3-year scoping report

Topic: Care of deteriorating patient: literature published since the original searches were conducted in 2022

Date of search: 20/04/2026 – 24/04/2026

Date range: 2023-2026

Searched by: Carolyn Sleith

Summary of findings

The purpose of this 3-year scoping is to identify significant new evidence relating to SIGN 167 Guideline, and whether any sections of the guideline require updating. A rapid search of the literature was conducted; sources and references are detailed in the box below.

Chair's comments

Comment
On balance I would favour a review of the guidance but when it should be done is unclear. There should be some reference to Martha's rule in any updated guidance. I think this would be supported further by the Honormand et al paper. The working group within Healthcare Improvement Scotland and the Scottish Government are looking at this issue and have yet to complete their work. It's already within legislation within NHS England and has been given prominence in the Ockenden Maternity report. There may be strong appetite within the Obstetric community in Scotland to extend the guidance to include Obstetrics in revised guidance. This would be another strong reason to review the guidance but again I would take advice on whether it is better to wait for HIS and the Scottish Government to consider the issue further. The terminology for advanced care planning changed shortly after publication of the guideline and should now be termed "Future Care Planning" as per Scottish Government guidance. This should be amended if the guideline is updated to cover the other issues highlighted.

I have had informal feedback around the use of NEWS2 in a community setting and feedback that the recommendation around Outreach is unclear in relation to smaller and larger hospitals. This would not be a strong reason alone to review the guidance, but could be incorporated into a wider update.

In terms of prehospital, Piedmont, Goldhahn et al may add weight to our current recommendations but wouldn't change the guidance.

In terms of the recent update to international Sepsis guidance (Prescott et al), the changes aren't major and in of themselves would not be a reason to revisit the guidance.

In summary I think the major argument to revise the guidance would be the inclusion of maternity recommendations and also the inclusion of family activation with reference to Martha's rule.

Relevant evidence and implications for SIGN recommendations

SIGN section 2.1 Anticipatory care plans

No studies with relevant outcomes were identified

SIGN section 2.2 Treatment escalation plans

No studies with relevant outcomes were identified

SIGN section 3.1 Observations

Reference	Details	How does this potentially change current recommendations?
Systematic review and meta-analysis Cheng SA, Tan SI, Goh SLE, Ko SQ. The Value of Remote Vital Signs Monitoring in Detecting Clinical Deterioration in Patients in Hospital at Home Programs or Postacute Medical Patients in the Community: Systematic Review. J Med Internet Res 2025;27:e64753 doi:10.2196/64753	Objective Efficacy of remote vital signs monitoring (VSM) for patients in the hospital at home (HAH) or post-acute setting was evaluated. Methods A systematic review was conducted with searches for studies in PubMed (MEDLINE), Embase, and Scopus. It adhered to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology. Studies focused on the post-acute phase were included, as only 2 case series addressed the HAH setting. Risk of bias (ROB) was evaluated using the Cochrane Risk of Bias Tool and the Newcastle-Ottawa scale. The GRADE (Grading Recommendations Assessment, Development, and Evaluation) framework was used to assess the certainty of evidence. Outcomes of interest included hospital readmissions, mortality, patient satisfaction, and compliance. Results Meta-analysis was conducted with 4 studies looking at mortality within 30 days. Mortality reduced significantly (RR 0.65, 95% CI 0.42-0.99; *P*=.04). There was no significant heterogeneity in mortality (I^2=0%). There was high heterogeneity in the study populations, interventions, and outcomes measured. Many studies were of poor quality, with 50% (4/8) of RCTs exhibiting a high ROB. The certainty of evidence for mortality was assessed as very low.	No change in recommendations

