

# PI Problem identification and prioritisation

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In this book the term ‘problem’ means pharmaceutical care problem. A pharmaceutical care problem can be defined as in the box below.

**A pharmaceutical care problem** is any medical or patient problem that can be:

- cured
- ameliorated (helped, made better)
- prevented
- caused
- aggravated
- or affected in any other way

**by either:**

- drug therapy

**or**

- the application of pharmaceutical skills or knowledge.

## PI1: What is a problem?

Once the relationship with the patient has been established, pharmaceutical care begins with the construction of a problem list and prioritisation of its contents. The first (and most important) question that should be asked when constructing a pharmaceutical care plan is ‘What are the patient’s problems?’.

Pharmacists might consider a patient’s problems in one of two ways, classifying them by either their derivation or their existence, as detailed below.

### Derivation: medical and pharmaceutical problems

**Medical problems** describe the disease states that the patient may be suffering from, such as Crohn’s disease, asthma or an adverse drug reaction. Referral letters, ‘clerking-in’ notes made by a doctor or nurse-practitioner, or medical records in primary care are all useful initial sources of this information. Over-reliance on these sources should, however, be avoided. For example, a doctor admitting a patient into hospital may not have access to all the information needed to assemble a complete problem list or may be working in a situation in which they are focusing on the immediate problem in hand.

**Pharmaceutical problems** relate to issues arising from the delivery of drug therapy and may not be considered by the physician in their initial assessment of the patient. Examples include difficulty using inhalers, polypharmacy resulting in poor compliance, and so forth. A good pharmacist takes a broader view of patients than their medical problems and prescription. They should be able to review the patient with a consideration of the problems that may result from drug therapy, and apply a particular focus on how the individual patient will manage and take his or her medicines.

### Existence: actual and potential problems

**Actual problems** are problems that the patient is currently experiencing, even if they are well controlled. For example, they may have ischaemic

heart disease or, on testing, display poor inhaler technique.

**Potential problems** are those that the patient is not currently experiencing but is at risk of developing due to either drug therapy prescribed or concurrent disease states. Examples might include the risk of developing osteoporosis if a patient is prescribed long-term corticosteroid therapy, or the chance of developing cardiovascular disease in a hypertensive patient.

The inter-relationship of actual, potential, medical and pharmaceutical problems is described in Table 1.1. It should be noted that a patient might have problems from one, several or all of these groups.

### Remember

There is no precise way of defining the scope of each pharmaceutical care problem identified. A good example of this is seen in **Nephrology N2**: The patient has severe chronic kidney disease. The problem is considered as a whole, as defined in the chapter title, rather than using a chapter in this book for each parameter or subproblem commonly associated with severe renal failure. These parameters are instead considered as the subproblems of renal failure. However, a specialist renal pharmacist might look at each as a problem in its own right.

**Table 1.1** The classification of pharmaceutical care problems by derivation and existence

Actual problems	Potential problems
<b>Actual medical problems:</b> e.g. patient has hypertension, asthma	<b>Potential medical problems:</b> e.g. risk of cardiovascular disease in a hypertensive patient, risk of gastrointestinal bleed in a patient prescribed long-term non-steroidal anti-inflammatory drug (NSAID) therapy
<b>Actual pharmaceutical problems:</b> e.g. the patient exhibits poor inhaler technique	<b>Potential pharmaceutical problems:</b> e.g. concordance issues, compliance problems, education needs, effects of confusion in elderly patients, difficulty in obtaining supplies

## PI2: Identifying the problems

A variety of methods may be used to identify an individual patient's problems. Much of the information is easily available – it just has to be gathered.

Figure 1.2 shows the most common sources used to derive the current problem list and prioritise it. These might seem onerous, but in practice can be reviewed quite quickly. As a minimum we would imagine that most newly admitted hospital patients (or patients being reviewed in the community) would have the following sources reviewed on admission or review:

- the medication history (with action taken if there are omissions and errors)
- a set of basic relevant blood results
- the initial inpatient prescription chart (if a hospital admission) or current drug record (in primary care)
- a quick review of the case-notes to establish the reason for admission or request for review, along with any significant concurrent disease states (co-morbidity)
- a conversation with the patient if at all possible (and/or their carers, if appropriate) to confirm all the above and establish any extra information needed.

