**Safety netting for primary care: evidence from a review of the literature**

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**How this fits in**

Safety netting is best practice, an important aspect of patient safety and is widely recommended in national guidelines. Despite this, there is no agreement on when safety netting should be used, what information it should contain or even how best to define it. This literature review has identified definitions of safety netting in use and enabled the development of a model including actions for different endpoints of the consultation.

**ABSTRACT**

**Background:** Ensuring patient safety is vital in primary care. One mechanism to increase patient safety is through a practice known as safety netting. Safety netting is widely recommended in national guidelines. However, a variety of definitions exist with no consensus on when safety netting should be used and what advice or actions it should contain.

**Aim:** To identify different definitions of safety netting to provide conceptual clarity, and propose a common approach to safety netting in primary care.

**Design and setting:** Literature review and evidence synthesis of articles relating to safety netting.

**Method:** Electronic database and grey literature search using terms around the theme of safety netting with broad inclusion criteria.

**Results:** 47 studies were included in the review. Safety netting was defined as a consultation technique to communicate uncertainty, provide information to patients on red flag symptoms and plan for future appointments to ensure timely re-assessment of a patient’s condition. Safety netting advice may include information on the natural history of the illness, advice on worrying symptoms to look out for and specific information on how and when to seek help. In addition to advice within the consultation, safety netting includes follow up of investigations and hospital referrals. Safety netting was considered to be particularly important when consulting with children, the acutely unwell, patients with multimorbidity and those with mental health problems.

**Conclusion:** Safety netting is more than solely the communication of uncertainty within a consultation. It should include plans for follow up as well as important administrative aspects such as the communication of test results and management of hospital letters.

**BACKGROUND**

Patient safety is a vital component of healthcare provision and is receiving increased attention worldwide ([1](#_ENREF_1), [2](#_ENREF_2)). Patient safety is key to primary care, and whilst primary care is considered to be essentially safe ([3](#_ENREF_3)) it is estimated that 1-2% of consultations may lead to harm ([4](#_ENREF_4)). Safety netting can potentially improve diagnostic and care pathways and as a result, is receiving increased attention particularly in the areas of early diagnosis of cancer and in consultations with children. Cancer Research UK (CRUK) ([5](#_ENREF_5)), Macmillan Cancer Support ([6](#_ENREF_6)) and the Royal College of Paediatrics and Child Health (RCPCH) ([7](#_ENREF_7)) have issued safety netting guidelines. In addition to this the National Institute for Health and Care Excellence (NICE) include safety netting in guidance on the recognition and referral of suspected cancer ([8](#_ENREF_8)), management of feverish children ([9](#_ENREF_9)), meningitis ([10](#_ENREF_10)), gastroenteritis ([11](#_ENREF_11)) and self-limiting respiratory tract illnesses ([12](#_ENREF_12)). This has resulted in an increasing number of definitions of safety netting and its components; along with calls for more research on what recommended safety netting advice should incorporate ([13](#_ENREF_13)).

Safety netting was formally introduced nearly 30 years ago by Roger Neighbour ([14](#_ENREF_14)) who defined it as a process whereby the GP answers three questions: “*If I’m right, what do I expect to happen? How will I know if I am wrong? And what would I do then?*”. Safety netting is included in Neighbour’s own model of the consultation as well as the Calgary Cambridge model which includes safety netting in the section ‘closing the session’ ([15](#_ENREF_15)).

Bankhead et al were among the first to attempt to provide recommendations for safety netting in primary care. They aimed to identify the components of safety netting related to cancer diagnosis and were the first to suggest that safety netting may be more than a consultation technique ([16](#_ENREF_16)). The aim of our work was to build on the work by Bankhead to collate and summarise the evidence on safety netting for all patients. Specific objectives were to (i) identify definitions of safety netting and develop a summary to provide conceptual clarity, and (ii) propose a common approach to safety netting for all consultations including when it is required and the information it should include.