	Conclusion Published data on the effects of remote VSM in acutely ill patients at home remains scarce. Future studies evaluating all common vital signs (heart rate, blood pressure, oxygen saturation, and temperature) with consistent monitoring frequencies and clear intervention protocols to better understand how to integrate remote VSM into HAH programs are needed.	
Systematic review and meta-analysis Sankar JM, Das RR, Kumar UV. Comparison of Intermittent versus Continuous Superior Venal Caval Oxygen Saturation Monitoring in Early Goal Directed Therapy in Septic Shock: A Systematic Review. J Pediatr Intensive Care. 2021;11(4):267-274. doi:10.1055/s-0041-1729742.	Objective To compare efficacy of intermittent versus continuous monitoring of ScvO2 Methods Major databases, MedLine, Embase, Cochrane CENTRAL and Google scholar were searched systematically till August 2020. Hospitalised children (>2 months age) and adults with septic shock were included. The intervention was “intermittent ScvO2 monitoring,” and the comparator was “continuous ScvO2 monitoring.” The primary outcome was “all-cause mortality.” Results Of 564 citations, 3 studies (n=541) including both children and adults were included in the analysis. There was no significant difference in the “overall/all-cause mortality” (two randomised controlled trials; 258 participants) between the “intermittent” and “continuous” ScvO2 monitoring groups (relative risk [RR]: 1.00; 95% confidence interval [CI]: 0.8–1.24). However, a single observational study (283 participants) showed a significant increase in mortality in the intermittent group (RR: 1.46; 95% CI: 1.03–2.05). The GRADE evidence generated for “overall/all-cause mortality” was of “moderate certainty.” Conclusion	No change in recommendations

	The present meta-analysis did not find any significant difference between “intermittent” and “continuous” ScvO2 monitoring in patients with septic shock.	
Systematic review and meta-analysis Honarmand K, et al. Society of Critical Care Medicine Guidelines on Recognizing and Responding to Clinical Deterioration Outside the ICU: 2023. Critical Care Medicine. 2024; 52(2):p 314-330. doi: 10.1097/CCM.0000000000006072	Objective To provide evidence-based recommendations for hospital clinicians and administrators to optimise recognition and response to clinical deterioration in non-ICU patients. Specific objective relevant to this section of guidelines: To compare hospital clinical outcomes between continuous and intermittent vital signs monitoring Methods A systematic review of literature was conducted and included searches of MEDLINE, EMBASE, CENTRAL Cochrane Library (Issue 12, 2019), ClinicalTrials.gov, WHO International Clinical Trials Registry Platform till January 2020. Where possible, meta-analysis of data was performed using random effects models and inverse variance weighting. Where data was insufficient for meta-analysis, evidence was summarised narratively. Assessment of the certainty in the evidence for each outcome using GRADE methodology was conducted and evidence profiles were generated using GRADEPro Guideline Development Tool. Results Fourteen studies (3 randomised controlled trials (RCT), 11 observational) reported in hospital clinical outcomes associated with continuous vital sign monitoring compared with intermittent monitoring. The intervention may be associated with decreased ICU length of stay (two observational studies, low certainty). Evidence suggests uncertain effects of this intervention on mortality (two	No change in recommendations

	RCTs, seven observational studies; very low certainty), cardiac arrests (two RCTs and six observational studies; very low and low certainty, respectively), unplanned transfers to ICU (three RCTs and eight observational studies; very low and low certainty, respectively), time to recognition of clinical deterioration (two observational studies; very low certainty), implementation of appropriate treatment (ie, time to antibiotics in sepsis; one RCT; very low certainty) and changes in goals of care/resuscitation status (two observational studies; very low certainty). Meta analysis was conducted on RCTs only, with pooled estimates RR (95%CI) for hospital mortality 0.94 (0.64-1.38), cardiac arrest outside of ICU 0.83 (0.36-1.91), unplanned transfers to ICU 0.99 (0.46—2.1) Conclusion We make no recommendation regarding the routine use of continuous vital sign monitoring to recognise early clinical deterioration in unselected non-ICU patients	

SIGN section 3.2 Escalation of care and the response to deterioration

Potentially important new evidence

Reference	Details	Why might this be important to include in the guideline?
Systematic Review Honarmand K, et al. Society of Critical Care Medicine Guidelines on Recognizing and Responding to Clinical Deterioration Outside the ICU: 2023. Critical Care Medicine 2024;52(2): 314-330. doi:10.1097/CCM.0000000000006072	Objective To provide evidence-based recommendations for hospital clinicians and administrators to optimise recognition and response to clinical deterioration in non-ICU patients. Specific objective relevant to this section of guidelines: Evaluation of patient/family/care partner activation of Rapid Response Team / Medical Emergency Team (RRT/MET) to include a hospital-led, formalised pathway for patients, family members, and care partners to trigger and communicate with the RRT/MET directly, without requiring involvement by their primary medical team. Methods A systematic review of literature was conducted and included searches of MEDLINE, EMBASE, CENTRAL Cochrane Library (Issue 12, 2019), ClinicalTrials.gov, WHO International Clinical Trials Registry Platform till January 2020. Where possible, meta-analysis of data was performed using random effects models and inverse variance weighting. Where data was insufficient for meta-analysis, evidence was summarised narratively. Assessment of the certainty in the evidence for each outcome using GRADE methodology was conducted and evidence profiles were generated using GRADEPro Guideline Development Tool. Results We identified five before-after studies that reported clinical outcomes after the implementation of patient/family/care partner RRT/MET	SIGN 167 does not mention patient/family /care partner activation of Rapid Response Team