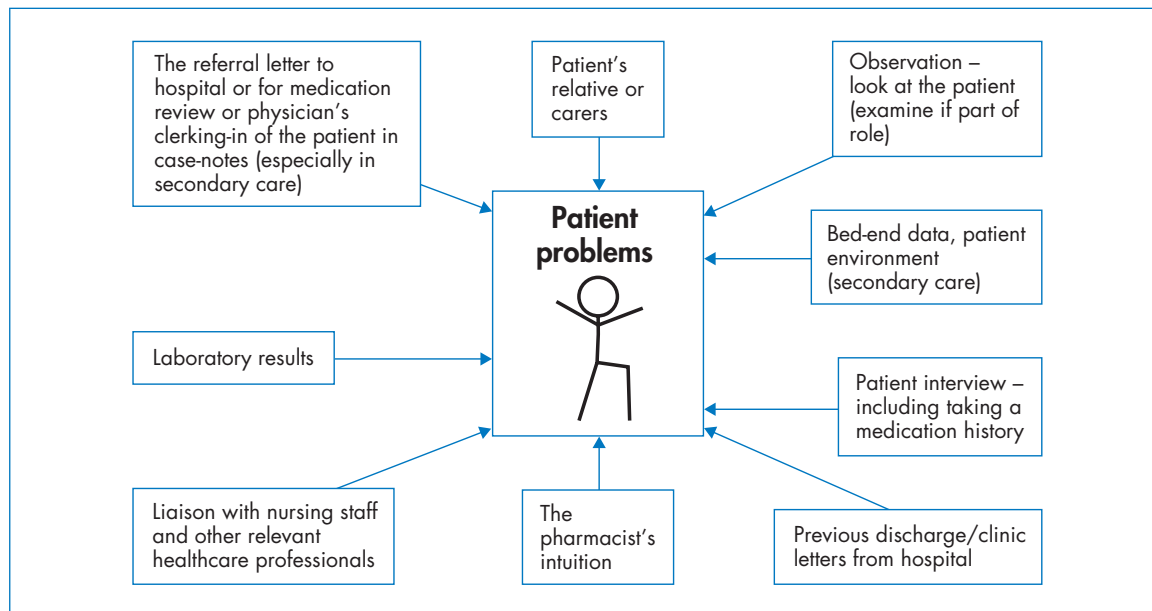
The impression the pharmacist gains while looking at and speaking with the patient should not be underestimated. An intuition, developed with experience, will help indicate factors that deserve further attention.

## PI3: The medication history and patient interview

An important source of information in the initial assessment is the medication history. This is a record of the drugs that a patient is taking at the time of admission/review and is a key part of a medication review and of hospital admission processes in many NHS trusts. Although it is called a history, in general, previous medication and durations of therapy are of secondary importance unless adverse events/drug sensitivities/treatment

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**Figure 1.2** Common sources for deriving the problem list



failures were associated with the therapy, or the treatment is only newly started. Other than the patient and any information they keep themselves, the information sources that may initially be available are shown in Box 1.1.

### Process

Not all the sources of information will be readily available to you during the initial assessment, nor is it appropriate to use them all initially. Remember, no single source of information can always be completely trusted – much recent research has shown that medical records and letters are full of omissions, errors and ambiguities, to an extent that would horrify most patients. After briefly reviewing the information readily available to you, you are ready to talk to the patient, whom you expect to be your major source of verifiable information. If this is not possible, or does not deliver sufficient information, it may be necessary to revisit some of the sources not yet utilised, and secondary care practitioners may need to telephone general practitioner (GP) surgeries or community pharmacies.

Pharmacist-acquired medication histories are especially important on hospital admission because the quality of information recorded in case-notes (especially during clerking-in) varies widely. This may be because the junior medical staff do not have access to all the information needed themselves or because patients become nervous or lie to avoid offending or disappointing the doctor. In addition, the pharmacist can bring specialist knowledge to bear about brands, formulations, unusual products and possible relationships between drug therapy and medical problems or essential monitoring.

