?
- Is the decision just and fair—e.g. are scarce resources being used appropriately?

It is also important to remember the following points:

- 'Do no harm' is a good basic principle, but sometimes some 'harm' must be done to achieve a greater individual or public good.
- Ensuring patient health should include mental and spiritual health in addition to physical health.
- Acting with compassion is not necessarily the same as acting ethically.
- Slavishly following scientific or evidence-based decision-making could lead to a morally inappropriate action (or lack of action).

Financial reports and budget statements

On the basis of data provided from pharmacy computer systems, pharmacists often take responsibility for providing financial information to their clinical area. Reports are generally monthly or quarterly. At the end of the financial year, an annual finance report is usually produced. Reports are usually sent to the finance manager, clinical director, and manager of a clinical area.

The objectives of a financial report are as follows.

- Relevant and timely information.
- Easy to understand and concise information.
- Verifiable and complete numbers.
- Format enables comparison.
- Reporting is consistent in form and content.
- Reports are adequate for the audience.
- Reports are periodic.
- Data are inclusive, analytical, and comparative.
- Assumptions are attached.

Financial reports should include the following elements:


- statistical data
- financial data
- current month
- actual versus budgeted.

The type of financial information that a pharmacist supplies is as follows:

- Overall drug expenditure for a financial year by month or quarter.
- Actual drug expenditure to date.
- Projected expenditure for the current financial year and the next financial year.
- Comparison of expenditure with that of the previous financial year (e.g. by month, quarter or year).
- Analysis of expenditure by clinical areas, in-patient/out-patient/take-home medication.
- The top 20–50 high-expenditure drugs by month, quarter, or year.
- High-expenditure therapeutic areas for a specified period of time (e.g. month, quarter, or year).
- Explanation of any areas of unexpected high expenditure.
- Interpretation of financial information, detailing areas where cost savings can be made.
- Detail where cost savings have already been achieved.
- Interpretation of changes in expenditure or drug use.
- Exceptions to previous trends.

This information can be portrayed in tabular or graphical form but should be presented in ways that are easy to interpret and include a commentary. It is helpful to determine what the recipient actually wants in the report before providing financial reports.

Hospital budget statements

- The finance department often produces budget statements, which it is useful for pharmacists to understand.
- The financial year in the UK National Health Service (NHS) runs from April 1 to March 31.
- The budget statement reflects the budget that is available and the financial position at a point in a financial year.
- These budget statements include salary (pay), non-salary (non-pay), and income budgets for a department or group of departments.
- Drug budgets are included in the non-salary budget.
- The drug budget expenditure is based on the cost of drugs issued by pharmacy.
- Budget statements usually include the following information for each of the budgets:
 - the total annual budget
 - the budget available for the year to date
 - the actual budget spent for the year to date
 - the difference between the available budget and the actual budget spent (variance)
 - the percentage of budget spent to date
 - the forecast spend for the financial year
 - total financial position.
- If a budget is overspent, it is usually represented as a positive number.
- If a budget is underspent, it is usually represented as a negative number.
- Finance department budget statements should be linked to financial reports prepared by pharmacy staff (see  p.84).
- Pharmacists might be asked for a breakdown of drug expenditure information.

Writing reports

Pharmacists can be required to write reports on a variety of subjects, such as the following.

- drug expenditure analysis
- evaluation of a new drug
- proposal for a new project.

A well-written and well-presented report is more likely to be read and acted on than something that is messy and incoherent. Much of the guidance given here also applies to writing business letters, e-mails, and memos (Table 4.4).

Define the aim

- What is the purpose of the report and what are you trying to achieve? Is it simply to inform the reader or is some course of action expected as a result of the report?
- Use a title that describes the aim or the content. As appropriate, write aims and objectives.
 - Aims describe what you intend to do.
 - Objectives describe how you intend to achieve the aims.

Content

The content should all be relevant to the title/aims. Look through your notes and delete any unnecessary material.

