West of England Academic Health Science Network

Acknowledgement

This toolkit has been developed based on resources produced by the Royal College of Physicians in collaboration with the Royal College of Nursing and the National Outreach Forum, building on recommendations made by NICE (2007) and the Department of Health and Modernisation Agency in 2003. The College's materials were used as a template for the development of vital signs charts in acute trusts in the South West of England.

Materials within this implementation pack have been developed by the West of England Academic Health Science Network. Thanks are due to a number of individuals who have contributed directly and indirectly.

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Introduction

Aim

This toolkit supports the implementation of the National Early Warning Score (NEWS) in a variety of health care settings and gives advice and guidance on achieving a successful implementation in any health care setting.

This toolkit also provides information and links to resources on change management methods. More support in improvement techniques is available from the West of England Academic Health Science Network website at http://www.weahsn.net/what-we-do/west-of-england-academy/improvement-resources-and-tools/the-improvement-journey/steps-in-the-improvement-journey/

Who this document is for

This guide is for managers, commissioners, clinical staff and trainers, from primary through secondary to tertiary care. It should be useful for GPs, district and community nurses, staff working in nursing homes or ambulance services, and staff working in the full range of hospital settings.

NEWS has a use in any environment where vital signs are taken and recorded.

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Supporting tools and templates are available online to support this toolkit at http://www.weahsn.net/what-we-do/enhancing-patient-safety/the-deteriorating-patient/

About the West of England Academic Health Science Network

The West of England Academic Health Science Network (AHSN) is delivering positive healthcare outcomes locally and nationally by driving the development and adoption of new innovations and making a meaningful contribution to the economy.

We are one of 15 AHSNs across England, established by NHS England in 2013 to spread innovation at pace and scale.

As the only bodies that connect NHS and academic organisations, the third sector and industry, we are catalysts that create the right conditions to facilitate change across whole health and social care economies, with a clear focus on improving outcomes for patients.

Find out more at our website http://www.weahsn.net/

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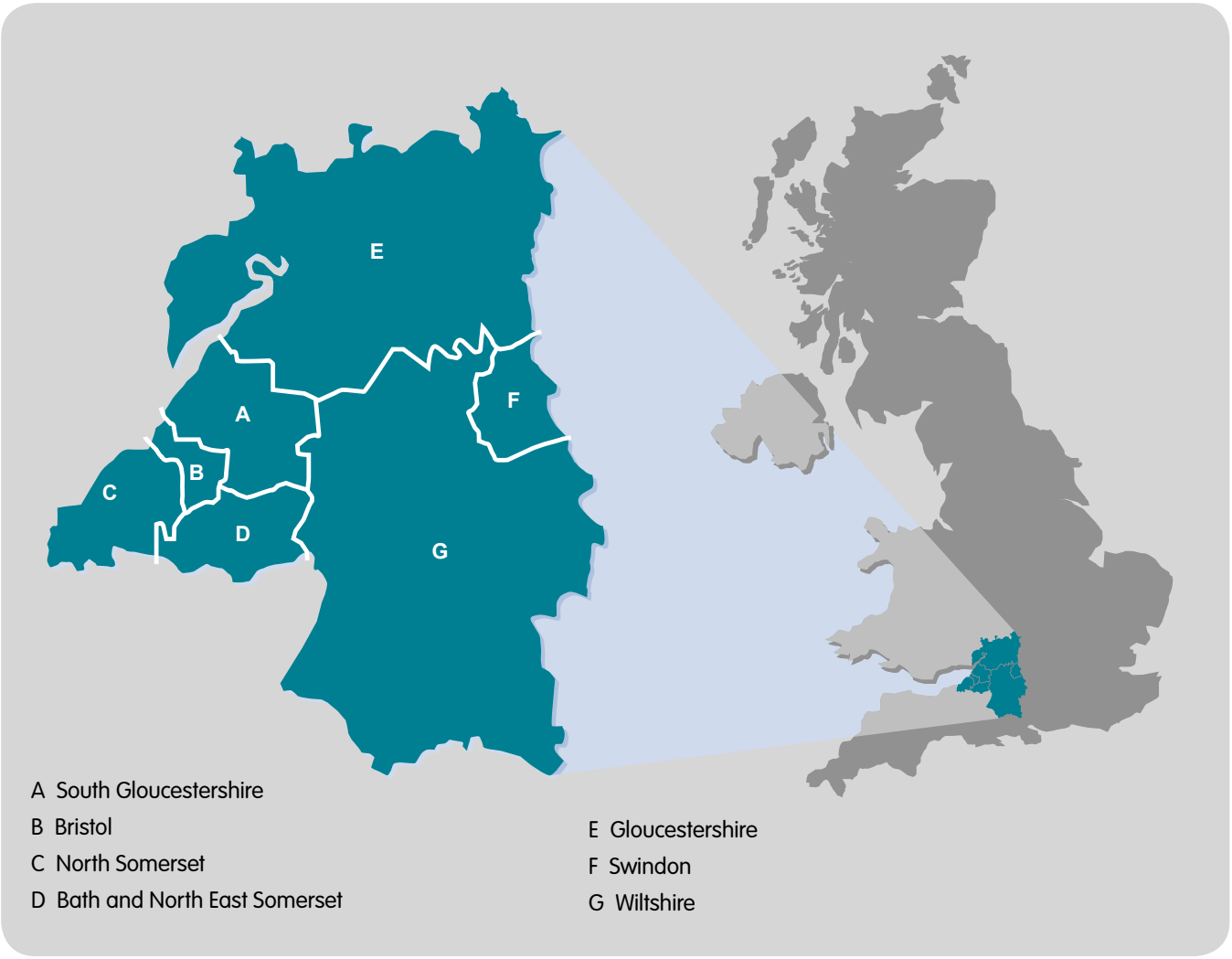


A South Gloucestershire
B Bristol
C North Somerset
D Bath and North East Somerset

E Gloucestershire
F Swindon
G Wiltshire

About the National Early Warning Score

NEWS has been produced as a way of making sure that where a patient is at risk of acute deterioration, then vital signs are recorded at a frequency suitable to the clinical scenario, and that escalation of treatment is timely and appropriate where it is needed. Since then it has become promoted as a communication device providing a summary of a patient's condition and a prompt for intervention, escalation of care or referral as required.

