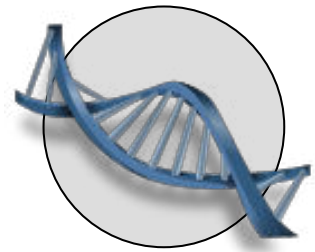


# 8 Diagnostics: Making a diagnosis/ making decisions

This performance area is about a conscious, structured approach to decision-making.

This performance area follows on from data-gathering which is not an end in itself, but provides information for making diagnoses and making decisions. We can see that this area is not simply about the clinical arena, although this is the most important one. It also encompasses problem-solving more widely, where decisions have to be reached about problems that may not be clinical, but have an impact on health. For example, GPs often have to make decisions that are related to employment, housing and social benefits.

Which aspects of our DNA, our deeper features, are particularly important in making diagnoses and decisions? If we look back at the competencies for the 'Diagnostics' section (page 60), we see that clinical expertise and problem solving are equally important. In addition to these predictable elements, we gain a further insight by seeing that organisation and planning skills are also needed.



8 | Diagnostics | Making a diagnosis/making decisions

Needs Further Development	Competent for licensing	Excellent	1
Taking relevant data into account, clarifies the problem and the nature of the decision required.	Addresses problems that present early and in an undifferentiated way by integrating information to aid pattern recognition.  Uses time as a diagnostic tool. Uses an understanding of probability based on prevalence, incidence and natural history of illness to aid decision-making.	Uses methods such as models and scripts to identify patterns quickly and reliably.  Uses an analytical approach to novel situations where probability cannot be readily applied.	

**This first progression is principally about building up a picture so that the nature and shape of a problem can be recognized or a clinical diagnosis made. We move from:**

Using available information (from data gathering), finding out what the problem is and what is expected from us.



Collating information until a pattern emerges, using an understanding of probability. Allowing this process to take place over time so that the picture can be progressively better informed.



Using theoretical models and scripts built up through experience, to reliably anticipate what the pattern might be. Additionally, analysing the situation from first principles where shortcuts, based on knowledge of probability, are not available.

Looking at each of the word pictures in turn:

### **Taking relevant data into account, clarifies the problem and the nature of the decision required.**

In a sense, the whole of this competency progression is about 'clarifying the problem'. At this basic level, what is required is that we make use of the available data and in broad terms, establish whether there is a problem that we can help with and if so, what sort of solution is possible. The 'solution' normally specifies the management plan and the degree of urgency.

For example, if we are unable to deal with the problem ourselves, the patient may need to be redirected or referred, perhaps urgently. Urgency can range from redirecting a patient with ear wax to a nurse for ear syringing/ referring a patient requesting a vasectomy to a specialist clinic/ calling an ambulance for crushing chest pain. In these examples, the decision that we make is straightforward and does not require significant negotiation with the patient.

Much more often, the patient has a problem for which the cause is not yet known and therefore the management is unclear. In these situations, the decisions relate to determining the appropriate management options that can then be discussed with the patient.

Occasionally, what is required from us is not yet clear. This may be because someone has reported a problem on behalf of the patient, but the patient has not yet been seen.

Alternatively, the patient has a problem but doesn't yet know whether our help is needed. For example, 'lethargy' is a common symptom that may reflect the patient's circumstances rather than be an indicator of disease. Because patients have continuing relationships with their doctors, it is not uncommon for them to attend early on simply to discuss their symptoms before it becomes clear whether or not a medical problem exists. The 'decision' in this situation might simply be to wait and see.



### **Using audit to make decisions**

Taken more broadly, this word picture could be applied to decisions that are related to systems rather than people.

'Using relevant information to find out whether a problem exists' could be taken as a definition of audit. Doctors often use information relating to personal and practice performance to find out whether performance is significantly outside the acceptable range, which may mean that a problem exists.

In this situation, our 'decision' would be to work on individual performance, and/or on the performance of a system.

Sometimes, no medical problem exists and the patient simply requires reassurance. The curriculum points out that part of our role is to identify symptoms that are within the normal range and require no treatment e.g. cyclical blocking of the nose, senile rhinorrhoea and small neck lymph nodes in children who are well.