**METHOD**

The focus of this review was to explore varying definitions and content of safety netting. Safety netting is currently poorly understood with limited research on the definition, content and effectiveness of the concept. As a result a narrative synthesis approach was undertaken in this review using methodology as described by Arai et al ([17](#_ENREF_17)). The ENTREQ checklist for reporting the synthesis of qualitative research was used as a guideline when reporting the results ([18](#_ENREF_18)).

Identification of literature

A database search using Medline, PsycInfo, CINAHL, EMBASE, The Cochrane Library, Web of Science Core Collection, and Google Scholar was undertaken from commencement to April 2018. The concept of safety netting is relatively imprecise as it can be used in different patient groups, in a wide variety of patient settings and can include different actions. Search terms around the words ‘safety netting’ such as ‘safety net\*’ were used in order to capture as much of the relevant literature as possible without pre-determining the individual components of safety netting. Searches of the grey literature database openGREY and websites including the Department of Health, NICE, the National Patient Safety Agency, CRUK’s National Awareness and Early Diagnosis Initiative, the National Cancer Registration and Analysis Service were conducted to identify relevant unpublished work. Citation searches of all included papers were undertaken.

Criteria for inclusion

Citations were included if they focused on patients, carers, or health care professionals and provided a definition of or information on safety netting for any patient group in any healthcare setting. Only English language papers were included as were studies using any research design. Educational articles and opinion pieces were included as these could potentially include detailed information on the definition and content of safety netting.

Selection of studies

Search results were screened using title and abstract by one reviewer (DJ or LD) with approximately 10% independently screened by both to ensure consistency. The full text of any potentially relevant study was obtained and independently assessed for eligibility (DJ with LD, CF or EDM). Disagreements were resolved by a third reviewer (UM or IW). Data were extracted by one reviewer (DJ) using a standardised form. Information was collected on setting, design, population, the definition of safety netting used, the components included, and recommendations as to the timing and circumstances under which it should be used.

Data Synthesis

Arai et al describe the process for undertaking a narrative synthesis ([17](#_ENREF_17)). In this review, synthesis was undertaken using tabulation and grouping to enable data to be compared across different citations and patterns to be established across the included literature. This process led to the development of the definitions and components of safety netting using categorisation. Following this, a process of ‘idea webbing’ and ‘conceptual mapping’ also described by Arai et al. was used to explore the relationship between the included citations and develop the model of safety netting discussed below. During this stage, safety netting components were mapped to both models of the consultation and consultation outcomes.

**RESULTS**

The search strategy retrieved 9949 papers, with 106 full text papers undergoing detailed review. After excluding papers that were not about safety netting (n=21), papers which were not available (n=11), papers not in English (n=2) and those that mentioned safety netting but did not provide any related information (n=25) a total of 47 studies were included in the review. The majority were from the UK with the remainder from Australia, Belgium, The Netherlands, Sri Lanka and USA. All the papers included, discussed safety netting in a ‘first patient contact’ setting, which was most often in primary care, the emergency department or an out of hours setting. The patient groups included all patients in the majority of papers, some focused on consultations with children whereas others dealt with specific conditions or symptoms such as melanoma, or fever. Figure 1 shows the PRISMA diagram, supplementary table 1 contains further information on the included papers.

Over half of the citations were classed as expert opinion this included 20 educational articles ([5](#_ENREF_5), [6](#_ENREF_6), [8](#_ENREF_8), [9](#_ENREF_9), [14](#_ENREF_14), [15](#_ENREF_15), [19-32](#_ENREF_19)) and six editorials or commentaries ([13](#_ENREF_13), [33-36](#_ENREF_33)). 12 citations were studies using qualitative methods including five interview ([37-41](#_ENREF_37)), two questionnaire ([7](#_ENREF_7), [42](#_ENREF_42)) and five mixed method studies ([43-47](#_ENREF_43)). Of the remaining studies five were audit or case reviews ([48-52](#_ENREF_48)), three were systematic reviews ([53-55](#_ENREF_53)), one a Delphi study ([16](#_ENREF_16)), and one a protocol for an RCT ([56](#_ENREF_56)).

