

# Acutely ill adults in hospital: recognising and responding to deterioration

Clinical guideline

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[nice.org.uk/guidance/cg50](https://www.nice.org.uk/guidance/cg50)

## Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

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This guideline is the basis of QS76 and QS158.

## Introduction

Patients who are admitted to hospital believe that they are entering a place of safety, where they, and their families and carers, have a right to believe that they will receive the best possible care. They feel confident that, should their condition deteriorate, they are in the best place for prompt and effective treatment.

Yet there is evidence to the contrary. Patients who are, or become, acutely unwell in hospital may receive suboptimal care. This may be because their deterioration is not recognised, or because – despite indications of clinical deterioration – it is not appreciated, or not acted upon sufficiently rapidly. Communication and documentation are often poor, experience might be lacking and provision of critical care expertise, including admission to critical care areas, delayed.

We have endeavoured to produce practical guidance with recommendations for the measurement and recording of a set of physiological observations, linked to a 'track and trigger' system. We have emphasised the importance of a full clinical assessment, and of tailoring the written monitoring and management plans to the individual patient's clinical circumstances. Throughout the document we have emphasised the importance of training; by ensuring that routine measurements are accurately taken and recorded by staff that understand their clinical relevance, and by linking these observations to a graded track and trigger system, care can be escalated appropriately. The foundations for patient safety are laid through doing and recording simple measurements well and having agreed response strategies in place.

The Guideline Development Group struggled with the lack of evidence to identify any one best model of response. It needed to balance making clear recommendations about the level and nature of the response with the absence of evidence regarding optimal configuration. Given this, the Guideline Development Group considered that the optimal configuration of response should be agreed and delivered locally. Whatever model of care is agreed, the clinical team must have the necessary competencies. Where admission to a critical care area is considered necessary, we have emphasised the importance of involving both critical care consultants and the team caring for the patient on the ward.

The Guideline Development Group recognised the pressure on both critical care beds and inpatient hospital beds, and the difficulties of ensuring smooth, planned transfer from critical care areas back

to the wards. Nevertheless, we have set out recommendations to avoid transfer out of critical care areas between the hours of 22.00 and 07.00. If this occurs, it should be documented as an adverse incident. We have been prescriptive about the need for a formal, structured handover of care between the transferring and receiving teams, recognising the understandable anxiety of patients and their carers and the need to provide reassurance and information to them at this time.

This is the first National Institute for Health and Clinical Excellence (NICE) short clinical guideline to be developed. The methodology is of the same rigour as for the standard NICE clinical guidelines, but the scope is narrower, and the development and consultation phases have been compressed. The Guideline Development Group recognises the importance of producing guidance rapidly in an area in which patients and clinicians need advice urgently to ensure patient safety. This philosophy sits well with our emphasis on a timely and rapid response to the acutely ill hospital patient. We hope that the guideline will be welcomed by all who plan, deliver, or experience hospital inpatient clinical care.

**Dr Mary Armitage**

Guideline Development Group Chair

## Patient-centred care

This guideline offers best practice advice on the care of adult patients within the acute hospital setting.

Treatment and care should take into account patients' needs and preferences. People with an acute illness should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If patients do not have the capacity to make decisions, healthcare professionals should follow the [Department of Health's advice on consent](#) and the [code of practice that accompanies the Mental Capacity Act](#). In Wales, healthcare professionals should follow [advice on consent from the Welsh Government](#).

Good communication between healthcare professionals and patients is essential. It should be supported by evidence-based written information tailored to the patient's needs. Treatment and care, and the information patients are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English.

If the patient agrees, families and carers should have the opportunity to be involved in decisions about treatment and care.

Families and carers should also be given the information and support they need.

## Key priorities for implementation

- Adult patients in acute hospital settings, including patients in the emergency department for whom a clinical decision to admit has been made, should have:
  - physiological observations recorded at the time of their admission or initial assessment
  - a clear written monitoring plan that specifies which physiological observations should be recorded and how often. The plan should take account of the:
    - ◇ patient's diagnosis
    - ◇ presence of comorbidities
    - ◇ agreed treatment plan.

Physiological observations should be recorded and acted upon by staff who have been trained to undertake these procedures and understand their clinical relevance.