- Ensure that the content is appropriate to the readership.
 - Who are the readers?
 - What do they already know about the subject?
 - How much time will they have to read the report?
 - Might they have certain expectations of the report or preconceptions about the subject?
 - Why are you submitting this report to them?
- What type of information will you be including and how is this best presented.
 - Drug expenditure report—graphs and tables.
 - Review of papers—predominantly text.
- Review the information and classify it under headings or sections, following the suggested structure and the rules:
 - Headings should follow a logical sequence:
 - problem/cause/solution
 - chronological order
 - priority—by urgency or need
 - drug review—follow *BNF* headings, i.e. drug, indications, contraindications, and cautions.
 - Headings should clearly tell the reader what that section is about.
 - Ideally, the maximum number of items in a section is seven; otherwise there is too much information for the reader to take in at once. If necessary, subdivide sections.
 - Ensure that the content of each section is relevant to the heading.
 - Try not to repeat information in different sections.

Table 4.4 Report structure

The following is a suggested structure. Depending on the type of report, the structure can vary.

Title**Identification**

Your name, department and contact details, and the date

Distribution

It might be helpful to list the following.

Those who need to take action.

Those for whom the report is for information only.

Contents**Aims and objectives****Summary or abstract****Introduction**

Provides the background and context of the report

Explains why the report was written

Gives the terms of reference

Method/procedure

There should be sufficient information for the reader to understand what you did, without giving every detail

Results/findings**Discussion**

The main body of the report; use section headings here

Conclusions

A re-statement of the main findings

Includes recommendations or proposals for future work

References

Use a standard system, such as the Harvard style—i.e. author, date in brackets, title of the article, journal title, volume and page numbers

Appendices

These should include information that informs the reader but is not essential on the first reading

Glossary

Explain any unusual or scientific terms or unavoidable jargon

Footnotes

Author name, date of preparation, review date, and page numbers

Layout

Even a well-written report with good content can be overlooked if it is difficult to read. A large amount of type crowded on to a page is difficult to read and the eye soon becomes tired.

- Leave wide margins at both sides and ample space at the top and bottom of each page. This also gives the reader space to write notes and ensures that print on the left-hand side doesn't disappear into the binding.
- Avoid left and right justification. Left justifying creates spaces in the text, which is easier on the eye.
- Use 1.5 or double spacing.

Bullet points and numbering

Putting information into lists using bullet points or numbering has the following benefits:

- makes it easier to read.
- has more impact.
- cuts the number of words (and waffle).

Most word processing programs offer a selection of bullet points. Keep things simple and only use one or two different types of bullet in your report.

- Use a straightforward numbering system (e.g. 1, 1.1, 1.2, 1.2.1) and avoid over-numbering (e.g. 1.2.1.1.1!).

Font

Use a font that is clear and easy to read. Use fonts without serifs ('sans serif'; e.g. Arial) and use a 12-point font size for the majority of the text e.g.

('good writing') (Gill Sans MT, 12 point)

is easier to read than

('good writing') (Times New Roman, 12 point)

or

('good writing') (Gill Sans MT, 10 point).

Avoid using capitals or underlining to highlight text: **bold** is easier to read than CAPITALS or underlining. People with poor literacy skills find upper-case text especially difficult to read.

For a lesson in how font style and layout affects ease of reading, compare the *Sun* newspaper with *The Times*!

Paragraphs

A paragraph should cover only one point or argument. As a rule, it should be about seven or eight lines long, and certainly no longer than 10 lines. The most important information should be in the first or last sentence of the paragraph.

Charts and tables

These should be used to convey information, usually of numerical origin, which might be too complex to describe in words. However, overuse or inappropriate use can divert the reader from the main message, making your work confusing. When deciding whether to use a chart or table consider the following points.

- Will it save words?
- Will it clarify things for the reader?
- Is the information to be presented quantifiable in some way?
- Will it help the reader to make comparisons?
- Will it help to illustrate a specific point?

In general, bar charts are the simplest charts to produce and suit most data. They are easier to interpret and less prone to be misleading than pie charts, graphs or pictograms. When using charts, consider the following points.

- Give the chart a title.
- Make sure that bars or axes start at zero.
- If comparing two charts, the axes should have the same scale.
- Label axes and bars.
- Show actual amounts on bars and pie chart slices.
- Use only two-dimensional versions—three-dimensional bars and slices can distort the relative proportions.
- Avoid overuse of colour or hatching, which might not reproduce clearly.
- Keep it simple!