Figure 1: PRISMA flow diagram of citations in the review

Current definitions of safety netting

Thirty of the included citations offered a definition of safety netting ([5](#_ENREF_5), [6](#_ENREF_6), [8](#_ENREF_8), [9](#_ENREF_9), [13](#_ENREF_13), [14](#_ENREF_14), [16](#_ENREF_16), [19-23](#_ENREF_19), [25](#_ENREF_25), [27-29](#_ENREF_27), [33](#_ENREF_33), [36-38](#_ENREF_36), [41](#_ENREF_41), [43](#_ENREF_43), [44](#_ENREF_44), [46](#_ENREF_46), [47](#_ENREF_47), [49](#_ENREF_49), [51-53](#_ENREF_51), [55](#_ENREF_55)). Whilst this differed among included papers, several themes were common throughout the literature. This data is presented in table one.

Table 1: Safety netting as defined in the literature

Management of uncertainty was frequently mentioned, suggesting that safety netting may act as a contingency plan by providing patients with information on prognosis and ways of organising follow up. CRUK state that safety netting can be used to support the management of diagnostic uncertainty, helping to ensure patients are re-evaluated in a timely manner ([5](#_ENREF_5)). Follow up and review are also considered to be important aspects of safety netting. Hirst et al state “one of the main safety netting approaches is to ask patients to return if symptoms persist ([44](#_ENREF_44)). Similarly, a model of the consultation introduced by McKelvey, states “*an agreed follow-up or review date is set*” ([21](#_ENREF_21)). Safety netting was also discussed in terms of providing medico-legal protection to health care professionals, the Medical Defence Union (MDU) state that if a complaint is received the doctors actions will be scrutinised ([22](#_ENREF_22)).

Other definitions, highlighted the need to review and act on results of investigations as an essential part of safety netting. This was described in definitions as ‘active monitoring of patients’, the ‘follow up and monitoring of investigations and urgent referrals’ and an ‘administrative process’ ([5](#_ENREF_5), [8](#_ENREF_8), [55](#_ENREF_55)). This important aspect of safety netting was not originally discussed by Neighbour, but would seem to be a vital aspect of future good patient care.

Box 1: A proposed new definition of safety netting:

“Safety netting is an essential process to help manage uncertainty in the diagnosis and management of patients by providing information for patients and organising follow up after contact with a health professional. This aims to empower patients and protect health care professionals. Safety netting may be performed at the time of the contact between health professional and patient, or may happen after the contact through active monitoring and administrative systems to manage results and referrals.”

Timing and recipients of safety netting

Twenty-four of the included citations provided advice on when safety netting should be used ([5](#_ENREF_5), [7](#_ENREF_7), [8](#_ENREF_8), [13](#_ENREF_13), [16](#_ENREF_16), [20](#_ENREF_20), [24-26](#_ENREF_24), [30-33](#_ENREF_30), [36-38](#_ENREF_36), [40](#_ENREF_40), [42](#_ENREF_42), [44](#_ENREF_44), [45](#_ENREF_45), [49](#_ENREF_49), [52](#_ENREF_52), [54](#_ENREF_54), [55](#_ENREF_55)). It was recommended when there is diagnostic uncertainty and the differential diagnosis includes serious illness or illness which may progress rapidly. The MDU state “safety netting is important where a patient may have risk factors for a specific disease or where specific complications are recognised as part of the illness ([22](#_ENREF_22)).The use of safety netting when managing children was frequently noted to be important, as a result of often early and non-specific presentations of acute illness in children and the small proportion of children with serious illness ([30](#_ENREF_30)). Other patient factors such as old age, multimorbidity, or mental health problems may increase the risk of the illness being or becoming serious and therefore were felt to need careful safety netting ([13](#_ENREF_13)). Three papers stated that safety netting should be done at each and every contact between a health care professional and patient. It was also acknowledged that safety netting is particularly important in acute settings, such as in emergency departments (ED), out-of-hours (OOH) centres and when using telephone consultations ([16](#_ENREF_16), [31](#_ENREF_31), [52](#_ENREF_52)).