- Physiological track and trigger systems should be used to monitor all adult patients in acute hospital settings.
  - Physiological observations should be monitored at least every 12 hours, unless a decision has been made at a senior level to increase or decrease this frequency for an individual patient.
  - The frequency of monitoring should increase if abnormal physiology is detected, as outlined in the recommendation on graded response strategy.
- Staff caring for patients in acute hospital settings should have competencies in monitoring, measurement, interpretation and prompt response to the acutely ill patient appropriate to the level of care they are providing. Education and training should be provided to ensure staff have these competencies, and they should be assessed to ensure they can demonstrate them.
- A graded response strategy for patients identified as being at risk of clinical deterioration should be agreed and delivered locally. It should consist of the following three levels.
  - Low-score group:
    - ◇ Increased frequency of observations and the nurse in charge alerted.
  - Medium-score group:



- ◇ Urgent call to team with primary medical responsibility for the patient.
  - ◇ Simultaneous call to personnel with core competencies for acute illness. These competencies can be delivered by a variety of models at a local level, such as a critical care outreach team, a hospital-at-night team or a specialist trainee in an acute medical or surgical specialty.
- High-score group:
- ◇ Emergency call to team with critical care competencies and diagnostic skills. The team should include a medical practitioner skilled in the assessment of the critically ill patient, who possesses advanced airway management and resuscitation skills. There should be an immediate response.
- If the team caring for the patient considers that admission to a critical care area is clinically indicated, then the decision to admit should involve both the consultant caring for the patient on the ward and the consultant in critical care.
  - After the decision to transfer a patient from a critical care area to the general ward has been made, he or she should be transferred as early as possible during the day. Transfer from critical care areas to the general ward between 22.00 and 07.00 should be avoided whenever possible, and should be documented as an adverse incident if it occurs.
  - The critical care area transferring team and the receiving ward team should take shared responsibility for the care of the patient being transferred. They should jointly ensure:
    - there is continuity of care through a formal structured handover of care from critical care area staff to ward staff (including both medical and nursing staff), supported by a written plan
    - that the receiving ward, with support from critical care if required, can deliver the agreed plan.

The formal structured handover of care should include:

- a summary of critical care stay, including diagnosis and treatment
- a monitoring and investigation plan
- a plan for ongoing treatment, including drugs and therapies, nutrition plan, infection status and any agreed limitations of treatment

- physical and rehabilitation needs
- psychological and emotional needs
- specific communication or language needs.

## 1 Guidance

The following guidance is based on the best available evidence. The [full guideline](#) gives details of the methods and the evidence used to develop the guidance.

### *Physiological observations in acute hospital settings*

1.1 Adult patients in acute hospital settings, including patients in the emergency department for whom a clinical decision to admit has been made, should have:

- physiological observations recorded at the time of their admission or initial assessment
- a clear written monitoring plan that specifies which physiological observations should be recorded and how often. The plan should take account of the:
  - patient's diagnosis
  - presence of comorbidities
  - agreed treatment plan.

Physiological observations should be recorded and acted upon by staff who have been trained to undertake these procedures and understand their clinical relevance.

1.2 As a minimum, the following physiological observations should be recorded at the initial assessment and as part of routine monitoring:

- heart rate
- respiratory rate
- systolic blood pressure
- level of consciousness
- oxygen saturation
- temperature.

## *Identifying patients whose clinical condition is deteriorating or is at risk of deterioration*

- 1.3 Physiological track and trigger systems should be used to monitor all adult patients in acute hospital settings.
- Physiological observations should be monitored at least every 12 hours, unless a decision has been made at a senior level to increase or decrease this frequency for an individual patient.
  - The frequency of monitoring should increase if abnormal physiology is detected, as outlined in the recommendation on graded response strategy.

## *Choice of physiological track and trigger system*

- 1.4 Track and trigger systems should use multiple-parameter or aggregate weighted scoring systems, which allow a graded response. These scoring systems should:
- define the parameters to be measured and the frequency of observations
  - include a clear and explicit statement of the parameters, cut-off points or scores that should trigger a response.

## *Physiological parameters to be used by track and trigger systems*

- 1.5 Multiple-parameter or aggregate weighted scoring systems used for track and trigger systems should measure:
- heart rate
  - respiratory rate
  - systolic blood pressure
  - level of consciousness
  - oxygen saturation
  - temperature.

- 1.6 In specific clinical circumstances, additional monitoring should be considered; for example:
- hourly urine output
  - biochemical analysis, such as lactate, blood glucose, base deficit, arterial pH
  - pain assessment.

### *Critical care outreach services for patients whose clinical condition is deteriorating*

- 1.7 Staff caring for patients in acute hospital settings should have competencies in monitoring, measurement, interpretation and prompt response to the acutely ill patient appropriate to the level of care they are providing. Education and training should be provided to ensure staff have these competencies, and they should be assessed to ensure they can demonstrate them.
- 1.8 The response strategy for patients identified as being at risk of clinical deterioration should be triggered by either physiological track and trigger score or clinical concern.
- 1.9 Trigger thresholds for track and trigger systems should be set locally. The threshold should be reviewed regularly to optimise sensitivity and specificity.

### *Graded response strategy*

No specific service configuration can be recommended as a preferred response strategy for individuals identified as having a deteriorating clinical condition.