Language

- Keep language simple and to the point.
- Avoid long sentences.
- Avoid foreign language phrases—e.g. *ad hoc* and *pro rata*.
- Use active rather than passive sentences—‘Use *paracetamol* regularly for pain’ is preferable to ‘*Paracetamol* is to be used regularly for pain’.
- Avoid double negatives as these can cause confusion—‘*Paracetamol* is not incompatible with breastfeeding’ could easily be misinterpreted as ‘*Paracetamol* is not compatible with breastfeeding’.
- Only use common abbreviations, such as ‘e.g.’, without explanation. Where you wish to use an abbreviation, write in full the first time, followed by the abbreviation—e.g. Royal Pharmaceutical Society (RPS). Thereafter, the abbreviation can be used.
- Avoid jargon and clichés.

Revision and editing

As much as 50% of the time spent writing a report should be devoted to revision and editing (Table 4.5).

- Print the report and check for spelling mistakes and other obvious errors (do not just rely on computer spelling and grammar checks).
- Check punctuation.
- Work through the report using the editing checklist and revise as necessary.
- Ask a colleague to read the report and make comments. Check that they interpret the information as you intended.

Table 4.5 Editing checklist

Aim

Is the aim clear?

Is the content at the right level for the reader?

If action is required as a result of the report, is this clear?

Content

Is the structure logical?

Do the conclusions follow the argument?

Are numerical data accurate and clearly presented?

Do graphs and tables achieve their aim?

Have you quoted references and sources appropriately?

Language

Are paragraphs the right length?

Have unnecessary words, double negatives, clichés, and jargon been avoided?

Are spelling and punctuation correct?

Presentation

Are abbreviations and symbols explained and used consistently throughout?

Do page breaks fall at natural breaks in the text?

Are page numbers and footers etc. included, as needed?

Does any of the text get lost on printing?

Does the whole report look tidy and professional?

Managing meetings

To manage meetings efficiently, get the best results, and use time effectively, follow the tips:

- Ensure that the agenda is understood in advance. Circulate a written agenda at least a week before the meeting, including the following points for each item to be discussed:
 - topic
 - duration
 - responsibility.
- Circulate any necessary or pertinent materials to be read before the meeting.
- The meeting should have a chairperson who must ensure that it runs smoothly and to time, allowing all participants to be involved.
- Be clear with the participants why the meeting is being held and what it will achieve.
- Ensure that at least two-thirds of the participants have a role in every topic on the agenda. Consider rearranging the agenda so that people do not waste time listening to a topic in which they have no active interest.
- Be clear what preparation is required in advance of the meeting.
- Always start and finish on time.
- Discourage deviations from the agenda and tangential topic discussions.
- Discourage AOB (any other business).
- Consider using a flip chart and record actions on it for all to see.
- Try to ensure that individuals record their actions in their diaries before leaving, and do not wait for the arrival of the 'minutes'.
- Minute-taking depends on the culture of the organization. The material to be recorded, how and by whom it is recorded, may vary between meetings and institutions.
- Minutes should be circulated as soon as possible after the meeting, ideally delaying no longer than 2wks.
- Do not hold meetings that are only for information. Minimize the use of meetings just to distribute information that could be circulated electronically.

Assertiveness

Assertiveness is an essential skill that can be learnt, developed, and practised. Applying assertive strategies enables you to stand up for yourself and express yourself appropriately and constructively.

Definition of assertiveness

- Expressing thoughts, feelings, and beliefs in a direct, honest, and appropriate way.
- Having respect for yourself and others.
- Relating well to people.
- Expressing your needs freely.
- Taking responsibility for your feelings.
- Standing up for yourself if necessary.
- Working towards a 'win-win' solution to problems.
- Ensuring that both parties have their needs met as much as possible.

Assertive people effectively influence, listen, and negotiate so that others choose to cooperate willingly. Assertiveness promotes self-confidence, self-control, and feelings of positive self-worth, and it is the most effective means for solving interpersonal problems.

Assertive behaviour

- When you differ in opinion with someone you respect, you can speak up and share your own viewpoint.
- You stand up for your rights or those of others no matter what the circumstances.
- You have the ability to correct the situation when your rights or those of others are violated.
- You can refuse unreasonable requests made by friends or co-workers.
- You can accept positive criticism and suggestion.
- You ask for assistance when you need it.
- You have confidence in your own judgement.
- If someone else has a better solution, you accept it easily.
- You express your thoughts, feelings, and beliefs in a direct and honest way.
- You try to work for a solution that, as much as possible, benefits all parties.
- You interact in a mature manner with those who are offensive, defensive, aggressive, hostile, blaming, attacking, or otherwise unreceptive.