Components of safety netting advice

Two-thirds of papers in the review (n=38) provided suggestions for what safety netting advice should include ([5](#_ENREF_5), [6](#_ENREF_6), [8](#_ENREF_8), [9](#_ENREF_9), [13-16](#_ENREF_13), [19-23](#_ENREF_19), [25-29](#_ENREF_25), [31-34](#_ENREF_31), [36](#_ENREF_36), [38](#_ENREF_38), [39](#_ENREF_39), [41](#_ENREF_41), [43](#_ENREF_43), [44](#_ENREF_44), [46-53](#_ENREF_46), [55](#_ENREF_55), [56](#_ENREF_56)) (Table 2). The most frequently recommended components were (i) communicating uncertainty; (ii) potential red flags (symptoms or signs that may suggest serious illness); (iii) the time course of the illness; (iv) how and when to seek further medical care; (v) arranging planned follow up; (vi) an explanation of investigations; (vii) organizational components Table two shows the frequency of the recommendations.

Table 2: Components of safety netting in primary care

*1.* *Communication of uncertainty*

A discussion with the patient around uncertainty was highlighted as an element of safety netting. Almond et al’s Delphi study described this well, stating “if the diagnosis is uncertain, that uncertainty should be communicated to the patient (or parent/carer) so that they are empowered to re-consult if necessary” ([13](#_ENREF_13)). Similarly, in his advice to GP registrars, Singh states “If you are not sure of the aetiology, explain this to the patient. This reduces the risk of false reassurance and most patients appreciate the honesty” ([29](#_ENREF_29)). The Medical and Dentist Defence Union of Scotland (MDDUS) state that diagnostic uncertainty may occur due to patients presenting very early in the illness process making medically unexplained symptoms more likely ([23](#_ENREF_23)).

None of the included studies gave advice on how uncertainty is communicated to patients, both Bankhead and Nicholson state that further research is needed to explore how this is most effectively undertaken by healthcare professionals.

*2.* *Advice on worrying symptoms and ‘red flags’*

In order to know when to represent or seek further medical care, it is necessary for patients to know the ‘red flag’ or worrying symptoms they should look out for.

This component of safety netting was described well by Almond et al who stated that “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” ([13](#_ENREF_13)).

This could include a description of symptoms of serious illness such as meningitis in an unwell child, or signs which may by suggestive of cancer in a patient presenting with non-specific symptoms (e.g. a patient may be warned about PR bleeding or diarrhoea if they present with unexplained vague abdominal pain).

*3.* *The likely time course of the illness*

Persistent or non-resolving symptoms may warrant further investigation or consultation and may be considered as a ‘red flag’. In order to know when a symptom is persistent or non-resolving, health care professionals need to communicate a likely time course to patients. However, Almond et al. recognises that this information may not be known for all presentations and states that this should not delay help seeking if the patient or carer has concerns ([13](#_ENREF_13)). For example a systematic review found that acute cough in children could last over two weeks ([57](#_ENREF_57)). Safety netting advice could inform parents of this likely time course but should also discuss red flags and worrying symptoms, such as a rash or worsening fever, to prompt an earlier review if needed.

*4.* *How and where to seek further medical care*

Once patients understand the potential red flag or worrying symptoms and the likely time course of the symptoms, they need to know how and where to seek further medical care if symptoms persist or red flag symptoms present. This element of safety netting was the most frequently included component.

This included signposting to other services such as OOH, or the emergency department ([29](#_ENREF_29), [47](#_ENREF_47)), advice on how to make a follow up appointment if needed, and who should do this ([19](#_ENREF_19), [55](#_ENREF_55)), and legitimising repeat visits so that patients felt able to return if symptoms persist or worsen ([46](#_ENREF_46)).