	activations among hospitalised adults (two studies) and children (three studies).This intervention may be associated with decreased rates of mortality (one study) and unsuccessful resuscitations (one study), but no change in the rate of non-ICU cardiac arrests (three studies]; low certainty for all outcomes). Effects on unplanned transfers to ICU (two studies) and number of RRT/MET activations (four studies) were unclear (very low certainty for both). The proportion of RRT/MET calls resulting in transfer to a higher level of care was increased in staff activations compared with family activations in three studies, while the fourth study reported that all family activations led to transfer to a higher level of care. Conclusion A conditional recommendation, with low-certainty evidence, was made that patient, family, and care partner concerns be incorporated into hospital early warning systems	
NHS England Patient Safety Initiative **Martha's rule** NHS England » Martha's Rule	Summary: - Full implementation is expected to be complete across all acute trust inpatient services during 2026/27. - Patients will be asked, at least daily, about how they are feeling, and if they are getting better or worse, and this information will be acted on in a structured way. - All staff will be able, at any time, to ask for a review from a different team if they are concerned that a patient is deteriorating, and they are not being responded to. - This escalation route will also always be available to patients themselves, their families and carers and advertised across the hospital.	SIGN 167 does not mention patient/family/ care partner activation of Rapid Response Team

SIGN section 4 Early warning scores

Reference	Details	How does this potentially change current recommendations?
Systematic review Burgos-Esteban A, Gea-Caballero V, Marín-Maicas P, Santillán-García A, Cordón-Hurtado MdV, Marqués-Sule E, Giménez-Luzuriaga M, Juárez-Vela R, Sanchez-Gonzalez JL, García-Criado J and Santolalla-Arnedo I. Effectiveness of Early Warning Scores for Early Severity Assessment in Outpatient Emergency Care: A Systematic Review. Front. Public Health. 2022;10:894906. doi: 10.3389/fpubh.2022.894906	Objective To evaluate early warning scores (EWSs) capacity to predict complications. Methods A systematic review of the bibliography was conducted. Scientific articles in Spanish and English were collected from the databases and search engines of Pubmed, Cochrane, and Dialnet, which were published between 2017 and 2021 about EWSs and their capacity to predict complications. Results For analysis eleven articles were selected. Eight dealt with the application of different early warning scores in outpatient situations, concluding that all the scoring systems they studied were applicable. Three evaluated the predictive ability of various scoring systems and found no significant differences in their results. However, in these studies, NEWS2 had consistently the highest AUC for mortality prediction at 24h or 48h compared to other scores. The eight articles evaluated the suitability of NEWS/NEWS2 to outpatient conditions and concluded it was the most suitable in pre-hospital emergency settings. Conclusions The early warning scores that were studied can be applied at the pre-hospital level, as they can predict patient mortality in the short term (24 or 48 h) and support clinical patient evaluation and medical decision	No change in recommendations

	making. Among them, NEWS2 is the most suitable for screening potentially deteriorating medical emergency outpatients.	
RCT Todd S, Euden J, Condie J et al. Procalcitonin testing combined with NEWS2 evaluation compared with usual care based on NEWS2 for identification of sepsis and antibiotic initiation in the emergency department in England and Wales (PRONTO): a multicentre, randomised, controlled, open-label, phase 3 trial The Lancet Respiratory Medicine. 2026; 14, 417-431. doi: 10.1016/S2213-2600(25)00433-3.	Objective To evaluate performance of procalcitonin testing combined with NEWS2 evaluation compared with usual care based on NEWS2 for identification of sepsis and antibiotic initiation Methods A parallel, two-arm, open-label, individually randomised controlled trial was done in 20 hospital emergency departments within 17 National Health Service (NHS) Trusts or Health Boards across England and Wales. Patients aged 16 years and older with suspected sepsis were randomly assigned to either usual care or procalcitonin-guided care in a 1:1 ratio via a centrally controlled web-based randomisation programme. Participants in the usual care group were assessed according to standard clinical management based on National Early Warning Score 2 (NEWS2). In the procalcitonin-guided care group, rapid procalcitonin testing was used in combination with NEWS2 assessment by use of a guidance-only algorithm for clinicians. This algorithm for clinical management was used for both usual care and procalcitonin-guided care groups and clinicians were free to use, ignore, or deviate from the algorithm. The co-primary endpoints included 28-day mortality (non-inferiority) from triage assessment, assessed in all randomly assigned consenting participants with data for both co-primary outcomes available Results Between Nov 20, 2020, and Nov 1, 2023, a total of 7667 patients were recruited and randomly assigned to the usual care group (n=3836) or the procalcitonin-guided care group (n=3831). Mortality at 28 days was lower in the procalcitonin-guided care group: 13·6% (372/2738 participants) in the procalcitonin-guided care group versus 16·6% (450/2715 participants) in the usual care group (adjusted risk difference	No change in recommendation