Non-assertive behaviour

- Aggressive behaviour involves a person trying to impose their views inappropriately on others. It can be accompanied by threatening language and an angry glaring expression, and communicates an impression of disrespect.
- Submissive behaviour is the opposite of aggressive behaviour. The person plays down their own needs and is willing to fit in with the wishes of others to keep the peace. It shows a lack of respect for the person's own needs and communicates a message of inferiority. It can be accompanied by passivity, nervousness, and lack of eye contact.

- Manipulative behaviour occurs when a person seeks to ingratiate themselves with another through flattery and other forms of deceit. It can be accompanied by over-attention and a simpering smarmy voice.

Strategies for behaving more assertively

- Identify your personal rights, wants, and needs.
- Use 'I' messages to give people complete information to address a problem. 'I' messages are assertions about the feelings, beliefs, and values of the person speaking, and the sentences used begin with 'I'. The 'I' messages should include three parts.
 - Behaviour—what it is that the other person has done or is doing?
 - Effect—what is happening because of their behaviour?
 - Feelings—what effect does their behaviour have on your feelings?
- Be direct and express your request succinctly.
- Choose assertive words.
- Use factual descriptions.
- Avoid exaggerations.
- Express thoughts, feelings, and opinions reflecting ownership.
- Convey a positive assertive attitude using the following communication techniques.
 - Maintain good eye contact.
 - Maintain a firm, factual, but pleasant, voice.
 - Pay attention to your posture and gestures.
 - Stand or sit erect, possibly leaning forwards slightly, at a normal conversational distance.
 - Use relaxed conversational gestures.
 - Listen, to let people know that you have heard what they said.
 - Ask questions for clarification.
 - Look for a win-win approach to problem-solving.
 - Ask for feedback.
- Evaluate your expectations and be willing to compromise.

Examples of assertive language

- I am . . .
- I think we should . . .
- I feel bad when . . .
- That seems unfair to me.
- Can you help me with this?
- I appreciate your help.

Communication skills

Communication is a key skill for pharmacists. Every day pharmacists communicate with a variety of different groups:

- patients/customers
- other healthcare professionals
- drug company representatives
- managerial staff.

Depending on the audience and circumstances, a different approach might be required, but the core skills are the same (Tables 4.6 and 4.7).

Planning and preparation

Before any encounter, a certain amount of planning and preparation is required, even if it is just a few words with a counter assistant to establish a customer's requirements.

- Establish the most appropriate means of communication—this might be written, in the form of a letter, memo, leaflet, or verbal, such as a conversation, seminar or oral presentation, or both.
- Know the subject—if necessary, do some background reading or research. Even if it means keeping a customer waiting, a quick look in the *BNF* could mean that ultimately your message is accepted more readily because it is well informed.
- Know the audience—understanding their background, knowledge base, and requirements aids effective communication. Communicating with one person requires different strategies compared with communicating with a small or large group.
- Prepare the message—a simple straightforward piece of information, such as dosage instructions, requires little, if any, preparation. However, a more complex message, such as the answer to a medicines information enquiry, might require some preparation.
 - Be clear in your own mind about what message or messages you want to get across.
 - Break the message down into a series of points.
 - Structure the message so that ideas are presented in order of importance.
 - Provide a one- or two-sentence summary/conclusion at the end.
- Think ahead—try to anticipate any questions that might arise and be prepared with the information needed to answer them.

Delivering the message

Whether communicating in writing or verbally, the same rules apply.

- Use language appropriate to the audience—avoid jargon and complex terms, and use simple direct words.
- Avoid vague terms, e.g. 'occasionally' or 'frequently', because these might mean different things to different people.
- Check understanding by asking for feedback or questions.

Remember that verbal communication is made up of three aspects:

- 55% body language
- 38% tone of voice
- 7% words that make up the communication.

Listening skills (Table 4.8)

An essential part of communication is listening. Not only does this ensure your own understanding, but it shows interest and concern and empowers the respondent by enabling them to participate fully in the communication process. The traditional active/passive roles of healthcare professional talking and patient listening, respectively, are not conducive to good communication. Good listening (by both parties) ensures that the encounter has the mutual participation of healthcare professional and patient. This should lead to the information elicited being of more value; any message is more likely to be remembered and acted upon.

