An Roinn Sláinte
Department of Health

Emergency Medicine Early Warning System (EMEWS)

National Clinical Guideline No. 18

Summary October 2018

National Patient Safety Office
Oifig Náisiúnta um Shábháilteacht Othar

NATIONAL CLINICAL EFFECTIVENESS COMMITTEE

EMERGENCY MEDICINE

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

This National Clinical Guideline has been developed by the Emergency Medicine Early Warning System (EMEWS) Guideline Development Group, as a work stream of the HSE National Clinical Programme for Emergency Medicine. The National Clinical Programme for Emergency Medicine was established by the HSE in 2010 with the overarching aim of improving the safety and quality of care for patients in Emergency Departments (EDs) throughout the country. The National Emergency Medicine Programme Report was published in June 2012 and launched by the Minister for Health.

Using this National Clinical Guideline

This summary should be read in conjunction with the full version NCEC National Clinical Guideline (NCG). The full version is available at: https://health.gov.ie/national-patient-safety-office/ncec/national-clinical-guidelines/. The compete list of references and appendices can be found in the full version. Only the relevant appendices are in this summary. This summary NCG applies to adults patients (16 years and older) attending an ED in Ireland who meet the inclusion criteria detailed later in their phase of care from triage to discharge or decision to admit. It should be used in conjunction with other NCEC NCGs, see page 12. This National Clinical Guideline is relevant to all healthcare professionals working in Emergency Departments.

The Emergency Medicine Early Warning System (EMEWS) has been developed in response to a recommendation of the HIQA Tallaght Report, 2012. EMEWS is recommended for use in all EDs to support the recognition of, and appropriate response to, the deteriorating patient as required by the National Standards for Safer Better Healthcare. It represents the commitment of the EMP, the Emergency Nursing Interest Group (ENIG) (the nursing work stream of EMP), and the GDG to improve the quality and safety of all patients in the ED who are at risk of physiological deterioration. Implementation of EMEWS will result in significant changes in how care is delivered to patients in EDs and will require ever closer collaboration within the ED team of nurses, doctors, and other clinical and administrative staff. The scale of this change should not be underestimated. EMEWS will require on-going refinement as further research evidence emerges but it is a significant step towards safer care for patients who are at risk of physiological deterioration in the ED setting.

Disclaimer

NCEC National Clinical Guidelines do not replace professional judgement on particular cases, whereby the clinician or health professional decides that individual guideline recommendations are not appropriate in the circumstances presented by an individual patient, or whereby an individual patient declines a recommendation as a course of action in their care or treatment plan. In these circumstances the decision not to follow a recommendation should be appropriately recorded in the patient's healthcare record.

Users of NCEC National Clinical Guidelines must ensure they have the current version (hardcopy or softcopy) by checking the website: www.health.gov/patient-safety/ncec

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Membership of the Guideline Development Group (GDG)

The GDG was co-chaired by Mr Fergal Hickey, Consultant in Emergency Medicine and Ms Fiona McDaid, Nurse Lead, National Emergency Medicine Programme.

Membership nominations were sought from a variety of clinical and non-clinical backgrounds so as to be representative of all key stakeholders within the health and emergency care arenas. The GDG consisted of a Working Group (GDWG) and a broader Advisory Group (GDAG) to most efficiently bring the project to completion. GDG members included those involved in clinical practice, education, administration and research methodology.

Working Group Membership

The function of the Guideline Development Working Group (GDWG) was to oversee the project including; adherence to National Clinical Effectiveness Committee (NCEC) criteria, communication with the NCEC and HSE, managing timelines, documentation of the decision-making process, reviewing evidence from the systematic review and agreeing recommendations generated by the Guideline Development Advisory Group (GDAG) based on the systematic and economic reviews (see Table 1).

Advisory Group Membership

The purpose of the GDAG was to advise the GDWG on the views of the constituency each member represented on various aspects of EMEWS, review evidence generated by the systematic review and suggest recommendations based on the evidence (see Table 2).

Acknowledgments

The Co-chairs would like to thank GDWG and GDAG, the National Emergency Medicine Programme and the National University of Ireland, Galway for their continued support and assistance with the development of this guideline. Special thanks to the staff of the Emergency Departments in Connolly Hospital, Blanchardstown; Naas General Hospital; University Hospital, Waterford; University Hospital, Galway; Sligo University Hospital and St James's Hospital who pilot tested the guideline at various stages during its development.

Guideline developers note:

The working title used during the development of this guideline was the Emergency Department Monitoring and Clinical Escalation (ED MACE) Protocol for Adults. This was changed to the Emergency Medicine Early Warning System to better align it with other national systems and guidelines.

Table 1: Working Group

Name	Title	Role
Ms Fiona McDaid Mr Fergal Hickey	Nurse Lead, National Emergency Medicine Programme Consultant in Emergency Medicine	Co-Chairs
Dr Gerard McCarthy	Clinical Lead, National Emergency Medicine Programme	Clinical Expert
Ms Breda Naddy	Programme Manager, National Emergency Medicine Programme	Programme/Project Management
Dr Una Geary	Consultant in Emergency Medicine with Hospital Quality Improvement Role	Clinical Expert
Mr Gethin White	Research, Information and Economic Expert	Clinical Librarian
Ms Sinead Reilly	Administrator, National Emergency Medicine Programme	Administration
Dr Vida Hamilton	Clinical Lead, National Sepsis Programme	Clinical Lead National Sepsis Programme and Consultant in Intensive Care Medicine
Ms Christina Doyle	Programme Manager, National Sepsis Programme	Programme/Project Management
Dr John Fitzsimons	Director for Quality Improvement and Clinical Lead, Paediatric Early Warning Score (PEWS)	Paediatric Early Warning System representative
Dr Karen Power	National Programme for Obstetrics and Gynaecology – Irish Maternity Early Warning System (IMEWS)	Irish Maternity Early Warning System representative
Ms Ruth Greene	Clinical Nurse Manager II Emergency Department	Clinical Expert
A representative of the Acute Medicine Programme and Lead for NEWS project was a member of the GDG until resigning in April 2016.		

Table 2: Advisory Group

Name	Title	Role
Ms Norma O'Sullivan	Clinical Nurse Manager, Cork University Hospital	Clinical Expert
Ms Helena Hanrahan	ADoN, University Hospital, Galway	Clinical Expert
Ms Fiona Brady	ADoN, Our Lady of Lourdes Hospital, Drogheda	Clinical Expert
Ms Helen O'Shea	Clinical Nurse Manager, Sligo University Hospital	Clinical Expert
Ms Rosie Quinn	Therapies Lead/ EMP Therapies Lead	Health and Social Care Professionals
Prof Garry Courtney	Clinical Co-Lead, National Acute Medicine Programme	Clinical Expert
Prof Frank Keane	Clinical Co-Lead, National Programme for Surgery	Clinical Expert
Ms Brid Boyce	Quality, Risk and Patient Safety, HSE	HSE, National Lead for Policies, Procedures, Protocols and Guidelines
Ms Angela Fitzgerald	Assistant National Director, Acute Hospitals Division, HSE	HSE, Senior Management Representative
Ms Eileen Whelan	Group Director of Nursing (DoN), Dublin Mid-Leinster Group	HSE, Hospital Group Management
Ms Ann Martin	Client Director, Acute Hospitals, Communications, HSE	Communication Planning
Mr Michael Brophy	Service User	Service User
Mr Damian McGovern	Service User	Service User
Ms Fiona Culkin - replaced by Ms Mairead Twohig in Sept 2016	Clinical Risk Advisor	State Claims Agency
Prof Eilish McAuliffe	Professor of Health Systems	Human Factors and Patient Safety
Dr Éidin Ni Shé	Health Systems Researcher	Human Factors and Patient Safety
Dr Gareth Quin	Chair, Irish Committee for Emergency Medicine Training	EM training
Dr Colm Henry	National Clinical Advisor, Group Lead Acute Hospitals, HSE	GDG Sponsor
A/Prof Conor Deasy	Consultant in Emergency Medicine/Principal Investigator	Clinical expert
Dr Frances Drummond	Researcher Support Officer	Health Systems Researcher
Ms Liz Roche	Area Director NMPD	Practice Development/ Service Planning
Dr David Menzies	Consultant in Emergency Medicine/National Adult Retrieval Programme	Pre-hospital expertise
Dr Jo Kelliher	Emergency Medicine Trainee	Emergency Medicine Trainee
Prof Julie Considine	Professor of Nursing, Deakin University, Australia	International Expert
Prof Peter Cameron	Academic Director of the Emergency and Trauma Centre, The Alfred Hospital, Australia	International Expert
Dr Taj Hassan	Consultant in Emergency Medicine, Leeds, UK/President , Royal College of Emergency Medicine	International Expert

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1 National Clinical Guideline summary

1.1 Summary of recommendations

1: Overarching Recommendations

Recommendation 1
EMEWS is recommended for use in EDs when patients are waiting longer for review by a Treating Clinician than is recommended based on their Manchester Triage System (MTS) Category. Based on international experience, if patient flow into and through the hospital were more optimal, there would be little need to introduce a schedule of on-going monitoring. It is the responsibility of the Hospital Chief Executive Officer (CEO)/General Manager (GM) to optimise patient flow and to ensure timely and appropriate action is taken to eliminate/minimise ED crowding.

