Healthcare Improvement Scotland

SIGN

SIGN 139 • Care of deteriorating patients

Consensus recommendations

May 2014

Evidence

Scottish Intercollegiate Guidelines Network

Care of deteriorating patients

Consensus recommendations

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Contents

1 Introduction

1.1 THE NEED FOR GUIDANCE

The Scottish Patient Safety Programme (SPSP) is co-ordinated by Healthcare Improvement Scotland. Over the last five years the SPSP has supported improved processes of care, including recognition of deterioration in patients, by implementation of Early Warning Score (EWS) systems.

In June 2012, the Cabinet Secretary for Health and Wellbeing set new aims for acute adult health care in NHSScotland including a 20% reduction in Hospital Standardised Mortality Ratios (HSMR) and that 95% of patients should be free from avoidable harm. While considerable gains have been made in improved processes to recognise and deliver appropriate treatment to deteriorating patients, there is much work to be done to implement reliable systems across Scotland.

The Scottish Intercollegiate Guidelines Network (SIGN) has developed these consensus recommendations to underpin a national approach to care of adult deteriorating patients. They set out the essential elements for prompt and reliable recognition of and appropriate response to deteriorating patients in Scotland's acute healthcare settings.

1.2 REMIT

1.2.1 OVERALL OBJECTIVES

This document provides consensus recommendations based on expert opinion for best practice in the management of deteriorating adult patients. The recommendations are intended to guide NHSScotland boards, hospitals and health professionals in the development of local systems that will deliver reliable recognition and response to the deteriorating patients in their care.

1.2.2 POTENTIAL USERS

This document will be of interest to healthcare professionals involved in the care of deteriorating adult patients, their families and service commissioners.

1.3 STATEMENT OF INTENT

This statement is intended to describe an appropriate level of response to any adult patient who suffers physiological deterioration in an acute hospital setting. It is not based on evidence but on the consensus opinion of a clinical expert group and is not intended to be construed or to serve as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available. It is advised, however, that significant departures from the national consensus statement or any local guidelines derived from it should be fully documented in the patient's case notes at the time the relevant decision is taken.

1.4 REVIEW AND UPDATING

These recommendations were issued in 2014 and will be considered for review in two years. Any updates to the recommendations in the interim period will be noted on the SIGN website: **www.sign.ac.uk**

2 Recommendations

In order to support a national approach to the care of deteriorating adult patients across Scotland a group of clinical experts (*see section 4.2*) took part in a modified Delphi process (*see section 4.1*) to establish good -practice recommendations. These recommendations should be adopted as an appropriate response in the care of deteriorating adult patients in an acute hospital setting by NHS boards in Scotland. These recommendations are based on guidance from the National Institute for Health and Care Excellence (NICE),[1] the Royal College of Physicians[2] and the South Australian Government.[3] The recommendations do not appear in order of priority.

2.1 OBSERVATION

1 Physiological observations should be recorded at the time of admission or initial assessment.

2 A clear written monitoring plan should specify which physiological observations should be taken and how often.

3 Observations should be performed by staff trained to undertake these procedures and who understand their clinical relevance.

4 Regular assessment of staff taking observations should be undertaken, to defined competency standards.

5 As a minimum, observations should include:

- heart rate
- respiratory rate
- blood pressure
- level of consciousness
- oxygen saturation including percentage/flow rate of administered oxygen therapy
- temperature
- state of hydration (for patients with medium or high NEWS score).

6 In specific situations additional monitoring will be required, eg biochemical analysis, (such as blood glucose or lactate) or pain assessment.

2.2 NATIONAL EARLY WARNING SCORE

7 Acute hospitals should implement the National Early Warning Score (NEWS).[2]

8 NEWS should be used to monitor all adult patients in acute hospital settings. Maternity specific EWS should be used for pregnant women.

9 NEWS should be monitored at least every four hours after admission to hospital unless a decision is made and documented at a senior level to decrease the frequency of monitoring for an individual patient.

10 The frequency of monitoring should increase if abnormal physiology is detected.

11 A protocol which defines increased frequency of observations for patients whose NEWS score triggers action should be implemented and its compliance measured.

12 Any patient whose NEWS score triggers action should be screened for sepsis and delirium.

2.3 SEPSIS

13 All patients who screen positively for sepsis should be started on the Sepsis Six care pathway,[4] unless their treatment plan indicates otherwise.