	–3·12 percentage points, 90% CI –4·68 to –1·57; p=0·0009). Improved mortality was not explained by findings of planned subgroup, sensitivity, or secondary analyses. One (<1%) of 2042 participants in the procalcitonin-guided care group reported a serious adverse event probably or definitely attributable to the procalcitonin test. Conclusion Making a procalcitonin-guided algorithm available to clinicians in emergency departments lead to the decrease in 28-day mortality and further research is needed to understand this finding.	
Systematic review Naylor D, Dicker B, Howie G. and Todd V. Review article: Use of prehospital early warning scores to predict short-term mortality: A systematic review. Emergency Medicine Australasia. 2025:37: e70047. Doi:10.1111/1742-6723.70047	Objective To summarise the most recent evidence on the predictive accuracy of the EWS for short-term mortality in adults in the prehospital setting. Methods A systematic search was conducted using the Medline, CINAHL, and Scopus databases. Studies that evaluated the diagnostic accuracy of the prehospital Modified Early Warning Score, National Early Warning Score or National Early Warning Score 2 in predicting mortality were included. Secondary outcomes were intensive care unit (ICU) admission and hospital admission. Results The review included 16 studies published between 2012 and 2023, with the total number of patients 311, 932. The literature indicated that prehospital EWS demonstrated a moderate to good diagnostic performance in predicting short-term mortality with an area under receiver operating characteristic curve ranging from 0.68 (95% confidence interval [CI]: 0.64–0.73) to 0.90 (95% CI: 0.82–0.97). Five studies compared the performance of different EWS systems. Although differences in design and settings make comparisons between these studies difficult, some broad themes can be identified. NEWS and NEWS2 had similar diagnostic performance for short-term mortality and	No change in recommendations

	compared well against the other EWS systems included in these studies. Two of these 'comparative' studies included the NEWS2 and MEWS with both showing that NEWS2 had a higher diagnostic ability for short-term mortality than MEWS in this setting. Conclusion Overall, diagnostic performance was higher for predicting mortality in short time frames (up to 48 h). The need to use relatively high cut-off points to identify at-risk patients may limit its use for the unselected patient populations found in the prehospital setting. The potential for under-triage and over-triage limits their use further. EWS should not replace structured clinical evaluation and judgement but may be useful as complementary and objective tools to aid the identification of patients at risk.	
Retrospective cohort study Piedmont, S, Goldhahn L., Swart, E. et al. Sepsis incidence, suspicion, prediction and mortality in emergency medical services: a cohort study related to the current international sepsis guideline. Infection. 2024: 52, 1325–1335. doi:10.1007/s15010-024-02181-5 (cited in Prescott et al. Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock. Critical Care Medicine. 2026)	Objective To evaluate which of the screening tools (qSOFA MEWS SIRS NEWS2) recommended by the Surviving Sepsis Campaign best facilitates sepsis prediction by Emergency Medical Services (EMS). Methods It was a retrospective cohort study of claims data from health insurances (n=221,429 EMS cases), and paramedics' and emergency physicians' EMS documentation (n=110,419). Analysed outcomes included predictive tools' intersections for screening positive in identical EMS cases and their predictive ability for an inpatient sepsis diagnosis. Results Incidence of sepsis (1.6%) was similar to myocardial infarction (2.6%) and stroke (2.7%); however, 30-day case fatality rate was almost threefold higher (31.7% vs. 13.4%; 11.8%). Complete vital sign documentation was achieved in 8.2% of all cases. Paramedics never, emergency physicians rarely (0.1%) documented a sepsis suspicion,	No change in recommendations