Quality of evidence: **High**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Hospital Chief Executive Officer (CEO)/General Manager (GM)**

Recommendation 2
Patients should be assigned to the track and trigger system appropriate to their age, condition and stage of their journey through the health system.

Quality of evidence: **Expert Opinion**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Clinical staff**

2: Measurement and Documentation of Vital Signs

Recommendation 3
Monitoring, using EMEWS, should be considered for all adult patients (≥16 years) in any ED setting following prioritisation using the Manchester Triage System.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Clinical staff**

Recommendation 4
To reduce risk in the ED environment the internationally recognised “heat” colour scheme should be used on the vital sign chart to denote parameter ranges.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Clinical staff**

Recommendation 5
EMEWS should complement care, not replace clinical judgement. Any concern about an individual adult patient warrants escalation, irrespective of the presence or absence of a trigger. The level of escalation should reflect the degree of clinical concern.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Clinical staff**

Recommendation 6
The core EMEWS physiological parameters must be recorded as a baseline at triage. These are: Respiratory Rate (RR), Oxygen Saturation (SpO_2), Fraction of inspired Oxygen (FiO_2), Heart Rate (HR), Systolic Blood Pressure (SBP), Temperature (T) and Level of Consciousness (ACVPU: **A**lert/**C**onfused/Respond to **V**oice/Respond to **P**ain/**U**nresponsive). The subsequent frequency of observations is initially determined by the triage category and presenting complaint until a patient-specific monitoring plan is in place.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Clinical staff**

Recommendation 7
The technique of recording, measuring and monitoring of vital signs should be undertaken in line with recognised, evidence-based practice.

Quality of evidence: **High**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Clinical staff**

Recommendation 8a
Staff concern is an important indicator of the level of illness/clinical status of an adult which may prompt a greater level of escalation and response than that indicated by the EMEWS alone.

Quality of evidence: **Moderate**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Clinical staff**

Recommendation 8b
Family concern is an important indicator of the level of illness of an adult which may prompt a greater level of escalation and response than that indicated by the EMEWS alone.

Quality of evidence: **Moderate**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Clinical staff**

3: Escalation of Care and Clinical Communication

Recommendation 9
The EMEWS escalation protocol identifies the clinical escalation steps that should be taken in the event of any parameter/s being triggered.

Quality of evidence: **High**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Clinical staff**

Recommendation 10
The ISBAR and ISBAR$_3$ communication tools should be used when communicating clinical concern.

Quality of evidence: **High**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Clinical staff**

Recommendation 11
Following review by a treating clinician, a clinical management plan must be put in place and clearly documented as part of the EMEWS response.

Quality of evidence: **High**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Clinical staff**

Recommendation 12a
Any amendment to the Post-triage Monitoring Plan, such as frequency of vital sign measurement or trigger point, for a given patient with a pre-existing condition that affects their baseline physiological status, e.g. Chronic Obstructive Pulmonary Disease should only be decided by a doctor of Registrar grade or above.

Quality of evidence: **Very Low/Expert Opinion**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Clinical staff**

Recommendation 12b
In a situation where an unwell but stable adult would normally have triggered escalation using EMEWS, a Medical Escalation Agreement may be made by a doctor of Registrar grade or above for a maximum period of four hours.

Quality of evidence: **Very Low/Expert Opinion**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Clinical staff**

Recommendation 12c
Any amendment to the Post-triage Monitoring Plan or Medical Escalation Agreement must be clearly communicated and documented in the patient's ED chart.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Clinical staff**

4: Adult Sepsis

Recommendation 13
In patients with a clinical suspicion of sepsis adherence to the NCEC National Clinical Guideline No. 6 Sepsis Management is strongly recommended.

Quality of evidence: **High**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Clinical staff**

5: Governance

Recommendation 14a
The Hospital Chief Executive Officer (CEO)/General Manager (GM), Clinical Director (CD) and Director of Nursing (DoN) of each hospital or hospital group are accountable for the operation of the EMEWS. A formal governance structure, such as a "Management of the Deteriorating Patient" governance committee, should oversee and support the local resourcing, implementation, operation, monitoring and assurance of the EMEWS.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: Hospital **Chief Executive Officer (CEO)/General Manager (GM), Clinical Director (CD) and Director of Nursing (DoN)**

Recommendation 14b
The "Management of the Deteriorating Patient" governance committee should identify a named individual/s to coordinate local EMEWS implementation e.g. a clinical facilitator.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Chief Executive Officer (CEO)/General Manager (GM), Clinical Director (CD) and Director of Nursing (DoN)**

Recommendation 15a
An appropriately experienced and trained nursing resource is required 24 hours a day for post-triage assessment as this is new work distinct from triage and other current emergency nursing roles. The use of the latest technological developments in patient monitoring should be explored.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Clinical staff**

Recommendation 15b
An appropriately trained senior Emergency Medicine doctor should be available 24 hours a day to support junior medical and nursing staff in the ED.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Clinical staff**

6: Education

Recommendation 16
The Hospital Chief Executive Officer (CEO)/General Manager (GM) and Director of Nursing (DoN) in each hospital must ensure that EMEWS education is provided to all clinicians who work in the ED.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Chief Executive Officer (CEO)/General Manager (GM), Clinical Director (CD) and Director of Nursing (DoN)**

7: Supporting Practices

Recommendation 17
Hospitals should implement safety practices that enhance EMEWS and lead to greater situational awareness among clinicians and multidisciplinary teams.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Chief Executive Officer (CEO)/General Manager (GM), Clinical Director (CD) and Director of Nursing (DoN)**

8: Evaluation and Audit

Recommendation 18a
Clinical audit should be used to aid implementation and quality-assure EMEWS.

Quality of evidence: **High**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Clinical staff**

Recommendation 18b
EMEWS should be supported through the application of quality improvement methods, such as engagement strategies, testing and measurement to ensure successful implementation, sustainability and future progress.

Quality of evidence: **Moderate**
Strength of recommendation: **Conditional**
Responsible person/s for implementation: **Clinical staff**

9: Electronic monitoring technology

Recommendation 19
Electronic monitoring technology should be utilised, where possible, to record physiological parameters.

Quality of evidence: **Moderate**
Strength of recommendation: **Strong**
Responsible person/s for implementation: **Clinical staff**

2 Development of the National Clinical Guideline

2.1 Overview

The Emergency Medicine Early Warning System (EMEWS) has been developed in response to concerns that Emergency Department (ED) patients are at risk of clinical deterioration between the time they are triaged and the time they are assessed by a Treating Clinician and that there may be a delay in recognising this deterioration if the patient is not appropriately monitored. These patients have undifferentiated, undiagnosed conditions with the potential for rapid change in their physiological status and have only been assessed once in the ED i.e. at triage.

The development of such a system is a specific recommendation in the *Report of the investigation into the Quality, Safety and Governance of the care provided by the Adelaide and Meath Hospital, Dublin incorporating the National Children's Hospital (AMNCH) for patients who require Acute Admission* (Health Information and Quality Authority, May 2012) (hereafter referred to as the HIQA Tallaght Report).

Crowded and under-resourced EDs will have relatively larger numbers of such patients waiting for longer periods of time thereby increasing the clinical risk. The international literature and media report tragic examples of ED patients who have deteriorated and died in ED waiting rooms. While EMEWS reduces the risk of a patient's clinical deterioration going unnoticed in the ED setting, it does not and cannot address the root cause of this risk which requires appropriate demand-capacity management and resourcing of EDs. EMEWS should not be seen as either a legitimisation of ED crowding or a means of obviating the urgent need to properly address this unsafe phenomenon.