Calculating NEWS

Vital signs are recorded as a way of finding out if there has been a positive response to treatment, or whether a patient needs a change to an ongoing treatment plan. Whilst it is recognised that serious complications may happen to patients without any warning, in the majority of situations there are warning signs that if acted on are likely to be associated with better outcomes.

NEWS is an inherently simple device but its implementation may involve considerable complexity depending on the organisation in which it is being used. There are two areas that require concentrated efforts; these are ensuring that NEWS is recorded accurately, and ensuring that NEW Scores are well linked to escalation of treatment where this is required. There are significant training implications in any NEWS implementation.

National Early Warning Score (NEWS)*

PHYSIOLOGICAL PARAMETERS	3	2	1	0	1	2	3
Respiration Rate	≤8		9 - 11	12 - 20		21 - 24	≥25
Oxygen Saturations	≤91	92 - 93	94 - 95	≥96			
Any Supplemental Oxygen		Yes		No			
Temperature	≤35.0		35.1 - 36.0	36.1 - 38.0	38.1 - 39.0	≥39.1	
Systolic BP	≤90	91 - 100	101 - 110	111 - 219			≥220
Heart Rate	≤40		41 - 50	51 - 90	91 - 110	111 - 130	≥131
Level of Consciousness				A			V, P, or U

The Royal College of Physicians (RCP) has led the development of the National Early Warning Score which advocated standardising the use of a NEWS system across the NHS in order to drive the 'step change' required in the assessment and response to acute illness.

Find out more at https://www.rcplondon.ac.uk/projects/outputs/national-early-warning-score-news

About the National Early Warning Score

NEWS provides the basis for succinct and efficient communication about the physiological state of patients where there is transfer of information between different professional groups or between different service providers.

In combination with communication tools like SBAR (Situation Background Assessment Recommendation), it is possible to communicate the right information about patients in a succinct format that helps to assure a quality communication.

We have developed a toolkit to support organisations to implement SBAR for human factors in their team. This is available online at http://www.weahsn.net/what-we-do/enhancing-patient-safety/collaborating-in-the-community/human-factors/

What is SBAR?

SBAR is a tool for communication and stands for:

- **Situation**. Patient/ client's details, identify reason for this communication, describe your concern.
- **Background**. Relating to the patient/ client/ service user/ resident significant history; this may include medications, investigations, treatments.
- **Assessment**. What is your assessment of the patient/ client or situation. This can include clinical impressions/ concerns, vital signs if relevant.
- **Recommendation**. Be specific, explain what you need, make recommendations, clarify expectations and confirm actions to be taken.

About the National Early Warning Score

What NEWS is for

NEWS is a scoring grid for physiology where six physiological parameters that make up routine vital signs recording of an adult patient, are scored along with an additional score for when a patient is receiving supplemental oxygen. The NEWScore is calculated from totals for the seven elements that are recorded. If a NEWScore is high then the greater a patient's physiology varies from normal. The greater the variation from normal then the worse their physiological condition.

NEWS is for use with adults, but not if more than 20 weeks pregnant. It is not suitable for children or neonates and is not used within critical care or operating theatres.

NEWS has a prescriptive clinical response about who should be contacted if NEWS increases over different thresholds, as well as prescription for the minimum frequency at which physiological observations should be recorded. The escalation response is based on a two-tier escalation depending on the magnitude of the NEW Score.

A very high score requires a senior review (or emergency input); a less high score requires a more junior response.

NEWS has a single parameter element and an aggregate scoring system. This means that a single vital sign may be reason enough to seek a review; or small changes in two or more vital signs accumulate in a score to trigger the need for review.

In different health care settings and in different acute hospitals, the detail of the escalation responses will be influenced by local service configuration.

Implementing NEWS may provide an opportunity to assess the appropriateness of some services and may act as a lever for service change to enhance patient safety.

What NEWS does

- It provides a baseline measure of an individual's physiological functioning (from a gathered sequence of vital signs recordings);
- It measures the effectiveness of some treatment interventions when there is a change in NEWS;
- It provides a risk assessment of an individual based on recorded observations;
- It can assist in timely escalation of clinical response in the event of an acute physiological deterioration when there is an increase in NEWS.

Benefits of NEWS

1. Improved patient safety by accurate recording and auditing of vital signs measurements
2. Saving of training time where staff work in many different organisations: (essentially) one system to be learned than a previous large variety of different EWS systems
3. NEWS becomes part of the language used in communication between different health care professionals about patients
4. Formalisation and clarity of escalation responses for patients who deteriorate in physiological condition.
5. Surveillance of baseline physiology to detect departure from normal physiology; collection of trend information allows monitoring of variance to assure appropriate changes in care where required.
6. Compliance with national recommendations for acute illness management; national recommendations tend to be based on better evidence than can be obtained locally.

About the National Early Warning Score

What NEWS is not for

NEWS is not a panacea. It is a simple and fairly blunt device that provides decision support to clinical staff assessing patients. It is **decision support tool** and not decision-replacement. Although it has been developed with specificity and sensitivity in mind, it cannot be a replacement for clinical judgment. It does however provide a level of information that is clinically useful in an abbreviated and succinct format that allows appropriate discussion about patient management.

It is not a comprehensive description of a patient. For example NEWS does not include a measure for urine output which is regarded as an easy to measure of organ perfusion in acute illness. It includes a component score for a patient receiving supplemental oxygen, but does not provide clinical detail about how that oxygen is being delivered. Patients receiving a lot of oxygen are generally a lot sicker than patients receiving much less. The distinction between receiving some extra oxygen or no supplemental oxygen is all that is scored in NEWS.