	respectively septic shock. NEWS2 had the highest sensitivity (73.1%; Specificity:81.6%) compared to qSOFA (23.1%; Sp:96.6%), SIRS (28.2%; Sp:94.3%) and MEWS (48.7%; Sp:88.1%). Depending on the tool, 3.7% to 19.4% of all cases screened positive; only 0.8% in all tools simultaneously. Conclusion Guidelines may omit MEWS and SIRS as recommendations for prehospital providers since they were inferior in all accuracy measures. Though no tool performed ideally, NEWS2 qualifies as the best tool to predict the highest proportion of septic patients and to rule out cases that are likely non-septic.	

SIGN section 5 Sepsis

Reference	**Details**	**How does this potentially change current recommendations?**
NICE guideline NG253 Suspected sepsis in people aged 16 or over: recognition, assessment and early management (NG253) www.nice.org.uk/guidance/ng253 https://www.nice.org.uk/guidance/ng253/evidence	Summary of recommendations relevant to this review: - In community or custodial setting - risk assessment is based on 5 categories: history, blood pressure, circulation and hydration, temperature, skin; and does not include NEWS2 score calculation -Use the national early warning score (NEWS2) to assess people with suspected sepsis who are aged 16 or over, are not and have not recently been pregnant, and are in an acute hospital setting, acute mental health setting or ambulance. -Management in community, custodial setting or acute mental health setting – referral to emergency medical care Antibiotics administration in acute hospital settings:	No recommendation for community settings in SIGN167 No change in recommendations for antibiotic use in hospital setting

	-Give people aged 16 or over who are at high risk of severe illness or death from sepsis (NEWS2 score ≥7) broad-spectrum intravenous antibiotic treatment, within 1 hour of calculating the person's NEWS2 score on initial assessment in the emergency department or on ward deterioration. Only give antibiotics if they have not been given before for this episode of sepsis Supporting evidence: Only one study comparing in-hospital mortality in patients who received antibiotics with 1-3 hours to those who received them within 1 hour was identified and the corresponding RR (95%CI) was 1.05 (0.66 – 1.68) in patients with sepsis (n=292) and 1.13 (0.45 – 2.83) (n=65) in patients with severe sepsis.	
Systematic review and meta-analysis Shime N, Nakada T-a, Yatabe T, Yamakawa K, Aoki Y, Inoue S, et al. The Japanese Clinical Practice Guidelines for Management of Sepsis and Septic Shock 2024. Acute Med Surg. 2025;12:e70037. doi:10.1002/ams2.70037	Objective Revision of clinical issues that were considered important in sepsis treatment. Specific objective relevant to this section of guidelines: To evaluate administration of empiric antimicrobials for sepsis within 1 h after diagnosing sepsis. Methods A comprehensive literature search for each question was conducted, including randomised controlled trials and observational studies. The literature search was conducted based on multiple databases, including CENTRAL, PubMed, and Igaku Chuo Zasshi, and EMBASE, CINAHL, PsycINFO, and other databases as necessary. Risk of bias was assessed, and evidence was integrated based on the GRADE methodology. The guidelines target children and adults, who have or are suspected of having sepsis or septic shock, in an intensive care unit, general wards or emergency room. For the administration of	Different recommendation from SIGN167

	antimicrobials within 1 h, a meta-analysis of 11 published observational studies was conducted. Results Administering antimicrobials within 1 h, hospital mortality yielded an RD of 22 fewer per 1000 (95% CI 57 fewer to 16 more). The studies included in the meta-analysis did not evaluate the undesirable effects of the intervention. The desirable effects of antimicrobial administration within 1 h were small, and the undesirable effects of the intervention could not be evaluated. These suggest that the balance of effects was neither intervention nor comparator was superior. Conclusion Although antimicrobials should be started as soon as possible after sepsis or septic shock is diagnosed, we suggest against the use of<1 h target time (weak recommendation, limited confidence in the estimated value of effects). This recommendation is based on the previous study concluding that adhering to the time frame of antimicrobial-administration target of within 1 h may lead to an increase in unnecessary and excessive administration of broad-spectrum and multiple antimicrobials.	
Retrospective Cohort Study Piedmont S., Goldhahn, L., Swart, E. *et al.* Sepsis incidence, suspicion, prediction and mortality in emergency medical services: a cohort study related to the current	Objective To evaluate which of the screening tools (qSOFA MEWS SIRS NEWS2) recommended by the Surviving Sepsis Campaign best facilitates sepsis prediction by Emergency Medical Services (EMS). Methods	SIGN167 does not refer to emergency services