The financial cost of implementing EMEWS (or any other early warning system) could be significantly reduced if patient egress from the ED to in-patient areas was optimised. The post-triage nursing reviews for patients in the waiting area would then only be required during periods where there was a surge in activity.

The EMEWS guideline has been designed to interface seamlessly with the Manchester Triage System which is the nationally recommended ED triage approach for adult patients and, insofar as this is practical or appropriate, align with other tools in use for patients at different stages of their journey through the hospital system.

2.2 Background

EMEWS has been developed in response to staff concerns that certain adult patients in EDs are at risk of clinical deterioration between the time they have been prioritised using the Manchester Triage System and the time they are assessed by a Treating Clinician. There may be a delay in recognising this deterioration if the patient is not appropriately monitored. It is also a specific recommendation in the Tallaght HIQA Report, 2012. These are patients with undifferentiated presentations with the potential for rapid change in their physiological status that have only been assessed once in the ED i.e. at triage. The guideline is intended to add structure to the often *ad hoc* nursing review process in EDs. Crowded and under-resourced EDs will have relatively larger numbers of such patients waiting for longer periods of time, thus increasing the clinical risk. The international literature reports increased rates of adverse events (Hendrie et al, 2017) and in-hospital mortality at 10 days (Richardson, 2006; Bernstein et al, 2009; Richardson and Mountain, 2009; Sun et al, 2013) in patients who are admitted at times of crowding.

2.3 Aim and objectives of EMEWS

The purpose of this NCEC National Clinical Guideline is to implement a standardised Emergency Medicine early warning system in order to improve the recognition and response to clinical deterioration in adult patients in the ED.

EMEWS will:

(a) Ensure the safe, timely and appropriate monitoring and management of adult patients from triage through to assessment by a Treating Clinician and until they are discharged or admitted under the care of an in-patient consultant.
(b) Enhance the quality of adult patient care through a standardised, structured approach to ED patient monitoring.
(c) Integrate with other early warning systems to enable seamless patient monitoring across the entire patient pathway.
(d) Assist in the overall management of clinical risk and improved quality of patient care.
(e) Reduce patient concerns and enhance satisfaction with the service.
(f) Represent a standard for service provision and facilitate service auditing and monitoring of the safety and quality of care in the ED.

2.4 Guideline scope

This NCEC National Clinical Guideline (NCG) applies to adult patients (16 years and older) attending an Emergency Department in Ireland. Following the application of Manchester Triage as a prioritisation filter the target population for the guideline is further refined through the use of the inclusion criteria (detailed in Section 2.8.2 of the full guideline). The guideline covers the phase of care from triage to discharge or decision to admit. This NCG should be used in conjunction with the following NCEC NCGs:

- No. 1 National Early Warning Score (NEWS) in non-pregnant admitted adult patients
- No. 4 Irish Maternity Early Warning System (IMEWS) in women with a confirmed pregnancy and for up to 42 days post-natally
- No. 5 Communication (Clinical Handover) in Maternity Services
- No. 6 Sepsis Management
- No. 11 Communication (Clinical Handover) in Acute and Children's Services
- No. 12 Paediatric Early Warning System (PEWS) in Paediatric in-patients.

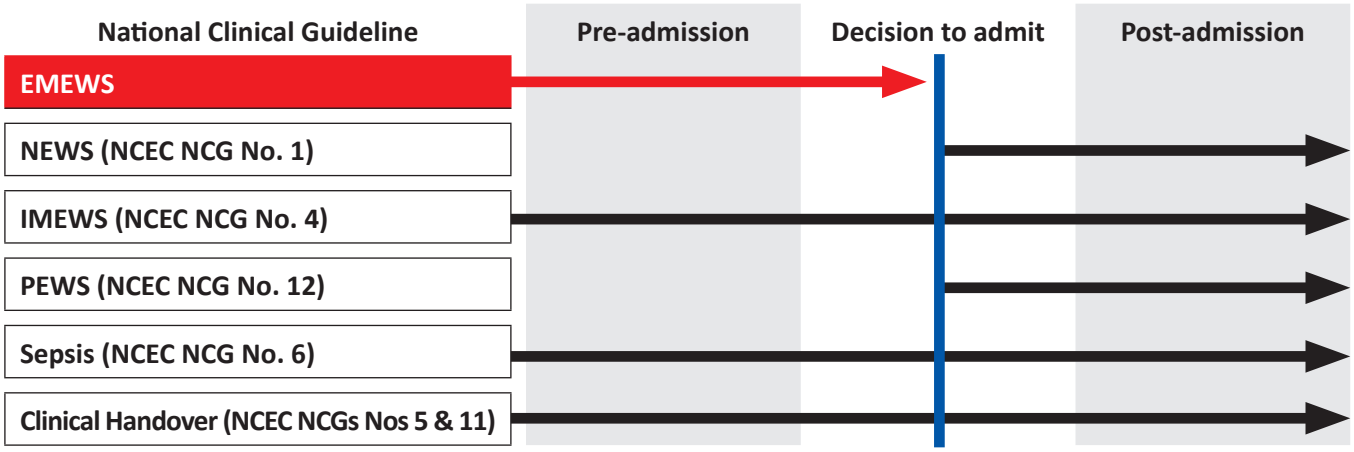
This guideline makes recommendations on the process of implementation and utilisation of EMEWS. It is relevant to hospital management, healthcare professionals, patients and their families. It is intended to complement, not replace, clinical judgement. Cases should be considered individually and, where necessary, discussed with a senior or more experienced colleague.

The intended audience for this guideline is primarily the clinical staff in the ED. However successful implementation requires support from the Chief Executive Officer (CEO)/General Manager (GM), Clinical Director (CD) and Director of Nursing (DoN) at both hospital group and hospital level.

Healthcare professionals attending to patients in the ED should be aware that there are a number of charts in use for different patient populations and phase of care as detailed in the following table:

Patient Group	Phase of care
Children (under 16 years)	**Irish Childrens' Triage System (ICTS)** is used for Triage **Paediatric Early Warning System (PEWS)** is used for children (under 16 years) following the decision to admit.
Pregnant Women	**Irish Maternity Early Warning System (IMEWS)** – is used for women with a confirmed pregnancy and up to 42 days post-partum (some presentations will also require the use of the Glasgow Coma Scale Score aspect of the EMEWS chart).
In-patients	**National Early Warning Score (NEWS)** – is used for adult patient (16 years and over) following the decision to admit.

EMEWS is designed to interface with other National Clinical Guidelines as shown below.



2.5 Rationale for a National Clinical Guideline

Analysis of 576 hospital deaths reported to the UK's National Patient Safety Agency's (NPSA) National Reporting and Learning System (NRLS) over a one-year period identified that 11% were as a result of deterioration not recognised or acted upon. Failures were identified at a number of points in the care process (NPSA Reports 2007 cited in Patient Safety First, 2008). EMEWS is intended to address the risk of a patient's clinical deterioration going unnoticed in the ED setting. The recording system currently used by the State Claims Agency is unable to identify specific cases of clinical deterioration during the phase of the patient's journey from triage to review by a treating clinician.

Prior to the HIQA Tallaght Report (2012) the development of an ED-specific system of physiological monitoring had already been seen by the National Emergency Medicine Programme (EMP) as an important area for development.

Through NCEC endorsement of EMEWS, there is a complete suite of tools for use in acute hospitals for the detection of deteriorating patients from their presentation in the ED through to discharge from hospital. EMEWS has been designed to align closely with the other systems for the detection of deterioration in patients within the context of the undifferentiated, undiagnosed nature of presentations to ED. Adult patients will transfer to the NEWS (NCEC NCG No. 1) following the decision to admit. Women who are deemed to require post-triage monitoring with a confirmed pregnancy or who are up to 42 days post-partum will be commenced on the IMEWS (NCEC NCG No. 4) following triage (the

Glasgow Coma Scale score component of the EMEWS may also be required depending on the presenting complaint). Children are triaged using the Irish Children's Triage System (ICTS) and transfer to the PEWS (NCEC NCG No. 12) following the decision to admit.