The key element of this component of safety netting ensures patients know how to, and where to seek help if things do not go as planned or expected. This was felt to be a separate component to planned follow up which is discussed below and may not be needed in every situation. For example Bankhead described this component as “*specific information about when and how to re-consult if symptoms do not resolve in the expected time course*” ([16](#_ENREF_16)). Buntinx et al state safety netting should include “clear information and advice on re-contacting the GP in specific situations” ([36](#_ENREF_36)). This suggests the advice should include a description of the specific situations and how to go about seeking help in these situations.

*5.* *Arrange planned follow up*

As well as advising patients on how to seek help should things not go as expected, arranging planned follow up may be a part of safety netting. This was felt to be a distinct element to safety netting and would normally involve a review in a similar setting often with the same health care professional. The NICE suspected cancer guidelines make this distinction clear stating reviews may be planned, or patient initiated if new symptoms develop. Planned follow up may be encouraged after having investigations (discussed below), or in groups patients who may be less likely to re-present without planned follow up. In their safety netting advice, Morgan et al. states “arranging appropriate follow up for patients is an essential element of the consultation . . . We encourage having a low threshold for asking patients to return for a review.” ([25](#_ENREF_25)). Similarly Macmillan’s safety netting leaflet advises the following “If you feel a patient needs to be reviewed, offer to make an appointment for them, rather than asking them to do it” ([6](#_ENREF_6)).

*6.* *Primary care investigations and safety netting*

Safety netting around investigations in may include arranging patient follow up as discussed above, but could also include an explanation of the purpose of tests, how they are undertaken and how results can be obtained. Much of the safety netting advice around cancer diagnosis focuses on investigations. The NPSA state that patients should be “enabled to follow up test results relating to their own care ([51](#_ENREF_51)).” The NICE suspected cancer guidelines state in the safety netting advice, that results of investigations should be reviewed and acted upon appropriately ([8](#_ENREF_8)). Nicholson et al. also highlight that patients often assume ‘no news is good news’ following investigations and suggest that health care professionals retain responsibility for reviewing and acting on the results of investigations they have requested ([55](#_ENREF_55)).

*7.* *Organisational components*

In addition to the contents listed above, included papers gave advice on other actions as part of safety netting. This included a recommendation to document safety netting advice in the patient’s notes ([16](#_ENREF_16), [22](#_ENREF_22)), have administrative systems in place to ensure abnormal results are dealt with ([6](#_ENREF_6)), and ensuring patients contact details are up to date ([5](#_ENREF_5)). Written safety netting instructions were suggested by a number of papers ([6](#_ENREF_6), [22](#_ENREF_22), [23](#_ENREF_23), [50](#_ENREF_50), [55](#_ENREF_55)). The MDU advise careful documentation in the medical notes and providing written advice stating “document specific advice given, rather than simply ‘advice given’”([22](#_ENREF_22)). Nicholson agrees stating “ensure patients understand safety netting advice, with written instructions if needed” ([55](#_ENREF_55)). Despite many of the papers suggesting providing written advice to patients, none of the sources gave advice on what should be given or on which group of patients may benefit from written advice.

**DISCUSSION**

Safety netting was described as an essential component of the consultation in 1987 ([14](#_ENREF_14)), and it continues to be advocated by national guidelines. This review has included 47 citations on safety netting with the aim of clarifying the concept, use and content of safety netting. This review has included citations on safety netting in a variety of settings and for different patient groups. Despite this, the definitions of safety netting and its possible component parts seemed to be largely universal. This suggests that whether given to the patient or parent, in the emergency department or general practice safety netting can be defined and component parts conceptualised, universally. The definition of safety netting has developed from that first described by Neighbour ([14](#_ENREF_14)), and the literature suggests should include a discussion with the patient on the problem of uncertainty, advice on potential ‘red flag’ symptoms, the likely time course of the illness, advice on accessing further medical care, follow up and the management of investigations. Safety netting may also include other factors such as providing written information and documenting advice in the medical notes.