Occasionally a problem *does* exist, but not in the way that the patient imagines. For example, patients may somatise, believing that symptoms such as musculoskeletal pain or weakness are due to physical illness, when in fact they may be due to psychological causes. Here, our decision is not so much how to treat physical symptoms as how to manage the somatisation.

‘Taking relevant data into account’ includes being aware of the patient’s context. Because solutions are specific to particular contexts, this information is vital if the appropriate way forward is to be found. (see page 64)

As we can see, as well as taking facts and figures into account, this competency is strongly influenced by consulting skills and particularly by our ability to question, listen and keep alert for cues. Sometimes, the most significant problem only manifests itself as a hidden agenda and is therefore only disclosed to doctors who have curiosity and show the patient that they are interested in finding out more.



**Addresses problems that present early and in an undifferentiated way by integrating information to aid pattern recognition.**

**This is a key competency.** In general practice, many problems present in an undifferentiated state, i.e. well before it becomes clear what the information represents. This skill involves being aware of patterns such as the natural histories of common diseases and then purposefully bringing information together to see if it fits a particular pattern.

The skill also involves being able to see what *is* there, rather than what we would like to see. It’s all too easy in clinical practice to shoehorn the clues into a preferred pattern, but this runs the risk of treating the patient on the basis of a wrong diagnosis. Worse still, there is the risk of *not* treating a more serious diagnosis which may be emerging, but has been overlooked. To give an example, a child with poor weight gain diagnosed as a nutritional problem, may in fact be the victim of child abuse.

Alcoholism is a good example of a condition that presents an undifferentiated way.

**Question: how can alcoholism be spotted earlier from the records?**

The manifestation of alcohol problems include:

- **physical:** accidents, victim of violence, obesity, dyspepsia, erectile dysfunction, fits, foetal alcohol syndrome, liver damage, anaemia, neurological and central nervous system problems
- **psychological:** anxiety, depression, attempted suicide
- **social:** loss of employment, disorderly conduct, domestic violence, drink-driving, relationship problems or breakdown



**Tip: aiding pattern recognition**

Integrating information is much easier than hitherto thanks to computers and this can help us to recognise patterns much earlier. The process is dependent upon coding significant pieces of information such as attendances, problems, symptoms, tests and investigations.

Try looking back in the notes, prompted by a significant diagnosis such as bowel cancer and ask yourself ‘Could this have been diagnosed earlier based on the information in the records?’ If so, how could the data have been collated or coded better to make earlier diagnosis more likely?

Get in the habit of looking at previous consultations that have been coded with the same presenting symptom. This often makes the pattern clearer, prevents unnecessary tests and reduces inappropriate delays in treatment.



### Tip: Improving our diagnostic use of time

Using time appropriately is dependent upon both competence and confidence. We can't rely upon confidence (unfortunately, poor doctors are often overconfident), but we can all work on our competence no matter how experienced or inexperienced we are.

Ask your colleagues to let you know of patients, previously under your care with similar symptoms, in whom they make a diagnosis. Ask your colleagues to let you know of situations that turn urgent or acute where you had been managing the patient by 'watchful waiting'.

Where a condition has been diagnosed in which you are not confident about the natural history, look back to see how the condition evolved. Look at the information/tests that eventually proved useful in making the diagnosis and the stage in the natural history when the diagnosis became evident.

Try auditing those referrals that you make for an opinion, where the condition is not clear to you. Could there have been any advantage in using time for a little longer? If the referral is premature, what costs are incurred to the patient (financial, morbidity etc.) through unnecessary tests?

Another example of integrating information is to search records of family members to look for commonalities that might suggest genetic or environmental factors.

### Uses time as a diagnostic tool.

Because so many significant problems evolve over time, it is both appropriate and unavoidable to use time to see the picture emerge. This doesn't mean that the time period is necessarily long. For example, we may use time to see whether abdominal pain is in fact appendicitis rather than gastroenteritis.

Using time safely depends on having a sound grasp of the important differential diagnoses, the probabilities of serious disease and knowledge of what red flags to look for. Red flags are particularly important because these help us to safely shortcut the decision-making process.