Whereas other NCGs are considered the appropriate track and trigger systems (TTS) for particular settings or patient cohorts e.g. general hospital wards or pregnant women, expert consensus concluded that clinical escalation in the ED requires an approach that recognises the needs of patients in the unique environment of the ED. The EMP therefore explored an ED-specific monitoring which escalation system cognisant that any such ED system should be aligned with existing tools to the greatest extent possible.

Tools for monitoring and escalation in hospital in-patient wards have been in use for a number of years both in Ireland and internationally. The NEWS (NCEC NCG No. 1) and the Compass© Training Programme, developed in Australia, have been implemented across acute hospitals in Ireland. An investigation of track and trigger type systems - both single and aggregate scoring, was undertaken by EMP which found that there was no international standard or system specifically for the ED and while early warning system tools were in use in some EDs and in some countries, the prevalence of their use in the ED environment was low.

Recognising and responding to clinical deterioration is an essential element of effective care, according to Standard 2.2 of the National Standards for Safer Better Healthcare (HIQA, 2012) which requires that "Care is planned and delivered to meet the individual service user's initial and on-going assessed healthcare needs, while taking account of the needs of other service users".

EMEWS is designed to be compatible with NEWS (NCEC NCG No. 1) and IMEWS (NCEC NCG No. 4). It will align with pre-hospital systems of physiological monitoring and clinical escalation when developed. This will facilitate the continuity of physiological monitoring from pre-hospital care through to hospital discharge for all patient groups, reducing clinical risk and improving the quality of care.

2.6 EMEWS implementation and future development

2.6.1 Implementation - Organisational responsibility

In very simple terms any health system has essentially four options available to it in response to patients at risk of deterioration in an ED

- Do nothing
- Adopt a tool developed for a different environment
- Develop an ED specific early warning system
- Resolve the major contributing factor of crowding.

The consensus view taken by clinical experts was that the preferable approach was to develop an ED-specific fit-for-purpose early warning system.

The Chief Executive Officer (CEO)/General Manager (GM), Director of Nursing (DoN) and the Clinical Director (CD) of the hospital have corporate responsibility for the implementation of EMEWS and to ensure that all relevant staff are appropriately supported to implement the guideline. The EMEWS guideline should be reviewed by the multidisciplinary clinical team and senior management in the hospital to implement the recommendations. All clinical staff with responsibility for the care of patients in the ED are expected to:

- Comply with the EMEWS guideline and any related procedures or protocols

- Adhere to their code of conduct and professional scope of practice as appropriate to their role and responsibilities
- Maintain their competency for the management and treatment of patients in the ED.

Implementing change in the healthcare environment can present many challenges. Implementation of EMEWS in EDs in Ireland represents a major change in the practice of ED nursing and medical care. The complexity and challenge of this intervention should not be underestimated. It will affect the care of a significant proportion of the 1.2 million patients who attend Ireland's EDs each year and the daily work of approximately 1,500 nurses and 500 doctors, clerical staff and other support staff in EDs across the country. It is clear that extensive training, on-going refinement and considerable support will be needed to ensure the success of this practice change. It is imperative that all EDs should be adequately resourced to enable the full implementation of all elements of EMEWS but this cannot be done at the expense of other important elements of clinical care. The resource implications of implementing this guideline are set out in Appendix 10 of the full guideline The full budget impact analysis is in Appendix 8 of the full guideline.

EMEWS represents guidance developed by experienced ED nurses and doctors based on best-evidence where available and "field-tested" by front-line ED clinical staff. Experience gained during pilot testing of EMEWS in three major EDs identified a number of key enablers and barriers to effective implementation and sustainable practice of the EMEWS. All ED and Hospital Group Management teams will need to manage these and other factors specific to their local environments to enable the best possible use of EMEWS. ED staffing constraints and excessive demands placed on nursing staff resources by ED crowding are major concerns, particularly with regard to the 24/7 provision of Post-triage patient monitoring. These challenges will need to be addressed, for the successful introduction on EMEWS.

The EMP Emergency Department Nursing Workforce Planning Framework (HSE 2016) and the work undertaken by the Taskforce on Staffing and Skill Mix for Nursing Phase II – Emergency Care Settings (Chief Nursing Office, Department of Health) can be utilised by hospital management and EDs to assist in identifying the appropriate level of resources required for the implementation of EMEWS.

The EMEWS Guideline will be circulated and disseminated through the professional networks who participated in developing and reviewing this document. The guideline will also be available on the HSE, NCEC and professional bodies' websites.

2.6.2 Implementation steps

While the CEO/GM, DoN and the CD of the hospital have responsibility for the implementation of EMEWS, a project team consisting of ED staff and senior management should be established to facilitate implementation. This team would set the local timeline for achieving full implementation. It is recommended that hospitals use quality improvement (QI) methodology when implementing EMEWS. Such methods enhance stakeholder engagement and support local adoption through the use of provision testing, measurement and feedback of the key interventions. Recognition must also be given to the complex task of improving patient safety climate (beliefs and attitudes) and culture (actions) that successful implementation of the EMEWS depends upon.

2.6.3 Implementation plan

- Establish a steering group under the governance of the hospital's "Management of the Deteriorating Patient Governance Committee". The steering group needs to have representation from all stakeholders involved with the local implementation of EMEWS.

- Identify the one-off costs and recurring costs at ED level that impact on the implementation of EMEWS and source relevant funding.
- Review pages one and four of the EMEWS chart to identify any local modifications required. Arrange for testing of the modifications if required.
- Arrange with procurement for the printing of the new documentation.
- Identify trainers and champions for the project.
- Develop a training plan. Ideally the training should be undertaken in a multidisciplinary format.
- Plan to "go-live" when a minimum of 75% of each discipline are trained.
- Ensure trainers/champions are available on each shift following "go-live" to troubleshoot issues that arise in practice.
- Set a review date for 1 month after the "go-live".
- Have a comment book available for staff to record challenges faced during implementation. Items raised by staff should be discussed at post-implementation review and a consensus developed to resolve issues.
- Keep staff informed of progress.

2.6.4 Enablers and barriers impacting on the implementation of EMEWS

The successful implementation of EMEWS will be dependent on many factors, of which the key areas are:

- Nurse staffing
- Infrastructure and equipment
- ED flow
- ED information systems
- Documentation
- ISBAR implementation
- Triage skills
- Post-triage training
- Clinical Escalation
- Audit and Improvement
- Interface with other early warning systems.

Implementation of Emergency Medicine Early Warning System		
Issue	**Enablers**	**Barriers**
Nurse Staffing	Appropriate staffing levels and skill-mix at all times	Nurse staffing shortages
		Over-reliance on agency staff who may not be trained on EMEWS
		ED crowding resulting in increased demand for nursing care
	Sufficient CNM staffing levels to allow Nurse-in-Charge consultation as required	Excessive workload demands on Nurse-in-Charge of ED/zone
Infrastructure and equipment	Appropriate environment and equipment for Post-Triage Monitoring	Lack of mobile equipment for vital signs
		Lack of resources to explain Post-Triage Emergency Nursing Review to patients e.g. waiting room media
		Lack of cubicle access for Post-Triage Emergency Nursing Review

Implementation of Emergency Medicine Early Warning System		
Issue	**Enablers**	**Barriers**
ED flow	Reduced volume of Post-triage Emergency Nursing Review workload as a result of better ED flow and improved compliance with MTS Triage recommended times to be seen by a clinical decision-maker	Prolonged waiting times for patients to see a clinical decision-maker increases monitoring demand.
		ED medical staffing shortages
		ED crowding placing excessive competing demands on nurse staffing resource
		Ineffective communication with patients on function of Post-Triage Emergency Nursing Review and involvement in Escalation
		Patients are frustrated by repeated monitoring during delays to be seen by a treating clinician
Information systems	ED Information Systems (EDIS)	Lack of EDIS with difficulty identifying which patients need MTS and when Post-triage Emergency Nursing Review is due.
Documentation	Good documentation of Post-Triage Emergency Nursing Review practice	Insufficient focus on documentation of MTS and Post-Triage Emergency Nursing Review practice
	Robust , ideally electronic, systems to support documentation of escalation events	Lack of EDIS
ISBAR	All staff trained in ISBAR/ISBAR$_3$ at induction	Lack of training and re-enforcement of ISBAR/ ISBAR$_3$ practice
Triage skills	ED nurses trained in MTS	Under-resourcing of training
		Over-reliance on agency staff
Post-Triage Training	ED nursing staff trained in Post-Triage Emergency Nursing Review with regular updates	Nursing staff not released for training
		Lack of training in Post-Triage Emergency Nursing Review including patient communication
Clinical Escalation	Multidisciplinary scenario-based training and simulation of clinical escalation practice and communication	Training is not resourced or organised
		Over reliance on Locum EM Staff
	Learning is shared through ED Safety Huddles and at shift handovers	Clinical escalation is not embedded in the daily work of EDs
Audit and Improvement	Clinical audit of Post-Triage Emergency Nursing Review and Clinical Escalation practice	Under-resourcing of clinical audit in the ED
Interface with other early warning systems	Training and audit support effective alignment of all early warning system used in ED setting	Failure to adapt all tools to optimise alignment and co-usability in the ED setting

2.6.4 Tools to assist implementation of EMEWS

A selection of tools to assist in the implementation of the National Clinical Guideline is available in Appendix 5.