For a full physiological profile of a patient information is required about vital signs (including NEWS); manner of oxygen delivery and oxygen requirement to maintain safe and appropriate oxygenation; and accurate fluid balance -- knowledge of input and output to assure adequate hydration and good organ perfusion.

In most instances NEWS (and its change over time) provides a useful statement of an individual's vital signs

NEWS is a generic tool, and may require other assessments such as Glasgow Coma Score or Forced Vital Capacity or Peak Flow. These other measures supplement and enhance NEWS.

It may require that NEWS is measured alongside a manual handling or transfer risk assessment to provide more appropriate information. This does not invalidate the implementation of NEWS even in a tertiary care setting, but NEWS often needs to exist alongside other clinical information and protocols.

NEWS is a part of the story and not the whole story.

As part of this toolkit you can download Frequently Asked Questions about NEWS and key messages to support implementation of NEWS.

Sensitivity and Specificity

Sensitivity and Specificity are two important aspects of the reliability of a test.

- Sensitivity measures the proportion of actual positives which are correctly identified as such.
- Specificity measures the proportion of actual negatives that are correctly identified as negative.

A perfect measure would be 100% sensitive and 100% specific.

NEWS related to need for escalation of treatment offers high sensitivity and low specificity.

A useful article to explain the difference between sensitivity and specificity can be found at: http://ceaccp.oxfordjournals.org/content/8/6/221.full.pdf+html

NEWS, Sepsis and Acute Kidney Injury

Any strategy to introduce NEWS should include AKI and Sepsis, bound together by consideration of human factors. SNOOP and SHOUT are useful acronyms.

Sepsis is a major cause of avoidable death in hospital and any implementation of NEWS should be linked to improved surveillance for it.

Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to infection.

The role of NEWS in sepsis is to prioritise where patients have become unwell with sepsis for urgent treatment. For a patient to score highly in NEWS though, the patient may well already have severe sepsis or even organ dysfunction or failure. All implementations of NEWS should include reference to and be associated with treatment of Sepsis and Acute Kidney injury

A key message with NEWS is that a patient may require intervention to treat sepsis even with a relatively low NEWScore, but any septic patient with a NEWScore over threshold requires prompt treatment and intervention.

The UK Sepsis Trust have published very helpful clinical toolkits available at http://sepsistrust.org/

Acute Kidney Injury

NEWS is not a fully comprehensive descriptor of an individual's physiology. Along with a drive to improve management of sepsis, there is a drive that should be associated with avoiding acute kidney injury (AKI).

SHOUT

- **S** **Sepsis**
- **H** **Hypovolaemia**
- **O** **Obstruction**
- **U** **Urine Analysis**
- **T** **Toxins**

Signs of Sepsis

Does the patient look ill?

Are they triggering an early warning score.

Are there signs of infection?

Chemotherapy in last 6 weeks?

This could be sepsis.

SNOOP

- **S** **SEPSIS**
- **N** **NEWS**
- **O** **OXYGENATION**
- **O** **OUTPUT OF URINE**
- **P** **PAIN**

Complete the Sepsis 6 within 1 hour

Give O2 to keep sats above 94%
Take blood cultures
Give IV antibiotics
Give a fluid challenge
Measure lactate
Measure urine output

Form your team

Your NEWS steering group may be incorporated as part of a deteriorating patient steering group, or established as NEWS specific depending on the organisation.

Identify project team members

- Executive / Board sponsor
- A project leader, (with quality and change management, and leadership skills).
- Risk manager
- Representation of non-medical clinical groups involved, and likely to consist of nurse(s), drawn from clinical practice and management; physiotherapists (AHPs); paramedic(s), GP practice lead, community (district) nurses; rehabilitation team; community integrated care team staff
- Medical representation: senior clinician (consultant) from surgery, medicine, emergency care and critical care; junior doctor; GP(s);
- Education lead
- Sepsis and AKI leads
- Audit expert
- Secretary (note-taker)

Others may be required depending on the stage of implementation who can be drawn in as required. This might include people with an IT background, communications department staff (for publicity).

It will be important to establish a steering group to oversee the implementation process. This group will need to be at least partly representative of all of the key groups influenced by the change. The group is largely operational in focus with a key emphasis on leadership and delivery of the project of NEWS implementation. Terms of reference and group membership will be dependent of the organisation that is being served.

Meeting frequency of the steering group will depend on the stage of the project, but will likely to be around two-monthly , with more or less frequency depending on the stage of the project.

The reporting function of the group will be dependent on the clinical governance structure of the organisation. The steering group will require an executive sponsor, the role of whom will change depending on the precise details of the project (e.g. if NEWS implementation forms part of a CQUIN).

The leader must be appropriately supported for a change to be successful.

Terms of reference will be dependent on the organisation being served, but clear accountability and reporting arrangements must be agreed and established.

NEWS adoption involves behaviour change. Change from staff who record vital signs; change from staff who respond to elevated NEW Scores.

To achieve implementation, the context of the organisation needs to be understood. Drawing up a commitment plan is a useful approach as it allows a description of the degree of movement that needs to be obtained from different staff where there may be negativity, or even obstruction to a change. A commitment plan can be focussed on individuals or groups of staff or departments. It allows a plan to describe the behaviour changes that are needed for a successful implementation. Not everyone has to be necessarily in favour of a change but opposition may need to be managed depending on where it is coming from.

Role descriptions

Each organisation will need to appoint individuals to specific roles within each project team. It is a strongly suggested that these roles are fulfilled by staff already in post working, not staff brought in for the specific functions/roles outlined in this Toolkit. In order to release people to complete the roles specified in this Toolkits, a commitment must be given by the Trust to backfill the individuals undertaken them.