Sometimes, the symptoms fade away and no diagnosis is made. However, this information need not be lost if it is coded and as we have discussed, it may allow a future episode of similar symptoms to be connected to it, thus allowing a pattern to emerge (if one exists).

### Uses an understanding of probability based on prevalence, incidence and natural history of illness to aid decision-making.



### For many educators, this is the most important competency in this domain.

We can understand why, because without this skill we are not only unable to develop appropriate management plans for common conditions, but crucially, we are unable to 'diagnose normality' and therefore prevent unnecessary and potentially harmful treatment and the wastage of scarce resources.

The prevalence and incidence of disease is markedly different between primary and secondary care. Understanding the natural history is critical to developing appropriate management plans and even more importantly, to pick up on unexpected deviations from the anticipated evolution of a patient's problem. We often hear that 'common things occur commonly', but just as importantly, although rare things are rare, they still happen and they usually surface in primary care rather than in casualty.

Having said that, we should be wary of too often making fancy, esoteric diagnoses in the community. These may be appropriate in hospital, but this behaviour may reflect a lack of understanding of prevalence and probability in the 'unfiltered' population of primary care. We need to remember that when prevalence rates are low (as they are in the community) positive test results have a low predictive value. The opposite is true in hospital.

To understand probability, we need to understand our communities and the range and frequency of diseases that occur locally. With many conditions, the prevalence may not be much different to what is reflected in textbooks. However, the practice population may be skewed in a way that makes a significant difference. The practice age-sex profile might be unusual, for example with comparatively young populations in new conurbations and comparatively old populations in seaside retirement towns. Additionally, ethnic mix may change the incidence of chronic conditions like diabetes and heart disease and occupational hazards through local industry may raise the risk of, for instance, lung disease.

Probability also ties in with natural history and clinical associations in the sense that some conditions are unusual in the presence or absence of other factors. For example, new-onset migraine is unusual in an older adult and should make us think about more serious causes of headache. Likewise, Polymyalgia is uncommon with a normal ESR and might make us think of joint problems.

Sometimes probability has to be ignored in order to exclude important diagnoses. For example, several causes of headache are rare but important such as raised intracranial pressure, thunderclap headache (which may stem from subarachnoid haemorrhage, enlarging aneurysm or migraine) temporal arteritis, trigeminal neuralgia, herpes zoster and some cancers.

Sharing knowledge of probability with the patient, discussing what we think might happen and over what timescale, is a vital part of good safety netting.

### **Uses methods such as models and scripts to identify patterns quickly and reliably.**

This is a higher level of performance because mental models and illness scripts can only be developed through experience of making decisions in various contexts and through learning the patterns of presentation and evolution. Progressively superimposing new insights on a body of experience allows patterns to be recognised more quickly and reliably than occurs with a novice GP.

The downside of experience is that it tempts us to take unwarranted shortcuts, making assumptions and misinterpreting information consciously or unconsciously because it fits with a preconceived notion. This is why the word 'reliably' is important in this word picture.

### **Uses an analytical approach to novel situations where probability cannot be readily applied.**

Sometimes, situations are new to us or even to medical practice, which means that no information on probability is available to guide our estimation of likelihood. Similarly, novel situations do not have an illness script to work from, so it is hard to manage the problem and to guide the patient. Nevertheless, as this word picture indicates, it is possible to use other approaches such as analyzing information to rule out other conditions. Additionally, we can look for associations, for example between symptoms and clinical findings, to see what conditions this might suggest.

To give a clinical example, a patient may present with flitting joint pains that don't fit any known pattern. There may be no joint swelling, but an analytical approach might reveal that the ESR, CRP and white cell count are raised, suggesting an inflammatory aetiology.