2.6.5 EMEWS training

A dedicated training programme will be required to support implementation and effective use of EMEWS and all ED clinical staff must undertake this training programme and subsequent updates to ensure the appropriate use of EMEWS. Clinical escalation is a key focus of the training programme aimed at nursing and medical staff. Administrative staff will also require in-service training on document management issues. Other clinical staff such as Health and Social Care Professionals (HSCP) will also require training so that they too are enabled to escalate patients if they are concerned regarding the potential for clinical deterioration in the ED setting.

2.6.6 Training programme for EMEWS

Training for the implementation of EMEWS should be delivered through a train-the-trainer model. Each ED needs to identify nurses who have the skills required to be trainers. Emergency Nursing Clinical Facilitators have a key role in providing clinical support to qualified staff and the wider multidisciplinary team during the training and implementation of EMEWS. Each hospital should have one or more members of staff who are trainers for all the tools for the early recognition of the deteriorating patient – EMEWS, NEWS, IMEWS, ICTS and PEWS as these trainers will understand how all the tools relate to each other and help front-line ED staff gain competence in their combined use for ED patient cohorts. Emergency Nursing Clinical Facilitators and Resuscitation Training Officers may be able to fulfil this important role. Following initial implementation EMEWS training should be incorporated into ED orientation for new staff.

An e-learning platform has potential to facilitate access to training; however it should ideally be accompanied by simulated case scenarios. The costing's for the development of such an e-learning programme is included in the BIA (Appendix 8 of the full guideline).

The HSE has established a national Deteriorating Patient Quality Improvement Programme which is currently reviewing the training modalities for all the Early Warning Systems with the possibility that a common core module will be developed. If this proposal comes to fruition there will be a positive impact on the training costs incurred with EMEWS implementation. A core e-learning module applicable to the general principles of all Early Warning Systems with a specific module for EMEWS would be the preferred way of delivering such training. Ideally the on-site training should be multidisciplinary to facilitate full discussion, though it is recognised that this may be difficult to achieve. In the future it is anticipated that EMEWS training will be incorporated into Emergency Medicine and Emergency Nursing training programmes.

The standard training module will include:

- Why we need to monitor patients
- Overview of EMEWS
- Overview of the EMEWS chart
- Patient-Specific Monitoring Plans
- Clinical Escalation in the Emergency Department
- Using the Event log
- Communication and using ISBAR
- Audit
- Case scenarios.

The assistance of the Nursing Practice Development Department or Centre for Nursing Education may be required for resource support for the delivery of the training module. EDs will require a minimum of 75% of staff trained in EMEWS prior to going live to ensure that there is sufficient staff trained in the use of EMEWS on each shift.

2.7 Monitoring and evaluation

Following the introduction of EMEWS, updates on any issues arising with the implementation should be included at the ED Huddles thus keeping staff informed and facilitating early resolution of any issues.

It is important that both the implementation of the guideline and patient outcomes are audited to ensure that this guideline positively impacts on patient care. See Appendix 6 for suggested audit criteria. Assessments of the effectiveness of the use of EMEWS should be included in the ED's clinical audit programme. Patient safety and quality of care issues identified through audit should be immediately reported in the standard way and addressed. On-going learning achieved through audit of the use of EMEWS should be shared with other EDs, Emergency Care Networks and at national level.

2.7.1 Audit

An audit tool is provided to assist implementation teams assess and improve the effectiveness of their use of the 5 components. Further guidance on the use of the Audit Tool is outlined in Appendix 6. The outcome of such audit should be included in routine governance and quality assurance work within the ED and the hospital. This activity will provide evidence to support the hospital's self-assessment for implementation of the National Standard for Safer Better Healthcare (HIQA, 2012) Standard 2.2.

To ensure that this guideline positively impacts on patient care, it is important that implementation is audited. Audit is recommended to support continuous quality improvement in relation to the implementation of the National Clinical Guideline. EMEWS can be audited as a whole or by each element of the system (see Appendix 6).

Frequency of audits
Following initial roll-out of EMEWS a review at four weeks and twelve weeks is recommended. If compliance issues arise, further charts should be reviewed. When EMEWS has become embedded into clinical practice the frequency of audit can be reduced to a minimum of six-monthly and incorporated into the regular departmental audit programme.

Number of charts to be reviewed
The recommended sample size is one-third of ED patient charts. One approach that could be taken during roll-out would be to review one-third of charts on all shifts, discussing any issues that arose with the staff at the shift change/huddle or with individual members of staff. When EMEWS is established a minimum of one-third of EMEWS charts should be reviewed twice a year. Patient charts from triage categories 2, 3 & 4 should be included in all audits.

Compliance
100% in all aspects of the audit.

Non-compliance
If the non-compliance affects the same aspects of EMEWS or a pattern appears over successive audits, an action plan should be formulated to address the deficits.

Suspending the Post-triage Emergency Nursing Review process in ED
If the ED is obliged to suspend the Post-triage Emergency Nursing Review process (e.g. due to staff shortages) a National Incident Reporting Form (NIRF) should be completed. It is the policy of the Health Service Executive that all safety incidents are identified, reported and investigated. Safety Incidents include serious reportable events (SRE). Incidents should be disclosed in accordance with the HSE National Guidelines on Open Disclosure (HSE, 2017). This Policy is in line with the provisions of Part 4 of the Civil Liability (Amendment) Act 2017.

All incidents should be monitored at departmental level and reviewed at the ED Clinical Operational group meetings and action plans formulated when the suspension stems from recurrent themes, i.e. inadequate staffing levels, competing needs of emergency patients and in-patients.

All incidents/near misses should be entered onto the National Incident management System (NIMS).

2.7.2 Key Performance Indicators

Key performance indicators (KPIs) are evaluative criteria which inform a process and have the potential to identify or flag further issues or questions which require review.

KPI	Goal
The percentage of ED clinical staff trained in the use of EMEWS	Minimum of 75% per discipline
EMEWS is applied to the eligible population	100%
Patients are assigned to the correct post-triage monitoring regime	100%
Where patient deterioration occurs care is escalated to the appropriate level and this is documented	100%
Where care is escalated the response is appropriate and documented	100%

It is recommended that once EMEWS is established, charts are reviewed twice a year applying the KPI criteria. A minimum of 10 charts from each triage category should be reviewed ensuring that the charts identified span the 24 hours of the day and 7 days of the week. Some of the KPIs can also be used for individual case reviews.

2.8 Sources of funding

The systematic review *Clinical effectiveness and cost-effectiveness of physiologically based early warning or track and trigger or scoring systems after triage in adult patients presenting to Emergency Departments: A systematic review* was commissioned by the Clinical Effectiveness Unit (CEU) in the Department of Health. Prof Declan Devane, of National University of Ireland, Galway and his team carried out the independent systematic review. This was the only part of the process for which funding was specifically provided. The CEU as commissioner and funder did not influence the result of the systematic review or the recommendations of this guideline.

2.9 Stakeholder consultation

The GDG endeavoured to ensure that all stakeholders had an opportunity to contribute to the development of EMEWS. The GDG would like to acknowledge the significant contribution made by the various stakeholders from professional, academic and patient groups (see Appendix 4 of the full guideline).

