

# Diagnostic safety-netting

## WHAT IS SAFETY-NETTING?

Missed diagnoses in general practice are inevitable. No diagnostic test or clinical decision rule in general practice is 100% sensitive. This is largely because individuals, both children and adults, present at different stages in the evolution of their illness. At an early stage classic 'red-flag' features of serious illness may be absent; for example, half the cases of meningococcal disease in children are missed by GPs at first presentation often because the characteristic features of the illness are yet to appear.<sup>1</sup> Similarly at first presentation, the serious complications of an usually uncomplicated illness may not have developed; for example, dehydration in gastroenteritis or sub-dural haematoma after head injury. Safety-netting is a diagnostic strategy to deal with this situation. The term 'safety-netting' was introduced to general practice by Roger Neighbour who considered it a core component of the general practice consultation.<sup>2</sup> He defined safety-netting as encompassing three questions:

1. If I'm right what do I expect to happen?
2. How will I know if I'm wrong?
3. What would I do then?

However, the evidence-base is scanty and even a brief discussion with clinical colleagues will confirm that there is little agreement on how to interpret and apply diagnostic safety-netting in practice.

## WHEN IS IT USED?

Ruling-out serious illness often takes precedent over ruling in a particular illness in both general practice and emergency departments.<sup>3</sup> Up to 50% of patients will not have a firm diagnosis at the end of a consultation with their GP and yet the need to rule out serious illness remains.<sup>4</sup> Safety-netting is critically important in this situation. It is also critically important if the diagnosis is known but carries a significant risk of serious complications either in itself (for example, dehydration in gastroenteritis) or because the individual characteristics of the patient put them at

particularly high risk of complications (for example, they have significant comorbidity or are having treatment which reduces their immune system). Box 1 summarises the three high-risk clinical situations where effective safety-netting is mandatory.

There is some published data on the second category; for example, surveys of the safety-net advice given to people discharged after head injury from emergency departments<sup>5,6</sup> and trials of the effectiveness of different methods of follow-up of patients with asthma.<sup>7</sup> In both cases the evidence highlights the range of methods employed without providing much help about how and what safety-net advice should be given.

## WHAT SAFETY-NET ADVICE SHOULD BE GIVEN?

In the absence of published evidence, we sought clinical consensus about safety-netting in children with acute illness using a modified Delphi approach.<sup>8</sup> We used focus groups of academic GPs to develop a series of seven recommendations, and then invited all our NHS-based GP teachers plus all acute paediatric and emergency department consultants working at the Oxford Radcliffe Hospitals to rate their agreement with them. In the initial round we obtained responses from 28/41 (68.3%) GPs, 5/5 (100%) emergency department consultants, and 8/12 (66.6%) paediatric consultants reaching a consensus (75% of ratings between 1 to 3 or 7 to 9 on a 9-point scale from strongly agree to strongly disagree) for four of the seven statements. We modified the remaining three statements,

### Box 1. High risk clinical situations

- The diagnosis is uncertain and the differential diagnosis includes serious illness, particularly illness that can progress very rapidly.
- The diagnosis is certain but carries a known risk of serious complications.
- The patient (for reasons of age or comorbidity) has an increased risk of serious illness or complications.

circulating the comments made, and after a second round (30/41 responders replied again) we achieved consensus on a fifth statement. The recommendations are shown in Box 2.

Although these safety-netting recommendations were derived for children, we see no reason why they would not apply also to adults and to non-acute problems (for example, rectal bleeding in an older patient).

## HOW DOES SAFETY-NETTING GO WRONG?

Safety-netting advice goes wrong in three ways:

1. it is not given, particularly in high-risk situations;
2. it is not heard or understood; and
3. it is insufficiently specific about what to look out for or what to do.

Many of us give 'generic' safety-net advice at the end of consultations (for example, 'Do come back if you're not better') but we do not know what this really means to patients. Inappropriate reassurance from a clinician that symptoms are not serious, whether provided in general practice or hospital, can sometimes lead to catastrophic delay in diagnosis and treatment.<sup>9</sup> However, an obvious side effect of safety netting is causing unnecessary additional anxiety. It is important for public health and wellbeing that GPs continue to appropriately reassure the vast majority of patients who are well. Safety-netting does not involve abrogation of responsibility for diagnostic decision making. It is a poor doctor who makes no diagnostic decisions, and passes all his uncertainty onto his patients.<sup>10</sup>

## HOW CAN WE IMPROVE?

### Communicating uncertainty

Test of time, therapeutic trials, or further investigations have all been proposed as diagnostic strategies when the diagnosis is uncertain.<sup>4</sup> Often these strategies 'buy time' for the condition to either resolve or declare itself more floridly. What is not

## Box 2. Recommendations

### What should safety net advice include?

- The existence of uncertainty. If the diagnosis is uncertain, that uncertainty should be communicated to the patient (or parent/carer) so that they are empowered to reconsult if necessary.
- What exactly to look out for. If there is a recognised risk of deterioration or complications developing then the safety-net advice should include the specific clinical features (including red flags) that the patient (or parent/carer) should look out for.
- How exactly to seek further help. Safety-net advice should give specific guidance on how and where to seek further help if needed.
- What to expect about time course. Where information about the likely time course of illness is known, safety-net advice should include this information. However, it should be made clear that if a patient (parent/carer) has concerns they should not delay seeking further medical advice.