international sepsis guideline. *Infection. 2024;* 52, 1325–1335 doi:10.1007/s15010-024-02181-5 (cited in Prescott et al. Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock. Critical Care Medicine. 2026)	It was a retrospective cohort study of claims data from health insurances (n=221,429 EMS cases), and paramedics' and emergency physicians' EMS documentation (n=110,419). Analysed outcomes included predictive tools' intersections for screening positive in identical EMS cases and their predictive ability for an inpatient sepsis diagnosis. Results Incidence of sepsis (1.6%) was similar to myocardial infarction (2.6%) and stroke (2.7%); however, 30-day case fatality rate was almost threefold higher (31.7% vs. 13.4%; 11.8%). Complete vital sign documentation was achieved in 8.2% of all cases. Paramedics never, emergency physicians rarely (0.1%) documented a sepsis suspicion, respectively septic shock. NEWS2 had the highest sensitivity (73.1%; Specificity:81.6%) compared to qSOFA (23.1%; Sp:96.6%), SIRS (28.2%; Sp:94.3%) and MEWS (48.7%; Sp:88.1%). Depending on the tool, 3.7% to 19.4% of all cases screened positive; only 0.8% in all tools simultaneously. Conclusion Guidelines may omit MEWS and SIRS as recommendations for prehospital providers since they were inferior in all accuracy measures. Though no tool performed ideally, NEWS2 qualifies as the best tool to predict the highest proportion of septic patients and to rule out cases that are likely non-septic.	
International Guidelines Prescott et al. Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock. Critical Care Medicine. 2026; 54(4):725-812. doi: 10.1097/CCM.0000000000007075	Summary of recommendations relevant to this review: -In acutely ill adults en route to hospital by ambulance or flight, we "suggest" using a standard sepsis screening tool over not using a screening tool. (conditional recommendation, very low certainty evidence) -For adults with definite or probable sepsis and hypotension (i.e., septic shock) and who have an anticipated time to in-hospital medical evaluation of over 60min, we "suggest" administering antimicrobial	SIGN167 does not refer to emergency services Possibly different criteria used for timing of antibiotics in hospital setting Recommendation of performance improvement programs for sepsis -

	therapy in ambulance or flight. (conditional recommendation, very low certainty evidence) -For acutely ill patients in hospital, we “recommend” using NEWS, NEW2, MEWS, or SIRS over qSOFA as a single tool to screen for sepsis. (strong recommendation, moderate certainty evidence) -Timing of antibiotics based on likelihood of sepsis or septic shock -For adults with possible, probable, or definite septic shock, we “recommend” administering antimicrobial therapy immediately, ideally within 1hr of recognition. (strong recommendation, very low certainty evidence) -For adults with probable or definite sepsis without shock, we “recommend” administering antimicrobial therapy immediately, ideally within 1hr of recognition. (strong recommendation, very low certainty evidence) -For adults with possible sepsis without shock, we “suggest” a time-limited course of rapid investigation and if concern for infection persists, the administration of antimicrobial therapy within 3hours from the time when sepsis was first suspected. (conditional recommendation, very low certainty of evidence) -Clinicians should perform a rapid assessment of the likelihood of infectious vs. noninfectious causes of acute illness in adults with possible sepsis without shock. (good practice statement) -For adults with a low likelihood of infection and without shock, we “suggest” deferring antimicrobial therapy while continuing to closely monitor the patient. (conditional recommendation, very low certainty of evidence) -For hospitals and health systems, we “recommend” using a performance improvement program for sepsis, including sepsis screening for acutely ill, high-risk patients; standard operating procedures for treatment; and implementation of sepsis quality improvement strategies. (strong recommendation, moderate certainty	mentioned in the Recommendations for research in SIGN167