### The patient interview: principles

#### *Partnership*

Occasionally a patient on multiple long-term drug therapy will present motivated, lucid and with a meticulously maintained self-managed list of their medication. Medication histories will be easy to clarify in this type of patient. Many more will be unable to remember facts, and while gentle encouragement is appropriate to encourage co-responsibility for managing medication and

**Box 1.1** Potential initial information sources

- **Medication** brought in to the hospital/surgery or seen in the domiciliary situation ('brown-bag' review) *but* remember that:
  - just because it is there does not mean that the patient has been taking it or is taking it exactly as intended
  - labels may no longer be correct; 'Doctor said to double up on that one', or may not be available if tablets have been removed from original packs
  - have you seen everything that the patient is taking? Don't forget to check for over-the-counter drugs (OTCs)/herbal medicines/insulins etc. Patients may not immediately associate these with the term 'medicines'
- **FP10 copies** may be available – many patients carry these around with them or hospital pharmacists can ask GP surgeries to fax over a copy of current medication *but*:
  - these records can be wrong, incomplete or out of date even in the best GP practices
  - again, just because the GP thinks that the patient is taking it, doesn't mean that they are
  - data can be incomplete, e.g. 'As directed', 'Two daily'
  - no OTCs or medication provided by other sources (e.g. trials, homecare schemes) will be listed
- **Community pharmacists (if the patient is loyal to one)/recent hospital discharge** information may be available *but*:
  - is it complete?
  - is it up to date?
  - does the patient actually take that which is dispensed?
- **Patient records/case-notes** may contain information about drug therapy, reason for admission, and so forth, but have similar limitations to the above sources. Medical records are often incomplete or inaccurate
- **Medical/nursing staff** in the ward/surgery situation or **administration records from nursing homes** and the **information provided by relatives or carers** may additionally throw light on the drug history, reason for admission and additional drug-related problems

avoiding reliance on professionals to do this, you are not the patient's judge. Remember that they may be elderly, anxious about their interview or admission to hospital, acutely unwell, confused or simply unable to remember long lists of drugs with strengths and frequencies of dosing.

**Sensitivity**

Good practice requires that pharmacists, technicians, doctors and nurses not only introduce them-

selves, but ask a few conversational questions first (unless circumstances render this inappropriate). This not only relaxes the patient, which will improve clarity of thought and recall, but establishes whether the patient is fit to be interviewed at that point in time. The focus can then be narrowed with questions such as, 'Right, Mrs Brown, can we think about your medicines now?'. Similarly, questions about adverse events/non-compliance will elicit more honest answers if the patient trusts the pharmacist enough not to feel the need to evade or lie. This can be encouraged by asking non-judgemental questions such as: 'A lot of people would struggle to remember to take all those, Mr. White, does that ever happen to you?'

**Thoroughness**

If the patient has brought medication or a list, use that as a focus for the discussion. Don't forget to ask about recent changes/adverse events/administration problems/drug sensitivities/OTC and herbal medication. Remember that they may forget to include eye drops/inhalers/injections etc. as 'medicines'. The patient should be doing most of the talking if you wish to avoid the errors of an unclear or muddled patient simply agreeing with you. You can then decide which other sources of information may be appropriate to follow-up. A structured form may guide inexperienced staff.

**Responsibility**

The first responsibility of a pharmacist is to their patient. If you are unsure how much depth it is necessary to go into, imagine that the patient were a relative of yours and what would usually shape your decision. Healthcare professionals have a responsibility to see the patient holistically, as a complete individual, and not as a presenting complaint or a collection of problems, illustrated by comments such as, 'How's the angina patient coming along?'. In addition, no matter how stressed, a pharmacist should never see the patient as a unit of work or a burden. The views of the patient are important and should not be dismissed as irrational or ill-informed, no matter how unorthodox they might appear.

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### PI4: Initial laboratory tests

Upon initial assessment, the most significant laboratory tests should be reviewed quickly (Table 1.2). Remember that reference ranges vary slightly between laboratories and slight abnormalities may be irrelevant or even perfectly normal in a patient. Changes over time, and trends, may often be as important as actual values.

### Other laboratory tests

These are not always available for every newly admitted or reviewed patient, but may have been requested if thought relevant. Some may need to be requested to assess a problem or to ensure that drug therapy is both safe and effective (Table 1.3).