Lead Nurse

Providing day to day nursing leadership to the Project

Agree quality metrics for measurement (clinical and operational) to assess impact of project with Lead Consultant

Educating staff on the project aims, methodology and anticipated patient safety impact, by a full range of communication methods and briefing sessions.

Delivering appropriate training and staff briefing sessions.

Champions of the project on the shop floor

Ensuring regular feedback results to all staff groups

Presenting information in a variety of formats

Coordinate regular meetings with Project Team to discuss project progression and action plan/delegation of responsibilities

Target specific staff groups according to their involvement in the project (admin staff, clinical site managers)

Liaise with trust data analysts to present data effectively and professionally

Write and present reports as required

Lead Consultant

Providing day to day medical leadership to the Project

Agree quality metrics for measurement (clinical and operational) to assess impact of project with Lead Nurse

Provide education support in all aspects of the project, but with specific emphasis on medical staff at all levels and consultant colleagues.

Champions of the project on the shop floor

Presenting project information and results in a variety of formats

Target specific staff groups according to their involvement in the project (e.g. CSMs)

Write and present reports as required

Audit Coordination Nurse / Data Analyst

Collecting and collating agreed metrics

Review retrospective data to enable comparison of current results

Managing supporting staff involved in auditing

Liaise with trust data analysts to present data effectively and professionally

Contribute and present data results to project group and wider audience

Other key stakeholders

Senior Medical & Nursing Team – need to entrust commitment to project and be a champion on shop floor

Data Analyst needs to be on board and prepared to assist project with data production and presentation

Receptionist/Patient Flow Coordinators needs to be on board and understand their contribution as per local procedures

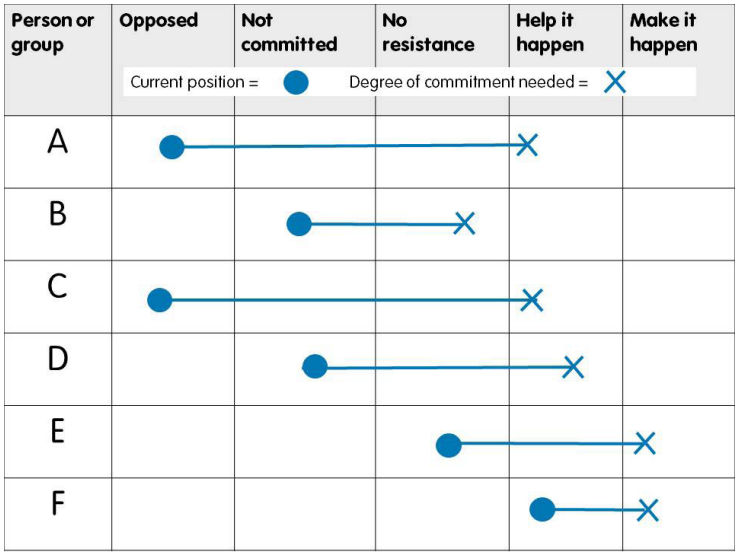
Identify barriers to change

The steering group will need to establish where barriers to implementation exist and discuss these at steering group meetings.

Commitment planning is a useful way of articulating where barriers exist, and prompting where actions may be required to manipulate barriers. See example below.

Some barriers can be avoided by the way that the steering group is established and because of the skills of the membership. Others are external to the group.

The list provided is not exhaustive and depends on the context of the organisation in which NEWS is being implemented.



Project related

- Lack of leadership support
- Weak sponsorship
- Lack of accountability
- Lack of consensus
- Lack of control plan / measures

Resource related

- Competing priorities
- Time pressure
- Work pressure / overloaded workforce
- Shortage of internal resources
- Financial cost

Staff related

- No perceived benefit from implementation
- No perceived relevance from change
- Staff fear of change
- Resistance to change
- Motivation and engagement

Organisation related

- Unanticipated events
- Cultural change
- Lack of communication

Carry out a gap analysis

Gap analysis is what it implies. It involves comparison between current state and future or desired state. The nature of the gap informs the process by which an implementation plan can be developed.

It is an essential part of the planning process, and requires a high level of thoroughness. If the gap is small the action plan is unlikely to be that complicated. If the gap is large it may point to key factors that must be considered in detail for a successful implementation plan.

Case study 1

The need for thoroughness in gap analysis is illustrated by the example of an implementation in an acute trust involving replacement of an existing pragmatic EWS with NEWS.

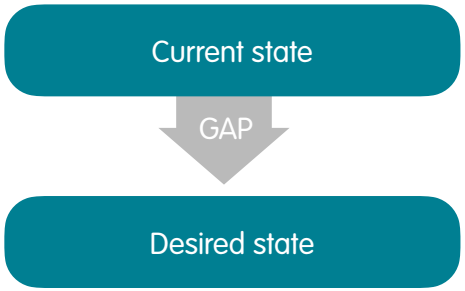
Because NEWS was far more sensitive than the existing EWS, there was an early perceived increase in workload. This had implications, particularly for training.

Gap analysis in that instance involved a simple data collection exercise to measure the increased escalation activity that came from the increased sensitivity of NEWS.

NEWS was identifying essentially the same patients, but sooner. Early increases in activity were partly due to decisions about patient management not being made on routine ward rounds. Had that been done an estimated 20-30% reduction in actual activity could have been achieved.

Case study 2

At another site where a critical care outreach team was available data were collected on 100 patients and a direct comparison between pragmatic EWS and NEWS. In that instance the two systems were very similar in the activity they would initiate through escalation calls.



Action plan

Create an action plan based on your analysis of the key factors for change

Agree your measures

In order to implement NEWS in a sustainable way in your organisation, and to be able to measure the impact of this intervention, we recommend a structured Quality Improvement framework for implementation.

Quality Improvement science is the application of a systematic approach using specific methods and techniques in order to deliver measurable improvements in quality, care and safety.