Sepsis Six (within one hour):

- deliver O_2 (94–98% SpO_2 or 88–92% in patients with chronic obstructive pulmonary disease)
- take blood cultures and consider source control
- give intravenous (IV) antibiotics according to local protocols
- start IV fluid resuscitation (minimum 500 ml) and reassess
- check lactate and full blood count
- commence accurate urine output measurement and consider urinary catheterisation.

2.4 LIMITED REVERSIBILITY

14 A process should be in place to identify patients with limited reversibility. Patients identified as deteriorating with limited reversibility should have a written management plan which considers and includes:

- key issues
- anticipated outcomes which acknowledge uncertainty
- resuscitation status
- discussions with the multidisciplinary team
- discussion with the patient and family, which may include discussion of uncertain recovery and medical plan, preferred place of care and concerns or wishes
- standardised and agreed ceilings of care.

2.5 GRADED RESPONSE

15 A graded response for patients identified as deteriorating should be agreed, implemented and audited locally.

For example:

Low NEWS score

- increase the frequency of observations and alert the nurse in charge.

Medium NEWS score

- respond within 30 minutes
- make an urgent call to the team with primary medical responsibility for the patient
- also call the person with core competencies for acute illness.

High NEWS score

- respond immediately
- make an emergency call to the team with critical care competencies and diagnostic skills.

16 Patients with a medium or high NEWS score should have:

- appropriate interventions initiated
- the response to these interventions assessed at the time of the intervention or at a later time
- a written management plan that includes location and level of care.

2.5 COMMUNICATION

17 All communication about patients identified as deteriorating should be formalised and include:

- a daily process for person-centred communication that includes the wishes of the patient and family
- a structured handover process which includes all relevant clinical information.

2.6 DATA COLLECTION

18 Acute hospitals should collect data on a monthly basis that measures the number and rate of cardiac arrests (with chest compressions and/or defibrillation).

19 Acute hospitals should consider the introduction of electronic track, trigger and alert systems.

3 Implementing the recommendations

3.1 IMPLEMENTATION STRATEGY

Implementation of these consensus recommendations is the responsibility of each NHS board and is an essential part of clinical governance. Mechanisms should be in place to review care provided against the recommendations. The reasons for any differences should be assessed and addressed where appropriate. Local arrangements should then be made to implement the recommendations in individual hospitals, units and practices.

Implementation of these recommendations will be encouraged and supported by Healthcare Improvement Scotland. The national implementation strategy for these consensus recommendations includes the Acute Adult Scottish Patient Safety Programme which will support NHS boards to test and implement processes to provide a structured response and review for deteriorating patients.

3.2 RESOURCE IMPLICATIONS OF RECOMMENDATIONS

Training: there will be a requirement to ensure adequate training for healthcare workers in the detection of and response to deteriorating patients, as well as monitoring continuing competency.

Staffing: there will be a requirement to ensure adequate levels of appropriately qualified staff to detect and respond to deteriorating patients.

National Early Warning Score: implementation of a National Early Warning Score is a desired future state for acute adult care in NHSScotland.

Electronic track, trigger and alert systems: there are likely to be resource implications in introducing new electronic systems.

3.3 AUDITING CURRENT PRACTICE

A first step in implementing any new recommendation is to gain an understanding of current clinical practice. Audit tools designed around recommendations can assist in this process. Audit tools should be comprehensive but not time consuming to use. Successful implementation and audit of new recommendations requires good communication between staff and multidisciplinary team working.

4 The consensus methodology

4.1 THE DELPHI PROCESS

SIGN is a collaborative network of clinicians, other healthcare professionals and patient organisations and is part of Healthcare Improvement Scotland. These consensus recommendations were developed by a multidisciplinary group of practicing healthcare professionals using a modified Delphi process. The Delphi process is a methodology designed to reach a group opinion or consensus without the drawbacks inherent within a face-to-face group processes. Delphi has been shown to be more accurate than focus groups, conferences, group discussions and other traditional interactive group processes.[5] The modified Delphi process used was a multistaged survey which fed back group results at each stage in the process. Consensus was deemed to have been reached when 70% of the group either agreed or disagreed on a question.