- 1.10 A graded response strategy for patients identified as being at risk of clinical deterioration should be agreed and delivered locally. It should consist of the following three levels.
- Low-score group:
    - Increased frequency of observations and the nurse in charge alerted.
  - Medium-score group:

- Urgent call to team with primary medical responsibility for the patient.
  - Simultaneous call to personnel with core competencies for acute illness. These competencies can be delivered by a variety of models at a local level, such as a critical care outreach team, a hospital-at-night team or a specialist trainee in an acute medical or surgical specialty.
- High-score group:
    - Emergency call to team with critical care competencies and diagnostic skills. The team should include a medical practitioner skilled in the assessment of the critically ill patient, who possesses advanced airway management and resuscitation skills. There should be an immediate response.
- 1.11 Patients identified as 'clinical emergency' should bypass the graded response system. With the exception of those with a cardiac arrest, they should be treated in the same way as the high-score group.
- 1.12 For patients in the high- and medium-score groups, healthcare professionals should:
- initiate appropriate interventions
  - assess response
  - formulate a management plan, including location and level of care.
- 1.13 If the team caring for the patient considers that admission to a critical care area is clinically indicated, then the decision to admit should involve both the consultant caring for the patient on the ward and the consultant in critical care.

### *Transfer of patients from critical care areas to general wards*

- 1.14 After the decision to transfer a patient from a critical care area to the general ward has been made, he or she should be transferred as early as possible during the day. Transfer from critical care areas to the general ward between 22.00 and 07.00 should be avoided whenever possible, and should be documented as an adverse incident if it occurs.

## *Care on the general ward following transfer*

- 1.15 The critical care area transferring team and the receiving ward team should take shared responsibility for the care of the patient being transferred. They should jointly ensure:
- there is continuity of care through a formal structured handover of care from critical care area staff to ward staff (including both medical and nursing staff), supported by a written plan
  - that the receiving ward, with support from critical care if required, can deliver the agreed plan.

The formal structured handover of care should include:

- a summary of critical care stay, including diagnosis and treatment
  - a monitoring and investigation plan
  - a plan for ongoing treatment, including drugs and therapies, nutrition plan, infection status and any agreed limitations of treatment
  - physical and rehabilitation needs
  - psychological and emotional needs
  - specific communication or language needs.
- 1.16 When patients are transferred to the general ward from a critical care area, they should be offered information about their condition and encouraged to actively participate in decisions that relate to their recovery. The information should be tailored to individual circumstances. If they agree, their family and carers should be involved.
- 1.17 Staff working with acutely ill patients on general wards should be provided with education and training to recognise and understand the physical, psychological and emotional needs of patients who have been transferred from critical care areas.

## 2 Notes on the scope of the guidance

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover.

The aim of this guideline is to provide evidence-based recommendations to guide healthcare professionals in the appropriate care of acutely ill patients in hospital.

### *Areas covered by this guideline*

This guideline provides guidance on:

- Identification of patients who are at risk of clinical deterioration or whose clinical condition is deteriorating. This includes assessment of:
  - scoring tools that record physiological parameters and neurological state
  - the level of monitoring needed and the recording and interpretation of the data obtained.
- Response strategies to manage patients who are at risk of clinical deterioration or whose clinical condition is deteriorating, including:
  - the timing of response and patient management
  - the communication of monitoring results to relevant healthcare professionals, including the interface between critical care and acute specialties.
- Transfer of patients from critical care areas. This includes:
  - monitoring requirements.
  - timing of transfer.

### *Areas outside the remit of this guideline*

This guideline does not address care that should be provided to: children, dying patients receiving palliative care or patients in critical care areas who are directly under the care of critical care consultants. It does not address the decision to discharge a patient from a critical care area.



### 3 Implementation

NICE has developed tools to help organisations implement this guidance.

## 4 Research recommendations

### *Identification and evaluation of risk scoring tools*

- What is the clinical effectiveness and cost effectiveness of automated (electronic) monitoring systems compared with manual recording systems in identifying people at risk of clinical deterioration in general hospital ward settings?
- What are the sensitivities and specificities of track and trigger systems in different clinical settings?
- Can track and trigger systems that have higher sensitivities and specificities than existing scores be developed and validated?

### *Response strategies for patients identified as having a deteriorating clinical condition*

- What is the clinical and cost effectiveness of a structured educational programme to improve recognition of and response to acute illness compared with no structured programme in improving outcomes for people who clinically deteriorate in general hospital ward settings?
- What is the clinical and cost effectiveness of CCOS compared with usual care or educational outreach in improving health outcomes for patients who clinically deteriorate in general hospital ward settings? Such research should:
  - use a cluster RCT design conducted on multiple sites, with analysis of the cluster at hospital level rather than ward level
  - investigate a range of health outcomes, including mortality, morbidity, quality of life measures and patient satisfaction
  - include a parallel qualitative process evaluation to help establish which components of outreach (a complex intervention) are likely to be most effective
  - consider 24-hour critical care outreach as well as daytime outreach.