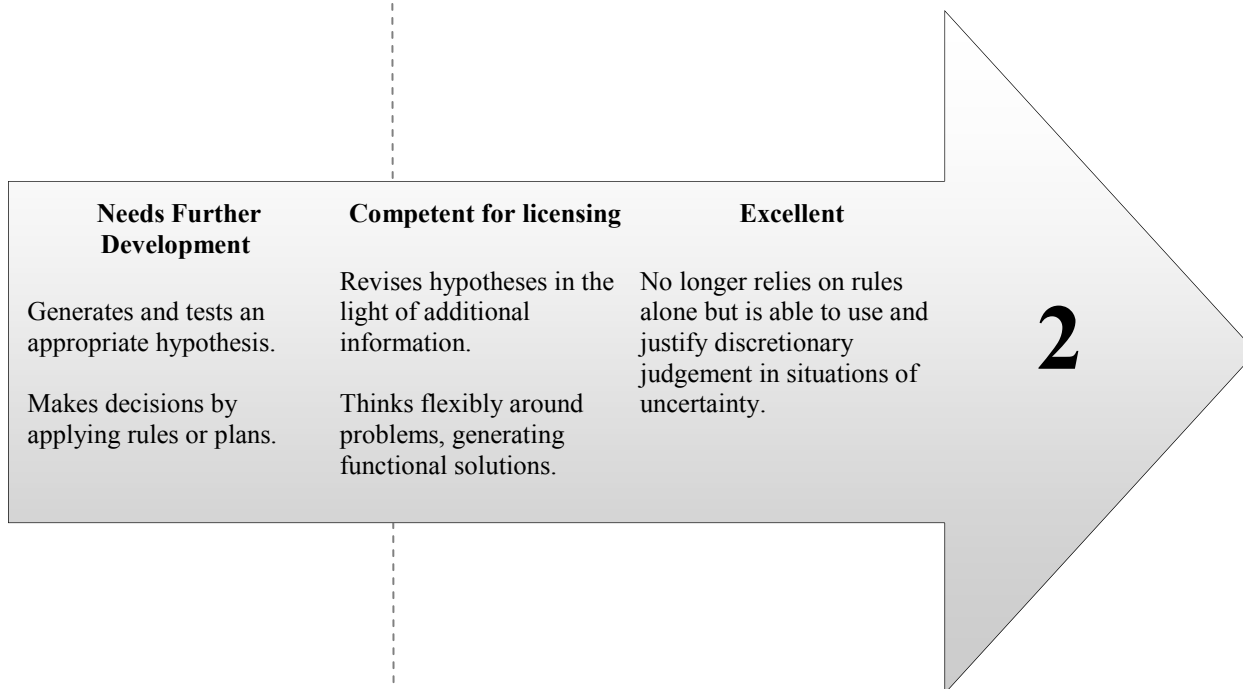


#### **Tip: spotting a problem with our performance**

However good our interpersonal skills, patients get dissatisfied if we fail to clarify the problem by giving it a label.

Look out for dissatisfied patients and patients that you have seen who then seek a second opinion within the practice.

Also look at your late or missed diagnoses; could you have recognised a pattern sooner?



The first progression within this domain concerned itself with pattern recognition. The second is concerned with the very important area of how we move from making decisions by applying rules to making decisions that are more reliant on our independent judgement. In today's rule-bound and accountable world, being able to do the latter is necessary, because many decisions in primary care are not amenable to algorithms, and don't have rules or guidelines that we can use to clarify or defend our decision. We could say that *the expertise of the GP begins where the algorithms end.*



### Tip: learning how to critique the guidelines

Once you know the theory (page 156), pick out a couple of guidelines both national and local and see how they measure up. Talk to your colleagues about guidelines that they find helpful and ones that they don't. What are the reasons for the differences?

Have you come across any guidelines that you feel are questionable? What should you do about it?

### In this second progression, we move from:

Coming up with reasonable suggestions as to what the problem/diagnosis might be and then using simple measures such as rules and guidelines to decide what should then be done.



Becoming less rigid about sticking with initial plans and instead, being prepared to think again as the situation evolves.



Recognising situations in which guidelines and rules don't exist or don't fully address the problem, and then using professional judgement to come up with justifiable approaches that are tailored to the situation.

Looking at each of the word pictures in turn:

### Generates and tests an appropriate hypothesis.

In clinical terms, this often means generating an appropriate differential diagnosis. Put another way, the descriptor suggests that what we should *not* do is to jump to conclusions by making immediate assumptions.