	evidence for screening) (strong recommendation, very low certainty evidence for standard operating procedures) (strong recommendation, moderate certainty evidence for quality improvement strategies) Remark: Performance improvement programs and quality improvement strategies may vary by setting and in accordance with a hospital/ healthcare system's ability to implement. Evidence: In a meta-analysis of 50 observational studies (published 2015), sepsis QI initiatives were associated with improved delivery of recommended care practices and reduced mortality (odds ratio [OR] 0.66; 95% CI, 0.61–0.72). Furthermore, multiple before-and-after and differences-indifferences studies have shown improvements in both processes of care and clinical outcomes in hospitals participating in multi-hospital sepsis QI initiatives (published 2010-2018). Additional one recent RCT (published 2022) testing a QI intervention involving the display of a sepsis early warning system-triggered flag in the electronic health record combined with electronic health record-based emergency department pharmacist notification. Patients randomised to this QI intervention had shorter time to antimicrobial therapy (2.3 vs. 3.0hr, p = 0.04) and increased days alive and out of hospital at 28 days (median, 24.1 vs. 22.5 d, p = 0.01).	

SIGN section 6.1 Structured response tool

No relevant articles identified

SIGN section 6.2 Clinical care outreach teams

Reference	Details	How does this potentially change current recommendations?
Systematic review and meta-analysis Honarmand K, et al. Society of Critical Care Medicine Guidelines on Recognizing and Responding to Clinical Deterioration Outside the ICU: 2023. Critical Care Medicine. 2025; 52(2):314-330. doi:10.1097/CCM.0000000000006072	Objective To provide evidence-based recommendations for hospital clinicians and administrators to optimise recognition and response to clinical deterioration in non-ICU patients. Methods A systematic review of literature was conducted and included searches of MEDLINE, EMBASE, CENTRAL Cochrane Library (Issue 12, 2019), ClinicalTrials.gov, WHO International Clinical Trials Registry Platform till January 2020. Where possible, meta-analysis of data was performed using random effects models and inverse variance weighting. Where data was insufficient for meta-analysis, evidence was summarised narratively. Assessment of the certainty in the evidence for each outcome using GRADE methodology was conducted and evidence profiles were generated using GRADEPro Guideline Development Tool. Results Six RCTs and 112 before-after studies evaluated the impact of activation criteria and/or RRT/MET interventions on clinical outcomes. Important heterogeneity existed across study designs and interventions, with many implementing activation criteria and	No change in recommendations

	RRT/MET simultaneously; thus, evaluating the impact of each in isolation was not possible. Among RCTs, pooled results demonstrated a reduction in mortality (three RCTs; respiratory rate 0.74; 95% CI, 0.66–0.83; moderate certainty) and non-ICU cardiac arrests (two RCTs; mean difference –0.43; 95% CI, –0.88 to 0.02; moderate certainty). Both findings were supported by most observational studies. There was no effect on health-related quality of life or discharge to assisted living facilities (low certainty). Conclusion We recommend hospital-wide deployment of rapid response systems (i.e., RRT/MET) for non-ICU patients that include explicit activation criteria for obtaining help from a designated response team. Strong recommendation, moderate certainty evidence.	

SIGN section 6.3 Prehospital response

No relevant articles were identified

SIGN section 7 Handover communication

Reference	Details	How does this potentially change current recommendations?
Systematic review and meta-analysis Appelbaum RD, Puzio TJ, Bauman Z, et al. Handoffs and transitions of care: a systematic review and meta-analysis. J Trauma Acute Care Surg. 2024;97(2):305–314. doi:10.1097/TA.0000000000004285.	Objective To assess impact of standardisation and formalised communication processes on handoffs and transitions of care in acute care surgery (ACS) Methods Clinically relevant questions regarding handoffs and transitions of care with clearly defined patient Population(s), Intervention(s), Comparison(s), and appropriately selected Outcomes were determined. These centred around specific transitions of care within the setting of ACS, specifically perioperative interactions, emergency medical services and trauma team interactions, and intra/interfloor and intensive care unit (ICU) interactions. A systematic literature review and meta-analysis were conducted using the Grading of Recommendations Assessment, Development, and Evaluation methodology. Results A total of 10 studies were identified for analysis. These included 5,113 patients in the standardized handoff group and 5,293 in the current process group. Standardized handoffs reduced handover errors for perioperative interactions and preventable adverse events for intra/inter-floor and ICU interactions. There were insufficient data to evaluate outcomes of clinical complications and medical errors. Conclusion Study concluded with a conditional recommendation of standardized handoff in the field of ACS, including perioperative interactions,	No change in recommendation