2.10 External review

In January 2017, the draft of this National Clinical Guideline was circulated for review to the EMEWS Clinical Advisory Group, the ONMSD in the HSE, and other national stakeholders, with a defined period to provide feedback. Sepsis considerations were developed in collaboration with Dr. Vida Hamilton, HSE National Sepsis Lead. In addition, the draft National Clinical Guideline was externally peer reviewed by three international experts in emergency care. Prof Julie Considine, Prof Peter Cameron and Dr Taj Hassan were identified based on their clinical practice and contribution to the academic literature, as well as their involvement with the Australasian College of Emergency Medicine and Royal College of Emergency Medicine.

Prof Julie Considine	Professor of Nursing, Deakin University, Australia. Founding Fellow, College of Emergency Nursing, Australasia and representative on Australian Resuscitation Council. Member of the International Liaison Committee on Resuscitation Basic Life Support Taskforce.
Prof Peter Cameron	Academic Director of the Emergency and Trauma Centre, The Alfred Hospital, Australia. Former President, International Federation of Emergency Medicine
Dr Taj Hassan	Consultant in Emergency Medicine, Leeds, UK and President, Royal College of Emergency Medicine, UK

The GDG is very grateful to these reviewers and appreciates the time commitment and expertise that was involved in their review. The external reviewers were requested to consider the guideline in accordance with the questions outlined in the NCEC/HIQA Quality Assurance Criteria for Clinical Guidelines (Version 2) (2015). The questions and the external reviewers consensus response to the questions are available (Appendix 4 of the full guideline). Overall, the external reviewers concluded that this National Clinical Guideline represented a genuine attempt to address a significant issue faced by

Irish EDs. Although eliminating the cause of the delays experienced by ED patients would be the optimal solution and would allow all patients be seen and treated by a clinician on arrival to the ED, this was unlikely to occur in the short to medium term. The consensus was that it was preferable to use a fit-for-purpose ED-specific tool rather than use an alternative tool intended for a very different environment.

The external reviewers commented specifically on:

- the high quality of the guideline
- the fact that this area is an evolving one in emergency care
- the commendable effort being taken to address a problem that extends beyond Ireland
- the emphasis on staff, patient and family concern
- having a simple trigger which alerts and empowers the junior nurse to call for help when faced with a potentially critically ill patient; something that has been shown to be useful in a number of studies.
- In keeping with those in Ireland who reviewed and commented on the draft document, the external reviewers also strongly suggested that there needed to be greater efforts to address the underlying causes of ED crowding.

2.11 Procedure to update this National Clinical Guideline

The GDG agreed that this National Clinical Guideline will be reviewed on a 3-yearly basis and updated as appropriate. Therefore, this National Clinical Guideline will be reviewed again in 2021. If the same GDG is unavailable, persons with the equivalent expertise will be recruited to participate in the review process. An updated systematic literature search will be undertaken at this time and the National Clinical Guideline amended, as appropriate, to incorporate any relevant new evidence and feedback from national and international experts on the current guideline. Findings from audits performed by hospital groups will also be reviewed. Following this, it will be submitted to the NCEC for review.

2.12 Methodology and literature review

The published abstract of the *Clinical effectiveness and cost-effectiveness of physiologically based early warning or track and trigger or scoring systems after triage in adult patients presenting to Emergency Departments: A systematic review* is available (Appendix 7 of the full guideline). The full systematic review is available in Annex 1. Summary tables are in Appendix 9 of the full guideline.

2.12.1 Development and grading of recommendations

In Section 3 of the full guideline, evidence for each of the 19 recommendations is outlined. For recommendations 1-19 the GDG formulated a series of clinical questions to organise the evidence from the literature review and to structure this National Clinical Guideline.

The evidence considered for each recommendation comprised the available published evidence from the systematic literature review, experiential evidence from the EMEWS pilot and expert consensus from the GDG and consultation processes. The quality of all the available evidence was then assessed by the GDG according to the GRADE criteria described in the table overleaf.

Quality of evidence	Description
High quality	Further research is very unlikely to change our confidence in the estimate of effect • Several high-quality studies with consistent results • In special cases: one large, high-quality multi-centre trial
Moderate quality	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate • One high-quality study • Several studies with some limitations
Low quality	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate • One or more studies with severe limitations
Very low quality	Any estimate of effect is very uncertain • Expert opinion • No direct research evidence • One or more studies with very severe limitations

The strength of each recommendation was decided following a process of considered judgement by the GDG that took into account the potential benefits and harms of implementation, the available evidence as described above, the values and preferences of the target audience including clinicians, the patient and family and finally the cost implications of implementation as described below.

Other factors that were taken into account when forming the recommendations included relevance to the Irish healthcare setting, applicability of published evidence to the target population, consistency of the body of evidence and the balance of benefits and harms of the options.

- A **strong** recommendation reflects the GDG's consensus that based on the available evidence, the expected benefits outweigh any potential harm, the values and preferences of patients and professionals are represented and cost implications are justified.

- A **conditional** recommendation reflects the GDG's consensus that although the evidence base is limited in some aspects, the GDG remains confident of the likelihood of benefits outweighing harm.

Practice points that denote recommended best practice based on the clinical expertise of the GDG are also included. In addition, the GDG has offered practical guidance where it is felt that this may aid implementation. The implementation of recommendations 1-19 is supported by a dedicated EMEWS education programme (Section 2.6.5). All recommendations are of equal importance and should be implemented without preference or bias.

2.13 Conflict of interest declarations

A conflict of interest form was signed by all GDG members and reviewers, including those on the Working and Advisory Groups. Members of the GDG declared no conflicts of interest. The GDG was managed by the Co-Chairs to promote the highest professional standard in the development of this guideline.

2.14 Copyright and permissions

No copyrights or permissions were required to assist in the development of the EMEWS guideline.

3 Appendices

Only appendices 5, 6 and 11 are presented here as they are key to interpretation of the recommendations in this summary guideline.

Refer to the full guideline report for the remaining Appendices.

Appendix 1: EMEWS observation chart
Appendix 2: GDG Terms of reference
Appendix 3: Guideline development timeline
Appendix 4: Report of the consultation process
Appendix 7: Systematic review - Abstract
Appendix 8: Budget impact analysis
Appendix 9: Summary tables 1
Appendix 10: Resource implications of implementing EMEWS

Appendix 5: Tools to assist implementation and FAQs

Dartmouth Clinical Microsystem Academy ED Quality Improvement Methods and Tools

- ED Quality Improvement Coached Groups may develop improvement projects that support use of the Protocol e.g. improving communication within the ED team;
- Clinical Microsystem Improvement Tools:
- Fishbone Diagrams to analyse local barriers and solutions
- PDSA small tests of change
- Process mapping
- Simple surveys of patient and staff experience
- 5-S Lean approach to sorting work areas
- SDSA – creating protocols (playbooks) for standardised practice
- Safety Huddles.

Additional resources can be found on **www.emnow.ie**

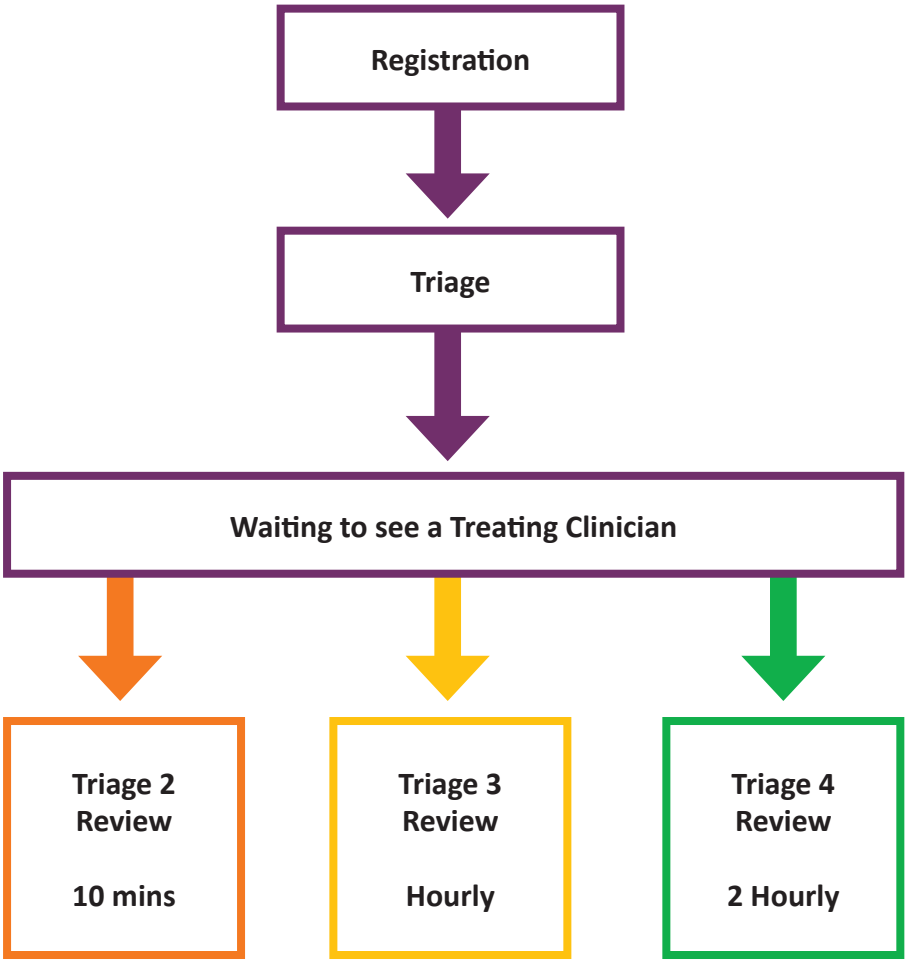
Key questions to consider when planning for implementation of EMEWS