- Reflecting back—clarify your understanding by repeating back ('mirroring') information, but in paraphrase.
- Summarizing—'What I think I hear you saying is. . . .'
- Body language.
 - Use facial expressions and postures to show empathy.
 - Mirror facial expression.
 - Nod encouragingly.
 - Adopt a listening posture—as appropriate, lean towards the speaker while being careful to avoid invading their personal space.
 - Maintain eye contact.
 - Avoid signs of impatience or being in a hurry.
- Ask open-ended questions—e.g. how and why.
- Use closed questions, as appropriate—i.e. those with a 'yes' or 'no' response.
- Use silences appropriately.
 - Allow the speaker to finish what they want to say and avoid the temptation to jump in.
 - Do not interrupt or finish the speaker's sentences.
 - If necessary, allow a short period of silence to elapse, especially if the speaker is slow or hesitant in their speech.
 - Silences can be helpful in giving thinking time.
- Use verbal or non-verbal signals to show that you are listening and encourage the speaker—e.g. nodding and saying 'yes' or 'mm'.
- If necessary, note down key points while the other person is speaking, but avoid scribbling throughout. Warn the speaker that you will be doing this so that they don't find it off-putting.
- In responding, avoid the following.
 - Exclamations of surprise, intolerance, or disgust.
 - Expression of over-concern.
 - Moralistic judgements, criticism, or impatience.
 - Being defensive and getting caught up in arguments.
 - Making false promises, flattery, or undue praise.
 - Personal references to your own difficulties.
 - Changing the subject or interrupting unnecessarily.
 - Speaking too soon, too often, or for too long.

Questioning

Questioning is also an important skill for communicating effectively. As pharmacists, this often involves direct questioning of a colleague regarding a course of action or prescribing decision. However, when dealing with patients, a broader approach might be required to obtain all the information required.

- Use open questions to enable the respondent to elaborate and give new information—e.g. ‘How are you getting on with your medications?’
- Phrasing questions in different ways often elicits different information—e.g. asking ‘Do you have any problems with your medicines?’ can elicit more information than asking ‘Do you have any side effects?’.
- Avoid leading questions, e.g. ‘You’re not getting any side effects are you?’, because usually the respondent will give the answer that they think the questioner wants (in this case, ‘No’).
- Closed questions can be used to establish specific information—e.g. ‘Are you taking this medicine with food?’
- Be specific because the respondent might interpret certain terms differently to you—e.g. ‘Are you taking these medicines regularly?’ could mean the respondent is taking them once daily, once weekly, or once monthly!
- Avoid questions that the respondent might interpret as being judgemental or critical.
- As appropriate, ensure that you understand the answer by paraphrasing it back to the respondent—e.g. ‘Just to be clear, I think you are saying . . .’.

Table 4.6 Barriers to good communication

Physical barriers

- Speech problems
- Hearing impairment
- Communicating in a language that is not the audience’s first language or through a translator
- Visual impairment
- Learning difficulties
- Noisy or distracting environment

Emotional barriers

- Preconceptions and prejudice
- Fear
- Aggression

Table 4.7 Checklist of essential interpersonal skills to improve communication

-
- Body language:
 - be aware of body language when interacting with people
 - mirror body language
 - ensure that body language, tone, and words are sending out the same messages
 - Rapport with people
 - Social poise, self-assurance, and confidence
 - Tact and diplomacy
 - Consideration of others
 - Assertiveness and self-control
 - High standards
 - Ability to analyse facts and solve problems
 - Tolerance and patience
 - Ability to make good decisions
 - Honesty and objectivity
 - Organizational skills
 - Good listening habits
 - Enthusiasm
 - Persuasiveness
 - Ability to communicate with different types of people
-

Table 4.8 Ten ways to become a better listener

-
- Schedule a time and place to listen
 - Create comfort
 - Avoid distractions
 - State the reasons for the conversation
 - Use non-verbal signals
 - Use reflection, paraphrasing, and summarizing
 - Listen for the message behind the emotions
 - Be patient
 - Write down any commitments
 - Follow up
-

Oral presentation skills

Pharmacists often make presentations to a variety of audiences. These can be both formal and informal. Some suggestions on how to prepare and effectively deliver an oral presentation:

- Know the expected duration of the presentation.
- Know the composition of the audience.
- Know the format—e.g. workshop or formal presentation.
- Know about the facilities—e.g. availability of audiovisual aids.
- Prepare approximately one slide per 1–2min of presentation.
- Find out whether you are expected to supply handouts to the audience, how many, and what level they should be aimed at.
- Check whether you are expected to send the presentation slides in advance, and, if so, the timelines for this.
- Plan and prepare your presentation.
- A presentation usually consists of three parts.
 - Tell the audience what you are going to talk about.
 - Talk about it.
 - Tell the audience what you told them.
- Always take a back-up option for the presentation—have the presentation saved on more than one USB stick and take a paper copy to refer to if the technology fails.
- Arrive at the presentation in plenty of time to ensure that the equipment can be tested or your presentation can be downloaded.
- Familiarize yourself with the venue and the equipment available— e.g. pointer or computer equipment.
- Ensure that you are not blocking the audience's view of your slides from where you are standing.
- Check that your slides are in focus.
- Look at the audience and NOT the screen!
- Make sure you look at ALL of the audience, so that they all feel included.
- Minimize how much you move around.
- Ensure that the audience can hear you.
- Introduce yourself, why you are presenting, and your background experience to the subject.
- Use a pointer to highlight points of data; avoid overuse and excessive circling.
- Involve the audience by asking questions or for input, as appropriate.
- Ask if the audience have any questions. Depending on the time and format, invite questions during the presentation and/or at the end.
- When responding to questions, consider repeating the question asked so that all audience members can hear the question and response, and to ensure that the question was understood.

Prioritizing

Pharmacists can be called upon to undertake a variety of tasks. Work often has to be prioritized to use time effectively and to complete tasks in a timely manner. The ability to understand the priorities of others and to prioritize your own work is a very important skill to learn. Some tips on prioritizing:

- When deciding the priority of a particular task, consider both its importance (is it worth doing?) and its urgency (does it need to be done right now?):
- Figure 4.1 shows a useful tool for prioritizing your work—write tasks in the boxes according to whether they fit the labels.
 - Urgent and important tasks take first priority.
 - Important tasks that are not urgent take second priority.
 - Unimportant tasks that are also not urgent take lowest priority.
- When deciding whether to do a particular task, consider the number of people it affects and the cost of undertaking the task.
- Numbered daily checklists are often helpful.
- To understand the priorities of others requires excellent communication skills, especially the ability to ask good-quality questions, listen to the answers, and notice body language.
- Knowing where your plan fits into the plans of others is useful in predicting problems, solving problems, and influencing solutions.
- Knowing where your plan fits in your own organization's priorities ensures access to and release of resources.

	Important	Unimportant
Urgent		
Not urgent		

Fig. 4.1 Tool for prioritizing work—write tasks in the boxes according to where they fit the labels.

Project planning

The purpose of a project plan is to determine and facilitate the achievement of a set of objectives, i.e. achievement of milestone objectives en route to achievement of goal objectives. Planning is done in the context of the stated mission of the organization and the vision of the organization. Planning is about the following:

- Ensuring that every individual involved knows what to do, when, how, where, and why.
- Communicating the plans to those who need to be confident that the ambitions will be delivered to the specification required, on time, and within budget.
- Forecasting what might occur in order that action can be taken to achieve the desired goal and avoid undesirable outcomes.
- Making decisions about actions that will be taken prior to and during anticipated situations.

A project plan needs to be broken down into tasks that need to be done, and then sequencing the tasks in a logical order. Tasks are actions. Accurate identification of the tasks is essential as they are the basis of:

- developing schedules
- identifying milestones
- implementing change plans
- planning communication
- resource planning: manpower, materials, and machinery
- monitoring
- maintaining records
- managing risk
- measuring progress
- forecasting remaining work.

It can be useful to complete a one-page summary of each task that contains all the information needed to delegate the responsibility for completion of the task to one person, as each task is effectively a 'mini-project'.

The quickest and most effective way to produce outline plans is to do it in five phases.

1. Describe the scope of the project.
2. Identify the tasks.
3. Schedule the tasks into a sensible order that will achieve the outcome of the plan.
4. Identify milestones. Milestones are the significant objectives that are to be achieved on the way to completing the project, and serve as visible indications of progress. They enable people to know that the plan is being implemented without having to know the details.
5. Implement the plan.

When scoping the project, the questions to be considered are as follows.