The processes we describe can be adapted to meet the needs of your staff, service users and organisational context. Our approach uses the methodology developed by the Institute of Health called the **IHI Model of Improvement.**

You can find out more about the Model for improvement through our **Improvement Journey at** http://www.weahsn.net/what-we-do/west-of-england-academy/improvement-resources-and-tools/the-improvement-journey/steps-in-the-improvement-journey/

For an introduction to PDSA cycles watch this video https://youtu.be/xzAp6ZV5ml4

The IHI Model for Improvement

There are three questions to ask when developing implementation projects shown to the right.

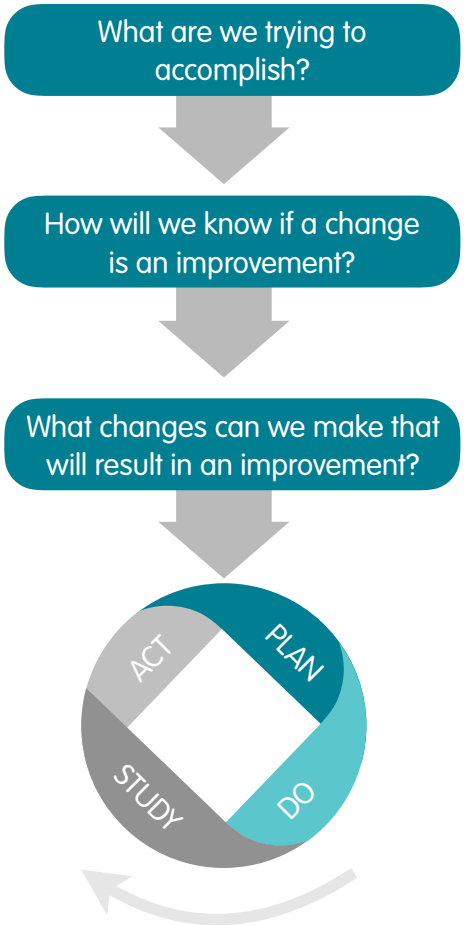
These are then followed by rapid cycle improvement using PDSA.

Plan, Do, Study, Act is an effective method that helps teams plan the actions for their model, test it on a small scale, and review before deciding how to continue.

Using PDSA cycles are a fantastic way of taking ideas, trying them in practice, learning what works, and what doesn't to help you achieve success.

You can then broaden the scale of the test, or adjust your ideas through more than one PDSA cycle — it make take a few before the idea starts to work reliably.

For a fun way to introduce a team to quality improvement, check out this blog post http://www.weahsn.net/2016/01/anyone-for-tennis/



Different types of measures

There are different types of measures:

- **Process measures**, e.g. the number of sessions delivered each month, number of staff trained in each session, number of public contributors involved in training sessions.
- **Outcome measures**, e.g. staff attitude survey of perception of communication within the team and safety attitudes, and confidence with using SBAR before and after the intervention
- **Balancing measures**, e.g. number of 999 call outs from residential homes before and after training delivered, staff sickness and turnover rates.

What can you measure?

We can **count** something, e.g. the number of patients who have diabetes in a given population, or the number of serious adverse events in a given time period.

We can use **ratios** which consider of two numbers, a numerator and a denominator. Sometimes this number is expressed as a **percentage**. For example if there are 5 adverse events each year in a 250 population, that is 0.02 adverse events per person (ratio) or a 2% adverse event rate (percentage).

Reasons for measuring:

- Measurement for **judgement**: where measures are used to judge us against performance targets, other Trusts, etc. Improvement is not about judgement, however, you can use measures to judge and manage your own progress
- Measurement for **diagnosis**: where data is gathered to understand the process, to see if there is a problem and how big it is. This is a useful technique, especially early in your work, for example, to really understand the demand and capacity at a bottleneck in the process
- Measurement for **improvement**: where a few specific measures, linked to the your objectives and aims, demonstrate whether the changes are making improvements
- Measurement for **sustainability**: to ensure the changes and the improved outcomes are maintained and are part of everyday practice. These are long term measures linked to organisational aims
- Measurement for **spread**: specific measures to demonstrate the extent to which learning and change principles for improvement have been adopted.

Run charts

A run chart is a tool for improvement which shows how your project is going.

To show that things have improved you need to show the things that have changed, and that the change is not a one off. You must consider whether the change has been sustained. Run or control charts allow you to see if this has happened.

For more information on run charts visit http://www.weahsn.net/what-we-do/west-of-england-academy/improvement-resources-and-tools/the-improvement-journey/steps-in-the-improvement-journey/step-4-test-and-measure-improvement/run-charts/

Measuring the accuracy of NEWS

There are a range of ways in which measurement of accuracy of NEWS can be accomplished. Careful consideration needs to be given to who does the measuring. The options are self audit; audit by "buddy"; audit by someone external to the department but within the organisation or audit by someone external to the department and the organisation. There are advantages and disadvantages to all. External audit is resource intensive and unlikely to be possible, although an audit from someone within the organisation but not the department is the more affordable option. The advantage of an external person is that they can be trained to a consistent standard and are unlikely to be responsive to bias compared to a self audit approach.

With any sort of measurement audit the idea of keeping it simple is a good one, and there may be opportunities to combine data collection with existing audits or have it as a part of traffic light or safety thermometer processes.

In the South West there has been a very successful safety project organised through the IHI. Where this has been the case a certain maturity of data collection and processing to support NEWS may be relatively easy to develop, building on existing processes.

Data collection relating to news accuracy using run charts provides a good reporting system.

It is worth noting that obtaining an acceptable level of accuracy may not be achieved immediately, and patience and detailed audit by department is required.

Measuring Appropriate Escalation

This area of measurement presents an immense challenge and is associated with the way in which an organisation works.