4.1.1 PROCESS OVERVIEW

Recruitment	SIGN Council and Directors of Nursing consulted for group membership nominations and volunteers
	Proposed group members invited to participate
	Declaration of interests obtained from each participant
Phase 1 (*see Annex 1*)	Questionnaire 1 sent to participants. Views sought on NICE guidelines on acutely ill patients in hospital,[1] the National Early Warning System[2] and the South Australian Government's national consensus statement on deteriorating patients.[3]
	Two week response time
	Reminder sent with one week extension
	Data collated and fed back to participants
	Prepared phase 2 questionnaire
Phase 2 (*see Annex 2*)	Questionnaire 2 sent asking participants to score each statement on a 5 point Likert scale. Views also sought on related issues.
	Three week response time
	Reminder sent with one week extension
	Data collated and analysed
	Consensus reached
	Data fed back to participants
Editorial phase	Consensus statement and recommandations drafted based on phase 2 outcomes
	Circulated to consensus group participants for comment
	Ammended based on feedback
	Reviewed by SIGN Editorial Group
	Recommendations finalised

4.1.2 PARTICIPATION AND RESPONSE RATE

Potential participants were identified by inviting nominations and volunteers from SIGN Council, the Scottish Executive Nurse Directors group and snowball sampling. To ensure the independence of the responses, group membership was not disclosed to participants during the Delphi process. Email communications were dealt with in a way that ensured no group member saw the email address of another group member and written responses to questionnaires were anonymised when fed back to the group.

Twenty nine participants were invited to take part in the modified Delphi process. Twenty two invitees agreed to take part, with eighteen responding to the first survey and sixteen responding to the second survey. Two participants did not respond to either survey.

It was anticipated that after a scoping stage two or three phases of survey would follow . However, consensus was reached after only one round of survey after scoping. The results of phase 1 and 2 can be found in Annexes 1 and 2 respectively.

4.2 THE CONSENSUS GROUP

The consensus group consisted of a representative sample of experts made up of doctors, nurses and other relevant allied health professionals.

Group membership was anonymous to allow each participant an equal voice and to encourage the broadest possible opinion.

Dr Daniel Beckett	*Consultant Acute Physician, NHS Forth Valley*
Professor Derek Bell	*Professor of Acute Medicine, Imperial College, London*
Ms Helen Carnochan	*Advanced Nurse Practitioner, NHS Dumfries and Galloway*
Dr Wendy Craig	*General Surgeon, NHS Grampian*
Dr Peter Curry	*Consultant Anaesthetist, NHS Fife*
Mr Eddie Docherty	*Nurse Consultant, NHS Ayrshire and Arran*
Dr Claire Gordon	*Consultant Acute Physician, NHS Lothian*
Dr Ailsa Howie	*Consultant Acute Physician, NHS Lothian*
Dr Rajan Madhok	*Consultant Rheumatologist, NHS Greater Glasgow and Clyde*
Ms Ruth Malcolm	*Charge Nurse, NHS Highland*
Ms Louise McKessock	*Nurse Manager, NHS Grampian*
Mr Robert Morton	*Advanced Clinical Pharmacist, NHS Tayside*
Professor Kevin Rooney	*Professor of Care Improvement, University of the West of Scotland, Paisley*
Ms Judith Roulston	*Senior Charge Nurse, Critical Care Transfer Service, NHS Greater Glasgow and Clyde*
Mr Charles Sinclair	*Associate Director of Nursing, NHS Fife*
Mr Mark Smith	*Night Nurse Practitioner, NHS Highland*
Dr Stephen Stott	*Consultant in Intensive Care and Anaesthesia, NHS Grampian*
Ms Helen Stirton	*Nurse Lead, NHS Greater Glasgow and Clyde*
Dr Ivan Tonna	*Consultant Acute Physician, NHS Grampian*
Dr John Wilson	*Consultant Physician, Vice President of the Royal College of Physicians of Edinburgh*

The membership of the consensus group was confirmed following consultation with the member organisations of SIGN. All members of the consensus group made declarations of interest. A register of interests is available in the supporting material section for this guidance at **www.sign.ac.uk**

Support and facilitation were provided by the SIGN Executive. All members of the SIGN Executive make yearly declarations of interest. A register of interests is available on the contacts page of the SIGN website **www.sign.ac.uk**

Lesley Forsyth	*Events Co-ordinator*
Karen Graham	*Patient Involvement Officer*
Gemma Hardy	*Distribution and Office Co-ordinator*
Stephen Heller-Murphy	*Programme Manager*
Stuart Neville	*Publications Designer*

4.3 ACKNOWLEDGEMENTS

SIGN is grateful to the following who have contributed to the development of the consensus recommendations.