**Table 1.2** Initial laboratory tests

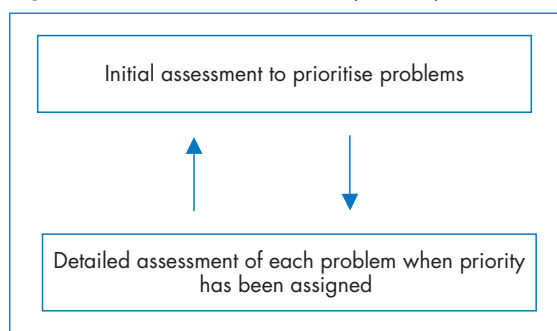
Test and typical levels	Usefulness
Na <sup>+</sup> (135–145 mmol/L)	Major extracellular ion, wide range means that small changes are often uninterpretable and usually insignificant <i>High:</i> dehydration, diabetic ketoacidosis or hyperosmolar coma <i>Low:</i> overhydration, SIADH (inappropriate antidiuretic hormone) diuretics (especially combinations), antidepressants, antiepileptics
K <sup>+</sup> (3.5–5.5 mmol/L)	Major intracellular ion but narrow range means small changes are important – can cause cardiac arrhythmias <i>High:</i> renal failure, diabetic ketoacidosis or hyperosmolar coma (initially), potassium-sparing diuretics, angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor antagonists <i>Low:</i> thiazide and loop diuretics, beta-agonists, diarrhoea, vomiting
Creatinine (<110 mmol/L)	Product of muscle turnover, and the best endogenous reflector of renal function <i>High:</i> may indicate renal impairment but beware partial interpretation or misinterpretation of serum creatinine (see Nephrology 1)
Urea (<7.5 mmol/L)	Another marker of renal function but more likely to be affected by other conditions, especially hydration status <i>High:</i> renal impairment, dehydration, upper gastrointestinal bleed, infections <i>Low:</i> poor nutrition, fluid overload
Ca <sup>2+</sup> (2.2–2.6 mmol/L)	Most calcium in the body is stored in bone but the free portion in plasma is important for muscle function (including cardiac muscle). Make sure that the value has been adjusted for albumin levels, the so-called 'corrected' or 'adjusted' calcium <i>High:</i> immobility, too much vitamin D, malignancy, hyperparathyroidism <i>Low:</i> vitamin D deficiency/renal failure, hypoparathyroidism
HCO <sub>3</sub> <sup>-</sup> (22–31 mmol/L)	Major buffer in blood <i>High:</i> alkalosis <i>Low:</i> acidosis – often seen in severe renal failure
Haemoglobin (Hb) (12–16 g/dL)	Reference range depends on age and sex <i>Low:</i> may reflect nutrition, iron status, haemorrhage, chronic gastrointestinal subclinical bleeding Any abnormality should be followed up by looking at the other haematological/iron results

**Table 1.3** Other laboratory tests (may be included in initial screen if considered relevant)

Test	Usefulness
Thyroid function tests	Thyroid-stimulating hormone (TSH) and free thyroxine ( $T_4$ ) will indicate abnormality, often presenting as another medical problem such as confusion or tachycardia
Liver function tests	Much less quantitative than indicators of renal impairment, bilirubin and liver enzymes such as transaminases and gamma-glutamyl transferase indicate liver disorders. Whether this is due to infection, carcinoma, alcoholism or a drug (many possibilities) requires further consideration and intervention (see Gastroenterology 4)
Cardiac enzymes	Older tests such as lactate dehydrogenase and alkaline phosphatase have been superseded by more specific enzymes such as troponin-T. The presence of these in the circulation at a point several hours after chest pain indicates the ischaemic muscle damage typical of a myocardial infarction. Borderline results may be due to acute coronary syndromes (unstable angina/non-Q-wave myocardial infarction (NSTEMI))
Lipids	Serum cholesterol and low-density lipoprotein (LDL)-cholesterol are performed in most patients at some stage: fasting cholesterol should ideally be below 4–5 mmol/L and tightly controlled where there is raised cardiovascular risk (see <b>Cardiology 4</b> )
Clotting	Patients on oral anticoagulants or with liver disorders will have an international normalised ratio (INR) performed. In simple terms, an INR of 2 indicates that blood is taking twice as long to clot as the reference standard. This would usually be the minimum effective INR in warfarin therapy for venous thromboembolism, but an indicator of problems in liver disease. Heparin therapy requires different tests
Therapeutic drug levels	See <b>Pharmaceutical problems 2</b> – most levels taken are wasted because they cannot be trusted or because they were not required
Full blood count (FBC)	Abnormal white cell count (WCC) or platelets may aid diagnosis

## P15: Initial assessment and prioritisation of problems

The next step is to assess and prioritise the patient's problems. This is a two-part process, as described in Figure 1.3.