### What should be recorded?

- Safety-net advice should be documented in the medical notes.
- There was no consensus on when and whether safety-net advice should be given in written format rather than verbally.

clear, is how often and to what extent the diagnostic uncertainty implicit in this strategy is shared with patients during consultations. Communicating uncertainty is not easy<sup>10</sup> and numerous studies have demonstrated the relatively low recall of information after typical primary care consultations.<sup>11</sup> However failure to communicate uncertainty effectively can lead to patients failing to return until they are approaching death.<sup>12</sup>

### **Saying more precisely what to look out for**

Giving parents or caregivers information about which specific clinical features to look out for seems sensible. There are a number of recognised red-flag symptoms that patients (or parents/carers) could self-monitor; for example, looking for rapid breathing or signs of respiratory distress in a child presenting with an acute respiratory infection.<sup>13</sup> It is also common practice for patients at recognised risk (for example, receiving cancer treatment) to receive direct access to hospital units. However, even in relation to something as common as a child with respiratory disease our Delphi process revealed disagreement (and scanty evidence) about what to do: should we suggest parents measure respiratory rate, peak flow, or

more global observations such as signs of increased work of breathing? This appears to be another important evidence gap.

### **Saying more precisely how to seek further care**

Achieving easy re-access to care for safety-netting is particularly important. At its simplest, it requires the clinician to legitimise re-contact by saying explicitly that the patient should reconsult if they remain concerned. Presumably this advice is reinforced if the clinician is explicit about the residual risk of complications and about the mechanism through which re-contact should be made (particularly if a fixed re-contact time is scheduled). However, the only evidence we found exploring different mechanisms for re-contact related to the use of specialist nurses for chronic conditions such as cancer.<sup>14</sup> We found no evidence related to re-access for acute conditions. There is some evidence that scheduling fixed appointments following acute consultation is effective in improving attendance for reviewing chronic conditions such as asthma, although the long-term benefits in terms of reduced exacerbations are unclear.<sup>15-17</sup> We could find no comparable evidence about safety-netting, and no clear consensus of clinical opinion.

### **Being more precise about time course**

For three conditions, we identified literature on illness time course with obvious relevance to safety-netting — meningococcal disease, lower respiratory tract infection, and head injury. For meningococcal disease, evidence about maximum time course means it is possible to say that the disease is extremely unlikely if the illness has lasted for more than 48 hours.<sup>1</sup> For viral infections of the lower respiratory tract infection, the time course of symptoms is remarkably consistent (at least for children) irrespective of the causative agent so departures from this time course suggest a complication such as secondary bacterial infection.<sup>18</sup> However, the only condition for which we found evidence of time-course information being used in safety-netting was head injury. After head injury, the risk of extra-dural haemorrhage typically peaks within a few hours. However, it can occur 24 hours after the initial injury<sup>19</sup> and some information leaflets reflected this information in the recommended surveillance period for complications.<sup>6,20</sup>

### **What should clinicians do now?**

So, given the scant evidence, what should clinicians do now? Diagnostic strategies that achieve high sensitivity in primary care are exceptional, so safety-netting is arguably the most important part of the diagnostic process. Fragmentation of primary care (for example, in-hours, out-of-hours, walk-in centres, and telephone call centres) makes this more difficult. For some patients, a formal 'hand over' is appropriate; for example, faxing the local out-of-hours centre. Otherwise, the objective must be to empower the patient (or parent or carer) so that they can take responsibility for monitoring their own situation and are able to take effective action when needed.

We suspect that the variation in safety-net practice evident among our colleagues reflects a general lack of explicit research and thinking. What we

also do not know is the best way to give safety net advice: trials on children being discharged from hospital suggest that parental knowledge and satisfaction are better when written information is given in addition to verbal information.<sup>21,22</sup> This may be particularly important in conditions in adults where memory could be affected.<sup>23</sup> While we improve the evidence base to underpin safety-netting, we recommend that all practising clinicians involved in first contact care try to implement the consensus recommendations on the basis of their own clinical experience. The recommendations might also be considered core competencies for GP vocational trainees and others working in first contact care settings.

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#### COMMENTARY

Thanks for the plug, folks. It's gratifying to find that what just seemed common sense when I first wrote about safety-netting in 1987 has survived the scrutiny of proper researchers and is now thought 'arguably the most important part of the diagnostic process.'

So why was I left feeling a tiny bit flat? It's certainly not for any lack of facts, logic, or passion in this cogently-argued piece.<sup>1</sup> I suspect it's more to do with how general practice itself has changed in the interim. Twenty years ago, safety-netting seemed a necessary safeguard against a sloppy over-confidence that made some of us think that, in general practice, near enough was good enough, and only other people made mistakes that mattered. But now, it seems, we need safety-netting as a remedy for under-confidence; under-confidence that flows from reduced clinical exposure in the training years and the 'fear of God' effect of an inundation of guidelines and protocols disobeyed at one's peril. We have become so used to GPs 'managing uncertainty' that you'd think uncertainty was all there is.

To me, safety-netting was primarily a mind-set thing, a little voice whispering, 'Remember you're fallible, and don't let this patient come to harm as a result.' I hope the little voice isn't now saying, 'Write it all down, spell it all out, and you're covered.' No, of course it isn't; it's saying both. Isn't it?

**Roger Neighbour**

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