Ms Alison Hunter	*Improvement Advisor, Healthcare Improvement Scotland, Glasgow*
Dr Wayne Wrathall	*Clinical Director for Anaesthesia, Dumfries and Galloway Royal Infirmary*

4.4 EDITORIAL REVIEW

As a final quality control check, the guidance is reviewed by an editorial group comprising the relevant specialty representatives on SIGN Council. The editorial group for this guidance was as follows. All members of SIGN Council make yearly declarations of interest. A register of interests is available on the SIGN Council Membership page of the SIGN website **www.sign.ac.uk**

Professor John Kinsella	*Chair of SIGN; Co-Editor*
Dr Roberta James	*SIGN Programme Lead; Co-Editor*
Dr Sara Twaddle	*Director of SIGN; Co-Editor*

Abbreviations

EWS	Early Warning Score
HSMR	Hospital Standardised Mortality Ratios
IV	intravenous
NEWS	National Early Warning Score
NICE	National Institute for Health and Care Excellence
SIGN	Scottish Intercollegiate Guidelines Network
SPSP	Scottish Patient Safety Programme

Annex 1

Phase 1 scoping results

Care of deteriorating patients phase 1 scoping			
1. Are the NICE guidelines sufficient for the current Scottish context?			
		Response percent	Response count
	Yes	38.9%	7
	No	61.1%	11
2. Are the South Australian guidelines sufficient for the current Scottish context?			
		Response percent	Response count
	Yes	33.3%	6
	No	66.7%	12
3. Is NEWS sufficient in the current Scottish context?			
		Response percent	Response count
	Yes	50.0%	9
	No	50.0%	9
4. Given your answers above, is a consensus statement adopting one, two or all of the above documents, in whole or in part, sufficient?			
		Response percent	Response count
	Yes	44.4%	8
	No	55.6%	10
5. Given your answers above, do we need a new guideline on managing deterioration of acutely ill patients?			
		Response percent	Response count
	Yes	61.1%	11
	No	28.9%	7
6. If you think we should develop new guidelines for this patient group, what are the gaps in the three existing documents, taken as a whole, that need to be addressed?			
			Response count
			14

Annex 2

Phase 2 survey results

Please indicate on the tables below your level of agreement with the following statements:					
	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Physiological observations are recorded at the time of admission or initial assessment	93.8% (15)	6.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)
There is a clear written monitoring plan that specifies which physiological observations should be taken and how often	50.0% (8)	31.3% (5)	6.3% (1)	6.3% (1)	6.3% (1)
Observations should be performed by staff who have been trained to undertake these procedures and understand their clinical significance	75.0% (12)	12.5% (2)	12.5% (2)	0.0% (0)	0.0% (0)
Regular assessments of competency of staff taking observations should be undertaken	56.3% (9)	37.5% (6)	0.0% (0)	6.3% (1)	0.0% (0)
As a minimum, observations should include:					
Heart rate	93.8% (15)	6.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Respiratory rate	87.5% (14)	12.5% (2)	0.0% (0)	0.0% (0)	0.0% (0)
Systolic blood pressure	93.8% (15)	6.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Level of consciousness	87.5% (14)	6.3% (1)	0.0% (0)	6.3% (1)	0.0% (0)
Oxygen saturation	87.5% (14)	6.3% (1)	0.0% (0)	6.3% (1)	0.0% (0)
Temperature	87.5% (14)	6.3% (1)	0.0% (0)	6.3% (1)	0.0% (0)
In specific situation, additional monitoring will be required:					
Urine output	87.5% (14)	6.3% (1)	0.0% (0)	6.3% (1)	0.0% (0)
Biochemical analysis, eg blood glucose or lactate	81.3% (13)	12.5% (2)	6.3% (1)	0.0% (0)	0.0% (0)
Pain assessment	56.3% (9)	25.0% (4)	12.5% (2)	6.3% (1)	0.0% (0)