NEWS is designed to provide a score which is associated with an escalation response; the higher the score, the more urgent the escalation. In a process where a transfer is influenced by NEWS measurement is relatively easy and data are likely to be easily available. Where it is possible to demonstrate an "always" result with high NEWS always leading to an appropriate response, infrequent audit is required. Where this is not the case frequent audit is required.

In an acute trust measurement is likely to be harder, where most bleep systems in use remain fairly unsophisticated. If bleep referrals are (preferably automatically) associated with data collection, as may be the case with some Out of Hours / Hospital at Night processes, then measurement may be easier.

Where data are lacking it may be possible to use a Global Trigger Tool approach where selected notes are analysed against a standard template of questions. If possible the notes selection process should filter to obtain patients who have had elevated NEW Scores during their stay.

Proxy measures such as incident reporting may provide some useful information to support information about escalation. This source is generally quite limited as reporting of NEWS related incidents plus actual are not likely to be close numerically. Serious untoward incidents reporting severe system failures may help with cultural change and improvement over time, but would require consistent reporting. Also incidents reported as relating to NEWS may have different root cause.

Using a reduction in resuscitation team or emergency calls as a proxy measure for failed processes may be useful, but is confounded by the fact that team calls are more influenced by appropriate placement of Do Not Attempt Cardio-Pulmonary Resuscitation (DNACPR) orders than anything else. If resources allow, every resuscitation team or emergency team call should be subjected to a serious untoward incident reporting process, particularly given that premonitory signs of acute deterioration before cardiac arrest are common. Routing review of National Cardiac Arrest Data (NCAA) in the context of NEWS is recommended.

Although it requires registration the Institute of Healthcare Improvement provides a global trigger tool that is useful, particularly if used with patient records where high NEW Scores are known to have been recorded.

A case study: Royal United Hospitals Bath NHS Foundation Trust

The RUH Bath NHS Foundation Trust implemented NEWS in 2014. The trust had an established critical care outreach team (CCOT) which provided the cascade training to achieve a critical mass of staff to support a safe implementation.

Achieving NEWS accuracy is challenging, because there are some inherent complexities in its use and because of the influence of human factors. In accuracy is more likely the higher the NEWS – in other words at a time when its accuracy is most important.

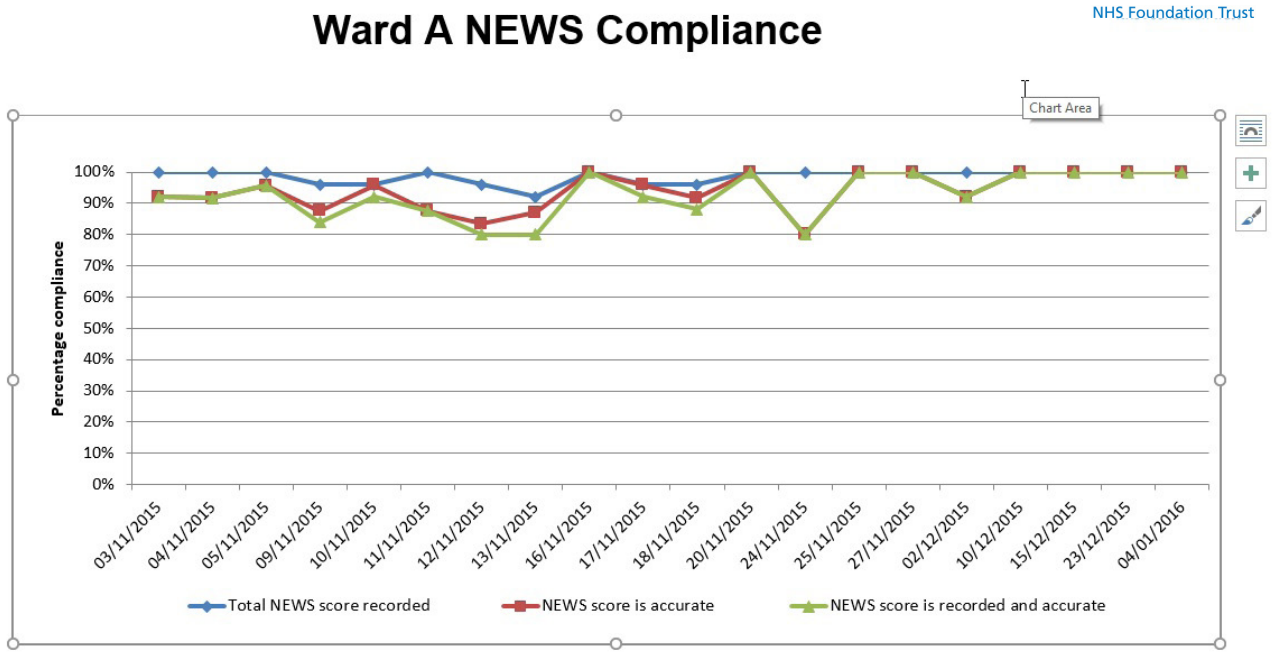
Measurement of NEWS accuracy used auditors external to departments to ensure accurate results. Accuracy came in at around 86%. As progress towards instillation of the system in the trust continued, a robust approach towards improving accuracy has been taken.

The key elements of this were:

- Formalised approach to cascade training with objectives and measurement of training built in
- Continued audit by external auditors until high accuracy achieved
- Shared and detailed analysis of training delivered by cascade trainers in wards
- Targeted action dependent on that analysis

Contact Anne Plaskitt, Senior Nurse Quality Improvement, Royal United Hospitals NHS Trust

Royal United Hospitals Bath NHS
NHS Foundation Trust



A case study: North Bristol NHS Trust

North Bristol NHS Trust implemented NEWS in collaboration with University Hospitals Bristol NHS Foundation Trust in December 2015.

Audit of NEWS accuracy was a relatively simple modification of existing well established audits of documentation. Measurement of compliance with referral was less easy as a number of different referral processes exist throughout the trust.