1. Who is leading implementation of EMEWS in the hospital and what are their responsibilities?
2. Who are the leaders within the ED team – nursing, medical, administration?
3. What are the local aims for implementation?
4. Who will develop an initial plan?
5. What local infrastructure and other factors can be used to facilitate the implementation?
6. How will decisions regarding implementation be made?
7. What are the implications of EMEWS on staffing resources and deployment in the ED?
8. What additional infrastructure and equipment resources may be required?
9. What training resources are required to support its implementation?
10. How will communication regarding implementation of EMEWS be managed within the ED and within the hospital?
11. How will EMEWS be embedded in the daily work of the ED?
12. How will use of EMEWS be aligned with other systems including IMEWS, PEWS, NEWS and Pre-hospital systems (when developed)?
13. How will use of EMEWS be measured?
14. How will any unanticipated events associated with implementation of EMEWS be captured, reported and managed?

15. How will knowledge and information relating to EMEWS (e.g. local policies) be stored and shared to support EMEWS?
16. How will the ED keep informed on further national development and improvements with regard to the EMEWS?

Adapted from Massoud MR, Nielsen GA, Nolan K, Nolan T, Schull MW, Sevin C. A Framework for Spread: From Local Improvements to System-Wide Change. IHI Innovation Series white paper. Cambridge, Massachusetts: Institute for Healthcare Improvement; 2006.

Emergency Nursing Reviews Frequency Poster



The frequency of Emergency Nursing Reviews can be reduced following the recording of a minimum of 2 sets of vital signs in the Emergency Department.

All adjustments must be discussed with the Nurse-in-Charge

NATIONAL CLINICAL EFFECTIVENESS COMMITTEE

EMERGENCY MEDICINE

Patient-Specific Monitoring Plan

Patient Name …… **HRN……** **Plan No ……**

Vital signs recommended:

Vital Sign	Y/N	Frequency	Acceptable Range	Date	Time	Signature	MCRN/Pin
RR			≥ ≤				
SaO2			%				
HR			≥ ≤				
BP			≥ ≤				
ACVPU							
GCS			≥				
Temperature			≥ ≤				
Blood Sugar							
Other specify:							

Frequency options **Continuous Monitoring - 15mins - 30mins - 1hourly - 2hourly - 4hourly**

Additional notes on Monitoring Plan: *Document escalation events in event log*

Signature **MCRN/PIN** **Date:** **Time:** **hours:**

ISBAR

I Identify
S Situations
B Backgrounds
A Assessment
R Recommendation

NATIONAL CLINICAL EFFECTIVENESS COMMITTEE

EMERGENCY MEDICINE

Event Log

EVENT					
Date	Time	Trigger			
Action:			Nurse-in-Charge informed ***Y*** ***N***	Treating EM Doctor ***Y*** ***N***	
				Specialty Doctor ***Y*** ***N***	
				Senior EM Doctor ***Y*** ***N***	
			Signature and PIN		

EVENT					
Date	Time	Trigger			
Action:			Nurse-in-Charge informed ***Y*** ***N***	Treating EM Doctor ***Y*** ***N***	
				Specialty Doctor ***Y*** ***N***	
				Senior EM Doctor ***Y*** ***N***	
			Signature and PIN		

EVENT

Frequently Asked Questions for Emergency Department Staff

Why do we need EMEWS?

- A key aim of EMP is that patients should experience the same standard of care in an ED regardless of where in the country they access that care. EMEWS standardises the monitoring and clinical escalation in EDs so that all ED patients in the country benefit from the same approach to monitoring and escalation.
- EMEWS is designed to meet the HIQA Tallaght Report (2012) requirement for a 'system of physiological and triggered responses' across all EDs.
- EMEWS assists ED clinical staff in establishing appropriate and effective monitoring and escalation schedules for ED patients to optimise the quality and safety of their care.
- EMEWS offers a structured approach for vital sign monitoring that will increase patient safety and safety for both patients and staff, especially junior staff.

Why do we need a different chart for ED?

- Patients attending EDs have undifferentiated and undiagnosed conditions and are more likely than ward patients to be seriously ill and injured. This means that lower thresholds for escalation and more rapid responses are needed to ensure care is as safe as possible for ED patients.
- Recording of a GCS score is required for a significant number of ED patients.
- The parameter ranges for respiratory rate, heart rate and temperature needed to be broadened to reflect the greater ranges of physiological abnormality seen in ED patients.
- Having a chart that aligns with core ED practice, such as the Manchester Triage System (MTS), makes it more usable and safer in the ED setting.
- It was considered important to include core-hospital physiological monitoring.

Which patients does EMEWS apply to?

- All patients attending the ED aged 16yrs and over assigned triage category 2, 3 or 4 including those assigned to the waiting area unless they meet the exclusion criteria. Patients to whom the EMEWS does not apply include:
  - Patients assigned MTS Triage category 1 as they require resuscitation
  - Patients assigned MTS Triage category 3 or 4 presenting with non-life or limb threatening injuries/illness who require no or at most "over the counter" analgesia. These patients will be commenced on EMEWS if they subsequently require additional analgesia.
  - Patients assigned triage MTS Triage 5 priority as they have no pain and their complaint has been present for more than 1 week.

Does the Triage Nurse undertake the Post-triage Monitoring Nursing Reviews on patients in the waiting area?

- No, the Triage nurse is assigned to the assessment and prioritisation of new patients presenting and has a set timeframe in which to complete the assessment. Other nurses should undertake patient monitoring after triage.
- The monitoring of the patients in the waiting room places a new focus on the safety of patients in this clinical area. This is the first time that monitoring ED waiting room patients has been standardised. In many sites re-allocated or additional resources will be required to manage this workload. The tools for developing a business plan are included in the Emergency Nursing Workforce Planning Framework (2016).

Do all Post-triage Emergency Nursing Reviews include vital signs?

- No, for some patients the review is used to check if the patient requires analgesia, assistance with going to the bathroom or needs pressure area care.

Why are the first and last sets of pre-hospital vital signs transcribed?

- The pre-hospital vital signs show the patient's status on first contact with a healthcare provider and the last set show any response to treatment while in transit to the hospital. They also show the trend in a patient's physiological status that may assist with the early identification of the deteriorating patient. Preferably, the PHECC registered practitioner should transcribe the vital signs.

Do I need to continue with the frequency of emergency nursing reviews as defined by the triage priority?

- Following the 2nd (i.e. review at Triage and one other) Emergency Nursing Review the frequency of the reviews can be reduced if the patient is considered to be "stable" and at relatively low clinical risk for deterioration.
- It is recommended that the reduction in frequency should be discussed with the nurse in charge of the area - especially if you are a junior nurse.

What is the most frequent level of monitoring?

- MTS Triage 2 patients initially require monitoring at 10 minute intervals, which may appear difficult to achieve but patients who are assigned Priority 2 are at significant risk and should be assessed by a doctor within 10 minutes. Some patients in Triage Priority 2 require the prescription of analgesia or time-critical treatment such as a nebuliser, so following initial review by a doctor and the administration of the required medication they may be suitable to have the frequency of their reviews reduced to 30mins or 1 hour, as per a patient-specific monitoring plan determined by the treating doctor and nurse responsible for their care.