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Early warning scores (EWS) should be used to monitor all adult patients in acute hospital settings	87.5% (14)	12.5% (2)	0.0% (0)	0.0% (0)	0.0% (0)
EWS should be monitored at least every 12 hours	81.3% (13)	6.3% (1)	0.0% (0)	12.5% (2)	0.0% (0)
A decision to monitor a patient less frequently that 12 hours should be made at a senior level and documented	68.8% (11)	25.0% (4)	0.0% (0)	6.3% (1)	0.0% (0)
The frequency of monitoring should increase if abnormal physiology is detected	93.8% (15)	6.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Any patient whose EWS score triggers action, should be screened for sepsis	56.3% (9)	25.0% (4)	18.8% (3)	0.0% (0)	0.0% (0)
All patients who trigger EWS and screen positively for sepsis should be started on the Sepsis Six care pathway/ protocol, unless their treatment plan indicates otherwise	75.0% (12)	18.8% (3)	0.0% (0)	6.3% (1)	0.0% (0)
A protocol which defines increased frequency of observations for patients whose EWS score triggers action should be implemented and its compliance measured	75.0% (12)	18.8% (3)	6.3% (1)	0.0% (0)	0.0% (0)

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
A process is in place to identify patients with limited reversibility and as such any patient identified as deteriorating with limited reversibility should have a written management plan which considers and includes:					
Key issues	62.5% (10)	37.5% (6)	0.0% (0)	0.0% (0)	0.0% (0)
Anticipated outcomes which acknowledges uncertainty	62.5% (10)	37.5% (6)	0.0% (0)	0.0% (0)	0.0% (0)
Resuscitation status	93.8% (15)	6.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Discussions with the multidisciplinary team	50.0% (8)	43.8% (7)	0.0% (0)	0.0% (0)	6.3% (1)
Discussion with the patient and family on issues including uncertain recovery, medical plans, preferred place of care, concerns or wishes	62.5% (10)	31.3% (5)	6.3% (1)	0.0% (0)	0.0% (0)
Standardised and agreed ceilings of care	75.0% (12)	25.0% (4)	0.0% (0)	0.0% (0)	0.0% (0)
A graded response for patients identified as deteriorating should be agreed, implemented and audited locally:					
Low score:					
Increase frequency of observations and alert nurse in charge	62.5% (10)	31.3% (5)	6.3% (1)	0.0% (0)	0.0% (0)
Medium score:					
Response required within 30 minutes*	80.0% (12)	13.3% (2)	6.7% (1)	0.0% (0)	0.0% (0)
Urgent call to team with primary medical responsibility for patient*	73.3% (11)	13.3% (2)	6.7% (1)	6.7% (1)	0.0% (0)
Simultaneous call to person with core competencies for acute illness	37.5% (6)	50.0% (8)	6.3% (1)	6.3% (1)	0.0% (0)
High score:					
Response required immediately	81.3% (13)	12.5% (2)	0.0% (0)	0.0% (0)	0.0% (0)
Emergency call to team with critical care competencies and diagnostic skills	62.5% (10)	25.0% (4)	0.0% (0)	12.5% (2)	0.0% (0)
*only 15 out of 16 participants answered these two questions					

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Patients with a medium or high score should have:					
Appropriate interventions initiated	87.5% (14)	12.5% (2)	0.0% (0)	0.0% (0)	0.0% (0)
The response to these interventions assessed	93.8% (15)	6.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)
A written management plan that includes location and level of care	93.8% (15)	6.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Communication of deteriorating patients is formalised and includes:					
A daily process for person-centred communication that includes the wishes of the patient and family	56.3% (9)	25.0% (4)	18.8% (3)	0.0% (0)	0.0% (0)
A structured handover process for all deteriorating patients which includes all relevant clinical information	87.5% (14)	12.5% (2)	0.0% (0)	0.0% (0)	0.0% (0)
Please indicate on the tables below your level of agreement with the following statements:					
Acute hospitals have data that measures number and rate of cardiac arrests (with chest compressions and/or artificial ventilation)	56.3% (9)	31.3% (5)	6.3% (1)	6.3% (1)	0.0% (0)
Acute hospitals should implement the National Early Warning Score	75.0% (12)	12.5% (2)	6.3% (1)	6.3% (1)	0.0% (0)
Acute hospitals should develop electronic track, trigger and alert systems	31.3% (5)	56.3% (9)	12.5% (2)	0.0% (0)	0.0% (0)

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