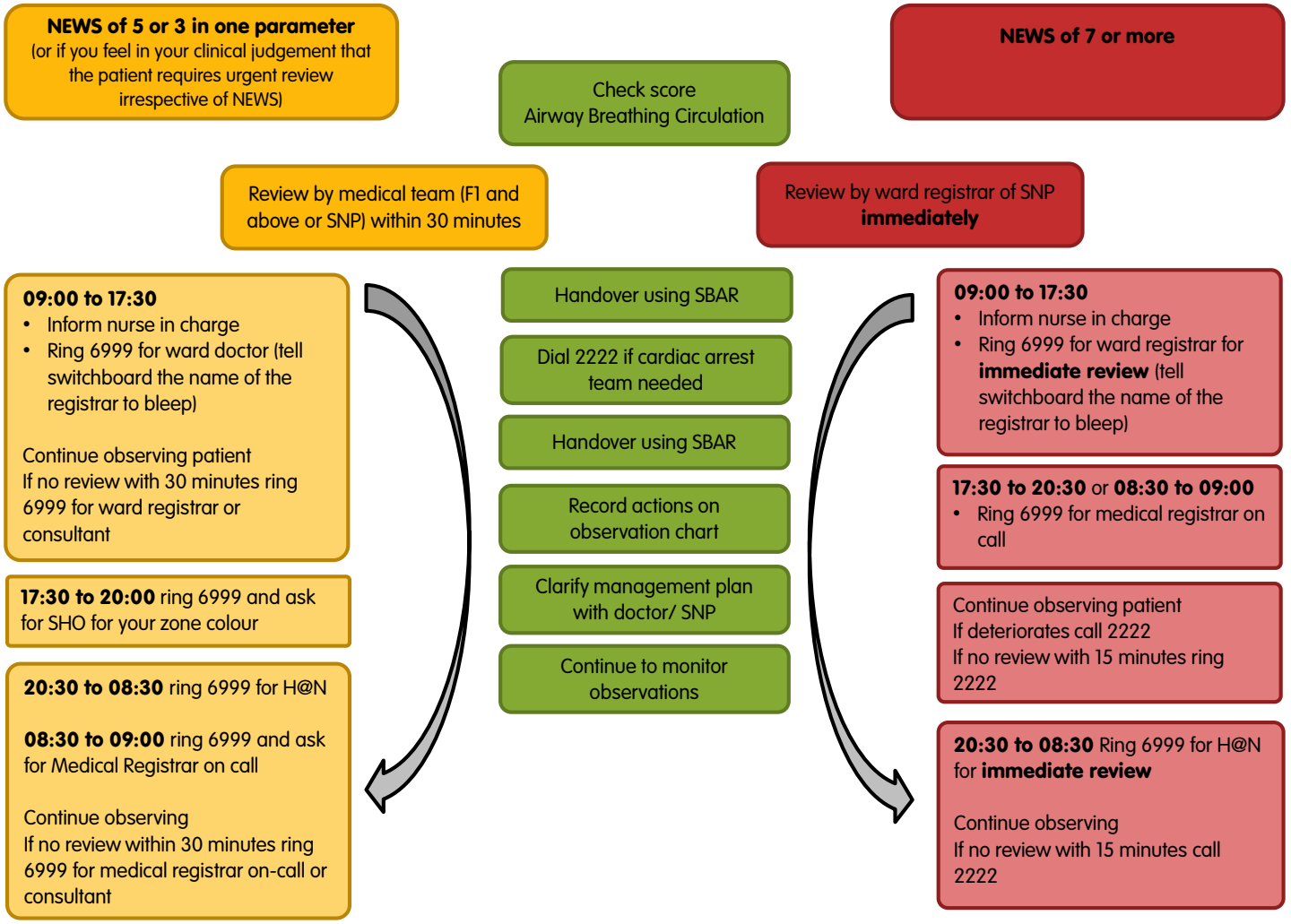
One advantage is that for many referrals a process existed where calls to a central number are logged with some information about the referral collected. Referral processes within the trust for this system were already very formalised with a requirement to attend patients with high EWS and now NEWS. This had an impact on referral rate as NEWS is more sensitive than the system it replaced, but does provide the basis for good data collection relating to appropriate escalation.

The information collected is not complete where ward based staff are immediately available and some departments use more traditional bleep referral processes.

The Trust has an advantage in measuring compliance with escalation with a drive to develop a single referral process throughout the trust. This should facilitate a more efficient use of a Global Trigger Tool approach.

Contact: Seema Srivastava, Associate Medical Director for Safe Care, North Bristol Trust

North Bristol NHS Trust



Trials and testing

Related to the gap analysis and consideration of existing documentation, a working draft of a NEWS chart is useful to initiate testing. The RCP template of the front of the adult observation chart is a good place to start for acute settings, but is unlikely be suitable on its own.

Measures to test

In implementing NEWS it is important to have an idea early on about how a successful implementation may be measured. The detail of this may be sketchy at first as there are some issues relating to measurement that may only emerge as a project develops.

Mike Davidge of the NHS institute presents a very useful video entitled "Measurement for Improvement". It can be accessed at: https://youtu.be/Za1o77jAnbw

Measures can relate to input, process or output and may involve:

- Observation of practice
- Interviewing key individuals
- Questionnaires / focus groups / surveys
- Analysis of untoward incidents / incident reports
- Preparation, delivery and measurement of result of educational materials
- Tap opinion leaders
- Audit and compliance with standards

There may be environments where serial recording of vital signs is less formalised in which case how NEWS would be incorporated within existing documentation or included within data fields of an IT system would need to be considered.

At the same time as producing a template chart (or similar) due consideration needs to be given to the referral processes associated with different NEW Scores.