### *Transfer of patients from critical care areas*

- What is the clinical and cost effectiveness of providing structured educational advice (such as an information booklet) compared with usual care to patients who have been transferred from critical care areas back to general hospital ward settings?

- What is the clinical and cost effectiveness of a transfer facilitator for patients transferred from critical care to a general ward environment? Such research could include outcome measures on:
  - patient satisfaction
  - time to discharge from acute hospital
  - destination when transferred.

## 5 Other versions of this guideline

### 5.1 *Full guideline*

The [full guideline](#), 'Acutely ill patients in hospital: Recognition of and response to acute illness in adults in hospital' contains details of the methods and evidence used to develop the guideline.

### 5.2 *Information for the public*

NICE has produced '[information for the public](#)' explaining this guideline.

We encourage NHS and voluntary sector organisations to use text from this information in their own materials.

## 6 Updating the guideline

NICE clinical guidelines are updated so that recommendations take into account important new information. New evidence is checked 3 years after publication, and healthcare professionals and patients are asked for their views; we use this information to decide whether all or part of a guideline needs updating. If important new evidence is published at other times, we may decide to do a more rapid update of some recommendations. Please see our website for information about updating the guideline.

## **Appendix A: The Guideline Development Group and the Short Clinical Guidelines Technical Team**

### *Guideline Development Group*

The Guideline Development Group was composed of relevant healthcare professionals, patient representatives and NICE technical staff.

The members of the Guideline Development Group are listed below.

**Mrs Sheila Adam**

Nurse Consultant in Critical Care

**Dr Mary Armitage (Guideline Development Group Chair)**

Consultant Physician

**Mr Peter Brewer**

Patient/carer representative

**Dr Brian Cuthbertson**

Clinical Senior Lecturer and Consultant in Intensive Care

**Dr Jane Eddleston (Guideline Development Group Clinical Adviser)**

Consultant in Intensive Care Medicine

**Mr Peter Gibb**

Patient/carer representative

**Dr Paul Glynne**

Consultant Physician in Acute Medicine and Critical Care

**Dr David Goldhill**

Consultant in Anaesthesia

**Dr John Hindle**

Geriatrician/Consultant Physician and Clinical Director for Medicine

**Dr Paul Jenkins**

Consultant in Acute Medicine

**Dr Simon Mackenzie**

Consultant in Critical Care

**Dr Patrick Nee**

Consultant in Emergency Medicine and Intensive Care Medicine

**Professor Brian J Rowlands**

Consultant Surgeon

**Mrs Kirsty Ward**

Registered Nurse

The following individuals were not full members of the guideline development group but were co-opted onto the group as expert advisers:

**Dr David Harrison**

Statistician and Health Services Researcher

**Professor Gary Smith**

Consultant in Critical Care

### *Short Clinical Guidelines Technical Team*

The Short Clinical Guidelines Technical Team was responsible for this guideline throughout its development. It was responsible for preparing information for the Guideline Development Group, for drafting the guideline and for responding to consultation comments. The following people, who are employees of NICE, formed the Short Clinical Guidelines Technical Team for this guideline.

**Dr Tim Stokes**

Guideline Lead and Associate Director – Centre for Clinical Practice (from December 2006)

**Nicole Elliott**

Commissioning Manager

**Michael Heath**

Project Manager (from December 2006)

**Toni Tan**

Technical Analyst, (from January 2007)

**Janette Boynton**

Senior Information Scientist

**Francis Ruiz**

Technical Adviser in Health Economics

**Emma Banks**

Coordinator

**Dr Jayne Spink**

Associate Director – Centre for Clinical Practice (until December 2007)

**Dr Philippa Davies**

Technical Analyst (until January 2007)

**Dr Françoise Cluzeau**

Technical Adviser (until December 2007)



## About this guideline

NICE clinical guidelines are recommendations about the treatment and care of people with specific diseases and conditions in the NHS in England and Wales.

The guideline was developed by the Short Clinical Guideline team at NICE. The team worked with a group of healthcare professionals (including consultants, GPs and nurses), patients and carers, and technical staff, who reviewed the evidence and drafted the recommendations. The recommendations were finalised after public consultation.

The methods and processes for developing NICE clinical guidelines are described in [The guidelines manual](#). This guideline was developed using the [short clinical guideline process](#).

We have produced [information for the public](#) explaining this guideline. Tools to help you put the guideline into practice and information about the evidence it is based on are also [available](#).

### Changes after publication

20 December 2011: Copied into NICE guideline template, links checked.

November 2013: minor maintenance

### Your responsibility

This guidance represents the view of NICE, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summary of product characteristics of any drugs they are considering.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.

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## Accreditation