How do I decide at what frequency the nursing reviews should be reduced to?

- The guideline is that you reduce to the next frequency, i.e. 10mins to 30 mins (max hourly); hourly to 2 hourly; 2 hourly to 4 hourly.

What is the longest time allowed between nursing reviews?

- 4 hours. This is because patients have acute undifferentiated, undiagnosed conditions and require review at minimum every 4 hours.

How do I escalate care prior to review by Treating Clinician?

- Manage the patient's condition according to your scope of practice and competencies and inform senior staff as per the clinical escalation algorithms included in EMEWS. If in any doubt about a patient's condition escalate immediately to the most senior Nurse and/or Doctor in the ED.

How do I escalate care following review by Treating Clinician?

- Inform the treating clinician and/or the Nurse in Charge and Doctor in the ED, as per EMEWS.

Can we amend the chart locally?

- The free text sections on Pages 1 and 4 and the "other documents in use for this patient" can be customised to include local documentation but the essential components of the chart must be preserved. The chart can be printed in A4 or A3 format.

How should I transfer patient monitoring to a NEWS chart?

- If a patient is being admitted a NEWS chart should be commenced with the final 2 sets of ED vital signs recorded transcribed onto the new chart.

When do I use an IMEWS chart?

- For all pregnant women presenting to ED regardless of their presenting complaint.
- The recommended way to manage this is to clip the IMEWS observation chart over Page 2.
- The IMEWS does not include GCS scoring which your patient might require.

What percentage of staff should be trained prior to "go live"?

- It is recommended that a minimum of 75% of clinical staff have been trained prior to "go live".

Who are the trainers?

- Trainers will be Emergency Nursing Clinical Facilitators, ED staff nurses and clinical nurse managers and Resuscitation Training Officers who have undertaken the train-the-trainer Programme. There will be several trainers in each ED.
- It is advisable that one trainer is also a "Compass" trainer.

Is on-going training required?

- Regular updates are recommended during the first few months followed by annual updates.

Should staff undertake the "Compass" training programme?

- Not essential for using the EMEWS, but it is a useful refresher for staff.

Is there an audit tool?

- Yes, there is an audit tool to assist sites with assessing compliance and identifying areas that require additional training which will be available to ED teams.

Appendix 6: Audit tool and guidance

NATIONAL CLINICAL EFFECTIVENESS COMMITTEE

EMERGENCY MEDICINE

Guidance for using the EMEWS Audit Tool

Frequency of audits
Following initial roll-out of EMEWS an audit at four weeks and twelve weeks is recommended, if compliance issues materialise then further charts should be reviewed. When EMEWS has become embedded into clinical practice the frequency of the audit can be reduced to a minimum of biannually.

Number of charts to be reviewed
The recommended sample size is one-third of ED patient charts. One approach that could be taken during roll-out would be to review one-third of charts on all shifts, discussing any issues that arose with the staff at the shift change/huddle or with individual members of staff. When EMEWS is established a minimum of one-third of EMEWS charts should be reviewed twice a year. Patient charts from triage categories 2, 3 & 4 should be included in all audits.

Compliance
100% in all aspects of the audit.

Non-compliance
If the non-compliance is with the same aspects of EMEWS or a pattern appears over successive audits an action plan should be formulated to address the deficits.

Suspending the of Post-triage Emergency Nursing Review process in ED
If Post-triage Emergency Nursing Review process is suspended in a particular ED (i.e. due to staff shortages) a National Incident Reporting Form (NIRF) should be completed. It is the policy of the Health Service Executive (HSE) that all safety incidents are identified, reported and investigated. Safety Incidents include serious reportable events (SRE). Incidents should be disclosed in accordance with the guidance provided in the HSE/State Claims Agency (SCA) Open Disclosure Guideline.

All incidents should be monitored at departmental level and reviewed at the ED Clinical Operational group meetings and action plans formulated when the suspension stems from recurrent themes, i.e. inadequate staffing levels, competing needs of emergency patients and in-patients.

All incidents/near misses should be entered onto the National Incident Management System (NIMS).

Audit Tool

	Pt 1	Pt 2	Pt 3	Pt 4	Pt 5	Pt 6	Pt 7	Pt 8	Pt 9	Pt 10
Observation Chart	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No
Patient Name & Healthcare Record Number (HRN) on all pages?										
All free text entries on pages 1 & 4 are:										
Dated										
Timed										
Signed										
PIN										
Is the frequency of vital signs recorded?										
Is a GCS recorded (if altered conscious level)?										
Excluding triage, are any vital signs in a "Trigger zones"?										
If, vital signs are recorded in "trigger zone" has an event log been completed?										

Patient Specific Monitoring Plan										
Patient Name & Healthcare Record Number (HRN) present?										
Is the entry										
Dated										
Timed										
Signed										
PIN/MCRN										

Event Log										
Patient Name & Healthcare Record Number (HRN) present?										
Is the entry:										
Dated										
Timed										
Signed										
PIN/MCRN										
Is the reason for escalation clearly identifiable?										
Is the person escalating the case clearly identifiable?										
Is the person who was informed clearly identifiable?										
Was the escalation pre or post Treating Clinician review?										
Triage Category										
Frequency of vital signs/Emergency Nursing Reviews										
Was the escalation timely?										
Was an action plan completed following review?										
Does the case require a formal clinical review?										

Appendix 11: Glossary of terms and abbreviations

Glossary of Terms

Adult Only Emergency Department (ED)
An ED that treats patients aged 16 years and over

Paediatric Emergency Department (PED)
An ED which treats patients under the age of 16 years

Clinical Escalation
Describes a process whereby a change in the patient's physiological status or a clinical concern that need not be specified prompts a team response such that a clinician with appropriate competencies and diagnostic skills attends the patient in an appropriate time-frame (usually immediately in the ED setting) and manages the physiological problem or clinical cause for concern

Guideline Development Group (GDG)
Is the Emergency Medicine Early Warning System for Adults Guideline Development Group

HIQA Tallaght Report
Report of the investigation into the Quality, Safety and Governance of the care provided by the Adelaide and Meath Hospital, Dublin incorporating the National Children's Hospital (AMNCH) for patients who require Acute Admission, Health Information and Quality Authority, May 2012

Mixed Emergency Department (ED)
An ED that treats both Adults and Children

Nurse-in-Charge
The Nurse-in-Charge can be managing an area/zone of the Emergency Department or the entire department depending on its size and/or foot-print

Patient-specific Monitoring Plan
On-going monitoring plan developed following review by a Treating Clinician

Post-triage Emergency Nursing Reviews
Review undertaken during the period from triage to time seen by a Treating Clinician

Senior Decision Maker
A medical professional of registrar grade or higher

Senior Nurse
A nurse who may be a Senior Staff Nurse, Shift Leader, CNM or ADON/DNM for example

Treating Clinician
An Emergency Medicine doctor or an Advanced Nurse Practitioner (ANP)

Abbreviations

ADON	Assistant Director of Nursing (DoN)
BIA	Budget Impact Analysis
DON	Director of Nursing
ED	Emergency Department
EM	Emergency Medicine
EMEWS	Emergency Medicine Early Warning System for Adult Patients
EMP	National Emergency Medicine Programme
ENIG	Emergency Nursing Interest Group
GDAG	Guideline Development Advisory Group
GDWG	Guideline Development Working Group
HIQA	Health Information & Quality Authority
HSE	Health Service Executive
HSCP	Health and Social Care Professionals
IAEM	Irish Association for Emergency Medicine
ICEMT	Irish Committee for Emergency Medicine Training
IMEWS	Irish Maternity Early Warning System
ISBAR	Communication Tool – Identify, Situation, Background, Assessment, Recommendation
ISBAR$_3$	Communication Tool – Identify, Situation, Background, Assessment, Recommendation, Read-Back, Risk
NCEC	National Clinical Effectiveness Committee
NEWS	National Early Warning Score (NEWS)
PEWS	Paediatric Early Warning System
QID	Quality Improvement Division
RCEM	Royal College of Emergency Medicine
SIGN	Scottish Intercollegiate Guidelines Network

An Roinn Sláinte
Department of Health

The Department of Health, Block 1, Miesian Plaza,
50-58 Lower Baggot Street, Dublin 2, D02 XW14, Ireland
Tel: +353 1 6354000 • Fax: +353 1 6354001 • www.health.gov.ie