Each of the differential diagnoses will have features that can be used to test out the likelihood of the condition being present. Our task is then to decide which differential diagnosis and test strategy to prioritise. The choice will be governed by a number of factors such as the availability of tests, their acceptability, affordability and so on. However, the most significant factor will be patient safety. Therefore, if a red flag indicator is present, this may well determine the priority for further tests.

For example, if the patient has a history for some months of being tight-chested and wheezy on exertion, but with chest pain radiating to the jaw at the same time, we might choose to use a trial of GTN spray rather than a bronchodilator to test out the hypothesis of angina rather than exercise-induced asthma. For clinical problems, we often call the 'hypothesis', the 'working diagnosis'.

### Makes decisions by applying rules or plans.

Decision-making is probably the most important professional skill and this word picture is at one end of that continuum. At the other extreme lies our ability to use our own judgement when guidelines and protocols are not available. We might argue that rules and plans could include any systematic method that we use to reach a decision, including the 'clinical method' of history taking, examination and investigation. To some extent this is true, because at the very least we must demonstrate that we have a systematic and rational approach to decision-making. However, this competency is principally about our ability to appropriately follow guidelines and protocols.

Part of the skill is in knowing *which* clinical conditions and problems are linked to rules and plans. This will vary not only with the condition, but with our geographical location. Therefore, we might expect to know and follow national service frameworks, but the impact of NICE guidelines and SIGN guidelines for example, will vary with the country we are working in. In addition, there will be local rules that we might be expected to follow such as referral policies, clinical care pathways, practice protocols and formularies.

Of course, it is not always possible to apply rules. Sometimes, there may be no guidelines available and of course, if a guideline exists but we are not aware of it, we would not be in a position to use it.

### Revises hypotheses in the light of additional information.

The key abilities here are the willingness to keep an open mind and not assume that the first hypothesis was necessarily right. Don't make the facts fit the assumptions. For example, an itchy rash on the forearms might initially be treated as eczema and found to be unresponsive to topical steroids. If our mind is closed, we may fail to look closely for burrows and instead of treating for scabies, may instead increase the strength of the steroid preparation.



### Question: when should probability be ignored?

Probability does not take account of the significance of any particular condition. Therefore, although rare things happen rarely, some of these rare diagnoses may be particularly serious. Red flags are a classic example of situations where probability is ignored in the interests of patient safety (and related to this, medicolegal risk).

Many doctors come across situations where no red flag is present, but where an internal alarm bell rings. This may relate to some previous experience that turned out to be serious, or to recognising something unusual about the current situation.

Because pattern recognition is a complex affair, these 'alarm bells' should not be ignored and in fairness, secondary care readily accept referrals on the basis of a hunch because they recognize that not infrequently, these hunches prove to be correct.

These clinical suspicions are worthy of being recorded in some way that does not worry the patient, but is clear to another clinician.

Learn to recognize and record your hunches and go back to the patient's records after a few months. Were you right, did something evolve and if so what have you learned?



### Assessor's corner: does the doctor fail to revise the working diagnosis appropriately?

It may appear from discussion or from the records that only *one* diagnosis is being considered. A range of other options & differential diagnoses may not be forthcoming, suggesting a narrow mindset.

As new information becomes available that appears relevant to the problem, the trainee may not use this as a prompt to think again.

New information that seems *inconsistent or incompatible* with the working diagnosis may also be overlooked. In a worst-case scenario, red flag symptoms suggestive of an alternative (and serious) diagnosis may be ignored.

The worst consequences of this type of behaviour would be near misses, significant events, patient harm and patient complaints.

We may feel reluctant to commit ourselves to 'showing our thinking' in the medical records for a number of reasons. Sometimes, as in the scabies example above, this can be because we do not wish to alarm the patient. However, because conditions are often managed in modern primary care by more than one clinician, it can be helpful to see what *previous* clinicians considered in addition to their working diagnosis. This can act as a useful prompt to investigate further, treat differently or refer, and may prevent patients from being treated inappropriately for any longer than is unavoidable. In this sense, 'revising hypotheses' is a *team-based* activity and is facilitated by making the thinking processes of those involved in patient care, more explicit.