	emergency medical services and trauma team interactions, and intra/inter-floor and ICU interactions.	
Cluster RCT Curtis K, Kennedy B, Considine J, Lam MK, Aggar C, Shaban RZ, et al. Use of the structured emergency nursing framework HIRAID® improves patient experience: a stepped-wedge cluster randomised trial in rural, regional and metropolitan Australia. Intensive Crit Care Nurs. 2025;87:103948. doi:10.1016/j.iccn.2025.103948.	Objective To test the effect of HIRAID® on the quality and safety of emergency care. The HIRAID® framework [History including Infection risk, Red flags, Assessment, Interventions, Diagnostics, reassessment, and communication], standardises nursing assessment and management of patients in the emergency department (ED). Methods A modified (staircase) stepped–wedge, cluster randomised controlled trial was conducted in 29 Australian metropolitan, regional, rural EDs involving 1377 nurses from June 2020 to February 2024. The 29 Emergency Departments were allocated to four clusters and randomised to one of four sequences, with three to six months intervention periods. HIRAID® was implemented with a multifaceted strategy comprising 21 behaviour change techniques including an education program, and modifications to nursing documentation. The primary outcome was inpatient deterioration as evidenced by a rapid response team call within 72 h of admission via ED. Secondary outcomes were the proportion of rapid response team calls where emergency nursing care was a contributor; time to first dose analgesia; patient/carer experience with emergency nursing care; and staff satisfaction with clinical handover. Contributing factors to 2211 inpatient rapid response team calls within 72 h of admission via emergency department were categorised using the Human Factors Classification Framework. Time to analgesia was extracted during medical record review (n = 1374). Patient experience (n = 2704) and clinical handover quality were measured using surveys (n = 1205	No change in recommendation

	nurses). A regression approach was used to model the effect of HIRAID® implementation on primary outcomes adjusting for cluster effects and confounders. Results Of the 106,047 patients admitted via the ED, there were 2729 (1342 control, 1387 intervention) patients with a rapid response call within 72 h of admission. HIRAID® reduced the proportion of patients requiring a rapid response team call by 7.4 % (OR = 0.92, 95 % CI = 0.81–0.99) including 8.2 % fewer calls related to emergency nursing care (47 % to 38.8 %, OR = 0.72, 95 % CI = 0.56–0.93). Patient experience improved in all measures, particularly feeling more informed (OR = 1.74, 95 % CI = 1.37–2.19). There was no change in time to first analgesia. There was a 7.0 % improvement in handover of relevant history ($t = 5.57$, $p < 0.001$) and physical assessment ($t = 4.72$, $p < 0.001$). Conclusion Emergency nurses' use of HIRAID® significantly reduced inpatient deterioration requiring a rapid response team call and improved patient experience and perceived quality of clinical handover.	

Consultation feedback

Former members of the SIGN 167 guideline development group were invited to comment on the report and the proposed areas for update.

Reviewer	**Comments**
Ronnie Dornan, Clinical Nurse Specialist Critical Care Outreach/ **Jonathan Aldridge** Clinical Director Consultant Anaesthetics and Critical Care NHS Borders	Areas to consider: 'Martha's Law'. Procalcitonin – it can be a useful tool not an infallible guide. It will, more often than not, provide evidence of successful treatment of bacterial infection or support a decision to stop antibiotics when low. I do not have any experience with using it to decide to start antimicrobial treatment. Critical care outreach teams are mandated in England but we don't have them in Scotland.
Dr Claire Gordon, Consultant in Acute Medicine, NHS Lothian	From the new evidence, areas to consider: • community guidance • 'Martha's law' • Procalcitonin • I've not heard of the HIRAID tool • Should we also refer to emergency services? • Should we be stronger in our recommendation regarding critical care outreach teams now?

Concluding remarks

The guideline needs reviewed to incorporate the new legislation on Martha's rule, but the update should be deferred until the HIS and Scottish Government working group have published their conclusions. The remit should consider the inclusion of maternity care, revisit the use of NEWS2 and outreach, and possibly address the use of procalcitonin. During the update terminology should be changed to 'future care planning'.

The recommendation is:

some recommendations may change in the light of forthcoming evidence and selected elements of the guideline should be reviewed at that point.

Decision

The recommendation was ratified by SMT on 19 August 2026.

This guideline is in need of review and will be accepted onto the SIGN guideline programme.

Annex 1

Evidence sources

Resource	Results
Dynamed	
BMJ Best Practice	
Guidelines and guidance	
Previous HIS projects/advice/guidance relating to this topic	
NICE	
HTW	
HTA database	
Additional searching (if required)	
Cochrane library	