- Obtain a simple description.
- Why it is being considered?
- Where does it fit with other projects?
- What are the benefits to the organization?
- What are the downsides or penalties of not doing it?
- What are the major issues?
- What are the risks?
- What are the measures of success?
- What is the return on investment? Obtain a summary for this.
- What are the names of key stakeholders and stakeholder groups?
- Get an indication of whether to invest resources in a project plan.

Software is available to help with project planning and the production of time flowcharts (Gantt charts).

Time management

Quick techniques for managing time include the following.

- The four Rs of paperwork:
 - recycle (bin)
 - refer (out-tray and delegation)
 - respond
 - record (file).
- Invest time, don't spend it.
- De-clutter.
- Use a system for time management:
 - Use a list system to write down ideas, thoughts, and tasks as you think of them.
 - Use a diary system.
 - Use a name and address system.
 - Bracket tasks, appointments, and travel time.
 - Set time limits, with interruptions.
 - Use 'scrap time' wisely.
 - Take frequent quick breaks to ↑ productivity.
 - Do the most important tasks first.
 - Or, do the fastest and easiest tasks first.
 - Demand completed work from your staff.
 - Communicate upwards when you have problems:
 - description of problem
 - list of possible solutions
 - recommended solution
 - list of necessary resources
 - implementation of the solution.

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Using Medicines Information services

The Medicines Information (UKMI) service is a countrywide network comprising two national (Wales and Northern Ireland),¹⁴ regional, and 220 local MI centres. Local services range from one pharmacist, providing information part-time, to a large centre, with pharmacists, technicians, and administrative staff. Most MI centres provide an information service to hospital-based and community-based enquirers, including members of the public, but some only answer enquiries from within their NHS trust. For both community pharmacists and hospital pharmacists, it is a good idea to check who provides the MI service for your area.

Some centres provide a specialist information service (Table 4.9) but it is usually advisable to contact your local service first. Remember to contact local specialists as well, because advice from another centre might not reflect local practice.

Before contacting your MI centre with an enquiry, do some basic research. Most MI centres expect pharmacist colleagues to have checked basic sources before contacting them—e.g. *BNF*, Summary of Product Characteristics, and *Martindale*. Before contacting the MI centre, try to anticipate what background information they might require and have this ready. Depending on the type of enquiry, this might include the following:

- Drug details, including dose, route, formulation, brand, and indication.
- Patient details, including underlying condition, relevant laboratory results, age, weight, and past medical history.
- The identity of the original enquirer.
- Urgency.
- Contact details.
- Whether a written or verbal response is required.
- Any sources already checked for information and what was found.
- ADRs—nature of reaction, timing of the event, other drugs, any de-challenge/re-challenge and the outcome.
- Pregnancy—number of weeks gestation, whether or not the drug has already been taken by the mother, and indication.
- Breastfeeding—age, weight, medical status of infant, and whether the treatment is short or long term.
- Drug interactions—which drugs/drug classes are involved and the nature of the event, if a suspected interaction has already occurred.

After the enquiry is complete, it is really helpful if you feed back the outcome to your MI centre. It is rare that they hear what happened as a result of the answer given, and it is useful information to add to their enquiry records. Remember to fill in a yellow card for any significant ADRs (see  p.18).

Further reading

www.ukmi.nhs.uk
www.nelms.nhs.uk

Table 4.9 UKMI specialist information centres

Specialist topic	Centre
Drugs in pregnancy	Wolfson Unit Regional Drugs and Therapeutics Centre (Newcastle)
Drugs in lactation	Trent and West Midlands MIC
Complementary medicine	Welsh MIC
Drugs in cardiothoracics	Royal Brompton and Harefield NHS Foundation Trust MIC
Drugs in dentistry	North West MIC
Medicines in children	Alder Hey Royal Liverpool Children's Trust MIC
Drugs in liver impairment	Leeds MIC
Drugs in renal impairment	South West MIC
Drugs in porphyria	Welsh MIC
Drugs in psychiatry	Pharmacy Department, Maudsley Hospital
Ophthalmic drugs	Moorfields Hospital MIC
HIV/AIDS	Chelsea and Westminster Hospital MIC
Toxicology and poisoning (not emergency enquiries)	Wolfson Unit Regional Drugs and Therapeutics Centre (Newcastle)/Regional Medicines and Poisons Information Centre, Northern Ireland

Contact details are on the UKMI website: www.ukmi.nhs.uk

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