### Thinks flexibly around problems, generating functional solutions.



#### This is thought by educators to be a particularly important competency.

Once the problem has been clarified, we move to the stage of creating management options. These options are not simply a list developed by ourselves and presented to the patient rather like a menu. Instead, doctor and patient share ideas on what could be done, the pros and cons of various approaches and the acceptability of these approaches to patient and to doctor. Let us consider how this behaviour can be applied in a number of situations.

Firstly, engaging in this process when the initial management plan is discussed can prevent the concordance problems that are all too common.

A second example is the use of this behaviour when *difficulties* arise, when it can help with conflict resolution. For instance, imagine that an elderly patient did not comply with taking medication prescribed for hypertension. By thinking flexibly around the problem, we might establish that the patient did not agree with taking so many tablets, believing tablets to be a 'bad thing' (they have a point!). Our flexibility may be shown by our ability to discuss, explain and negotiate. As a result, the patient may agree to taking a smaller number of tablets, resulting in *some* reduction in blood pressure but perhaps not to target levels.

A third example is the application of this behaviour to non-clinical problems. For example, suppose a high DNA (did not attend) rate was found with a certain group of patients. One response could be to contact the patients and attempt to educate/discipline them about the appropriate use of services. However, with the mindset of 'thinking flexibly around problems' we may look at the characteristics of the group, inquire about the reasons for not attending and ask ourselves whether the problem might lie with the accessibility of doctor services rather than just with 'thoughtlessness' on the part of patients. Part of the solution might therefore be to alter the timing of some services.

### No longer relies on rules alone but is able to use and justify discretionary judgement in situations of uncertainty.

This behaviour falls into the 'excellent' category, because it represents a high-order skill. For clarification, the first aspect of the behaviour 'no longer relies on rules alone' might suggest that good GPs should bend or break the rules. 'Rules' is a portmanteau word that could include guidelines as well as directives or instructions. The latter are rare, but examples include the procedures to be adopted under the mental health act or when referring for termination of pregnancy as well as clinical directives such as the pronouncements of the committee on safety of medicines.



Such rules should be followed, but guidelines are another matter. Nowadays, there are a plethora of guidelines and only a few are authoritative. We should understand the factors that differentiate good guidelines from the mediocre and in particular, should look to gauge the strength of evidence that underpins the guidelines and the composition of the group that formulated the advice. If the strength of evidence is weak, the guideline may hold little validity. If the composition the group suggests that the primary care has not been adequately represented, then the suggestions made may not be feasible or appropriate.

Good GPs will therefore move from simply *accepting* guidelines to *checking* for themselves through a process of critical thinking, whether the guidelines are appropriate or not. Let's now think about 'discretion' which means the freedom to judge or act on one's own.

Because uncertainty is one of the few certainties in general practice, there will be many situations in which guidelines are not available or applicable. This does not necessarily mean that *no* guidance is available. For example, the patient's problem may be similar but not identical to another problem for which advice is available and it might therefore be reasonable to extrapolate from one to the other. Therefore, although there may not be evidence from clinical trials to advise whether to use cholesterol-lowering drugs in the primary prevention of coronary heart disease in very elderly patients, we could make a good argument for active treatment.

In other situations, we may supplement our own opinion with that of an expert in a particular field, most commonly a hospital specialist. If such an opinion is not available or appropriate, we may rely upon our experience, in particular models or 'scripts' of how particular symptoms or problems have evolved in other patients. This may help us to recognise patterns as they emerge and also to anticipate what might happen in the near future.

For example, suppose a patient in his twenties presents with episodes of colicky abdominal pain. We might recognise features of irritable bowel syndrome but will also know that inflammatory bowel disease may present with similar symptoms at this age. We may use discretionary judgement to decide what near-patient tests to do and whether and when the patient needs to be referred for more invasive investigation.

Using discretionary judgement is vital for the expert GP and the 'watchful waiting' that GPs use, especially during the management of more complex problems, is an example of this skill in action.

In the next chapter, we will look at how the continuum of data-gathering and decision-making is used in its most frequent application in general practice, which is to our management of clinical problems.