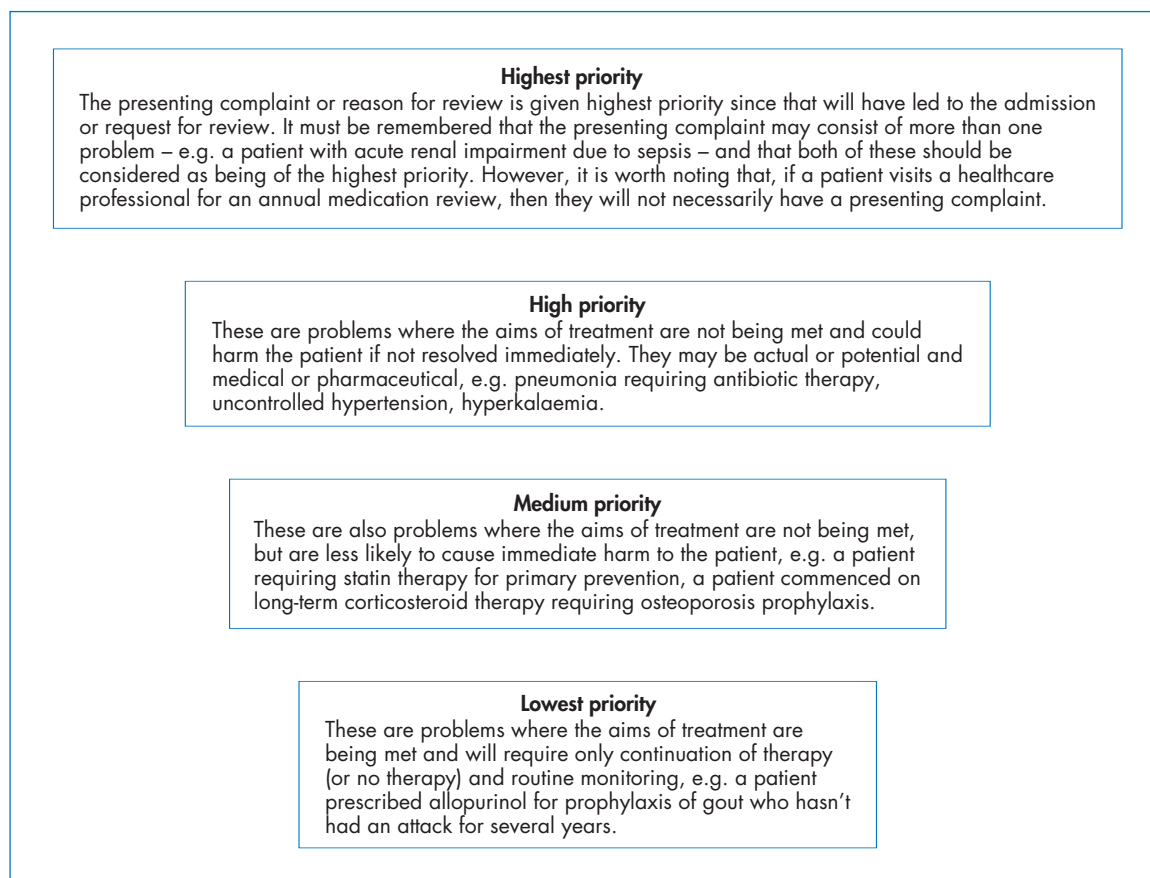
**Figure 1.3** Initial assessment of the patient's problems

A basic initial assessment of each problem, which identifies severity and whether the problem is active or controlled, aids the prioritisation of problems. This initial assessment involves asking whether the aims of treatment of each problem are being met (e.g. target blood pressure, pain control). An in-depth assessment of each problem can be made after the problems have been prioritised, as described in **Problem handling PH3**. A patient's problems can usually be prioritised as shown in Figure 1.4.

Over the course of time, the priority of each problem may change depending on any response to treatment given. The contents of the problem list may also change – after hospital admission, for example, problems such as chest infections and hypokalaemia may resolve, but new problems may arise (e.g. *Clostridium difficile* diarrhoea).

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**Figure 1.4** Prioritisation of the patient's problems



At the end of the initial assessment you should be in possession of:

- an accurate current medication list
- a prioritised list of the patient's problems
- an awareness of the further information needed and how to get it.

Of course, if you have identified any transcription errors on hospital admission or major errors in the medication record these need correcting (if appropriate) before moving into the second stage of pharmaceutical care – handing each problem individually.