The most recognisable part of safety netting ~ managing uncertainty ~ still occurs within the consultation, and whilst this may centre on the diagnosis as Neighbour suggested in his question “how will I know if I am wrong”, it may now also include prognostic and management uncertainty. Whilst many of the included citations suggest discussing uncertainty, none provide advice or evidence on how best to do this in practice. Uncertainty exists in the majority of consultations, but without the first step of recognising and communicating uncertainty, the actual need for safety netting may be lost. The rest of the component parts discussed above can help to provide a safety net in the management of uncertainty by providing information to patients and organising, or legitimising, a follow up visit to ensure patients do not ‘slip through the net’. Alam et al. conducted a conceptual review on managing diagnostic uncertainty. In this review safety netting is listed as just one technique in a group of cognitive factors which may help practitioners manage uncertainty. This review suggests that the management of uncertainty in primary care is complex and that safety netting may be just one of a number of factors to be considered ([58](#_ENREF_58)).

This review has focused on safety netting from the point of view of the HCP, however it is also important to consider the importance of safety netting for patients and carers. Only a few of the included citations in this review were patient focused ([39](#_ENREF_39), [41](#_ENREF_41), [42](#_ENREF_42), [44](#_ENREF_44), [47](#_ENREF_47)), with the majority discussing safety netting from the perspective of HCPs. More research is needed on what patients understand and want from safety netting advice and how they wish to receive the advice.

Strengths and limitations

This is the first review of safety netting in all age groups and settings and brings together insights from a variety of sources. The data have led to a new definition of safety netting as well as a description of its component parts. However, the review is subject to some limitations. Given the largely undefined nature of safety netting, compiling a comprehensive search strategy was difficult. A broad search around the terms ‘safety net’ or ‘safety netting’ was therefore used, rather than a focused search for all the possible individual components of safety netting. The most important limitation of the study is the lack of research evaluating the effectiveness and the optimal components of safety netting. Over half of the included citations could be classed as “expert opinion” and do not draw on empirical research. The findings of this review should therefore be treated with caution. It is hoped that this review may provide a basis to inform future safety netting research.

Comparison with existing literature

Little research has sought to define and assess safety netting prior to this review. The Acutely Sick Kid Safety Netting Interventions for Families (ASK SNIFF) research programme has undertaken a number of research projects looking specifically at safety netting in children and relevant published work from this programme has been included ([33](#_ENREF_33), [46](#_ENREF_46), [47](#_ENREF_47), [54](#_ENREF_54)). Similarly, a widely referenced, unpublished report on safety netting was produced by the University of Oxford, the findings of which are also included ([16](#_ENREF_16)).

Implications for practice

This review has found advice within the consultation as Neighbour suggested is one part of a larger array of actions which safety netting may include. It is clear that safety netting, while still considered to be an essential process to help manage uncertainty in diagnosis, has now been expanded by many authors to include dealing with uncertainty in management by providing information for patients and organising follow up after contact with a health professional. It aims to empower patients to recognise serious illness and seek timely and appropriate continued healthcare. The features of safety netting include advice on how and where to seek help, red flags, the organisation of follow up, and the natural history or time course of an illness. It may be performed at the time of the contact between the health professional and the patient, or may occur after contact, through active monitoring and administrative systems to manage results and referrals. Safety netting appears to have moved away from simple advice at the end of a consultation to a plethora of actions in different settings undertaken by different members of the healthcare team. The results of this review highlight different aspects of safety netting that have been suggested and may provide some conceptual clarity. The most compelling finding of this review is the lack of empirical research on safety netting and its components. The citations included have allowed the development of a definition of safety netting and provided a list of possible component parts. In clinic practice the individual components may serve as a reminder when conducting safety netting, however the findings are largely based on expert opinion and as such, caution should be used when interpreting the results. Further research is needed on many aspects of safety netting, including how it is implemented, the needs and understanding of patients subject to safety netting and to evaluate the effectiveness of safety netting, both its component parts and the patient groups for whom it is important.

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