A useful chart developers guide is available at: http://www.safetyandquality.gov.au/wp-content/uploads/2012/02/ORC-Developers-Guide-4-Oct-2010.pdf

The PDSA approach lends itself to refining different elements of a NEWS chart / documentation or process in different environments. The same approach can also be used for a larger trial of an implementation.

A larger trial is recommended, particularly in a large organisation such as an acute trust, but anywhere where many departments or locations will be implementing NEWS.

A trial in two or three areas, allows any unanticipated problems that may arise to be managed. In the worst caser scenario, the withdrawal of a new process may be required. If a large "big-bang" implementation fails, without a contingency plan, then patient safety may be compromised.

There is a short period of risk that needs to be assessed where parallel referral systems may exist. Good communication should minimise any risk.

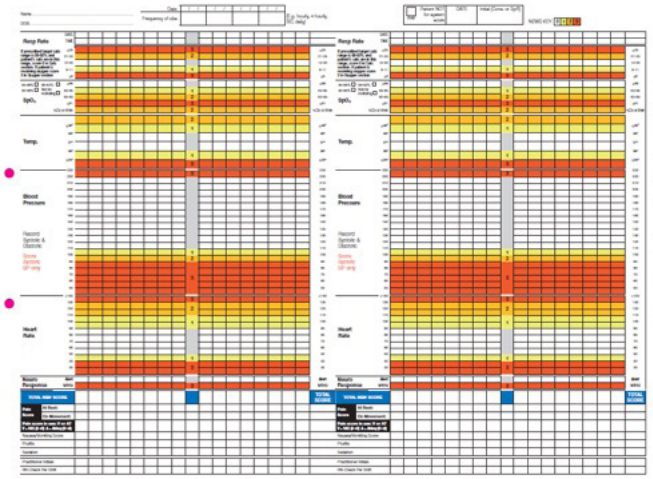
A full implementation is then possible with a high degree of confidence in success.

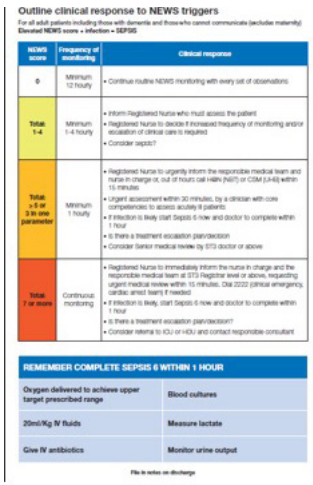
Key elements of NEWS chart

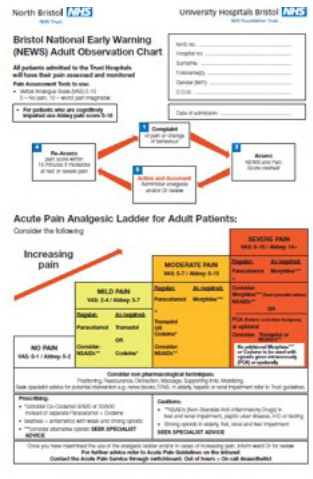
The key elements that make up NEWS are:

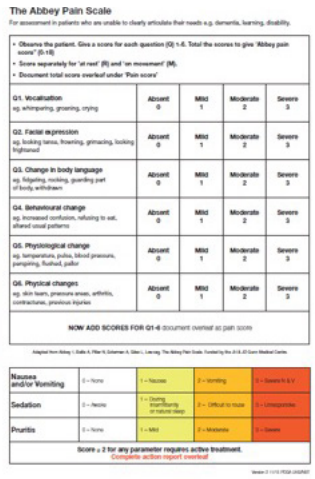
- A single parameter scoring system
- A multi-parameter scoring system
- Stated range of weightings for different parameters
- Prescribed minimum frequency of observations
- Four groupings of patients depending on score
- Two-tier clinical response if escalation required.

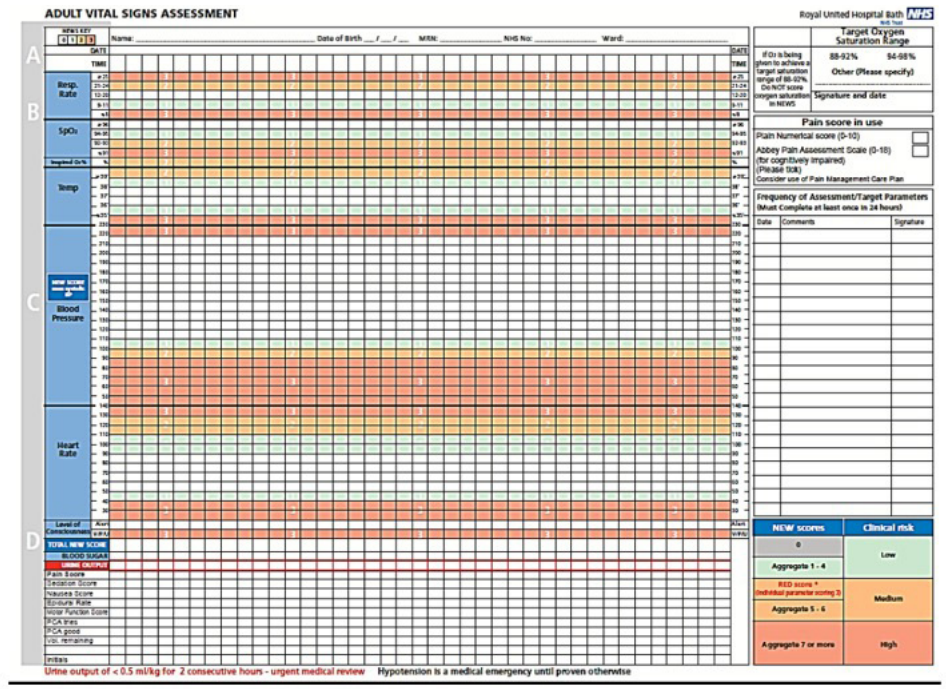
Trials and testing -- example of forms in use across the West of England

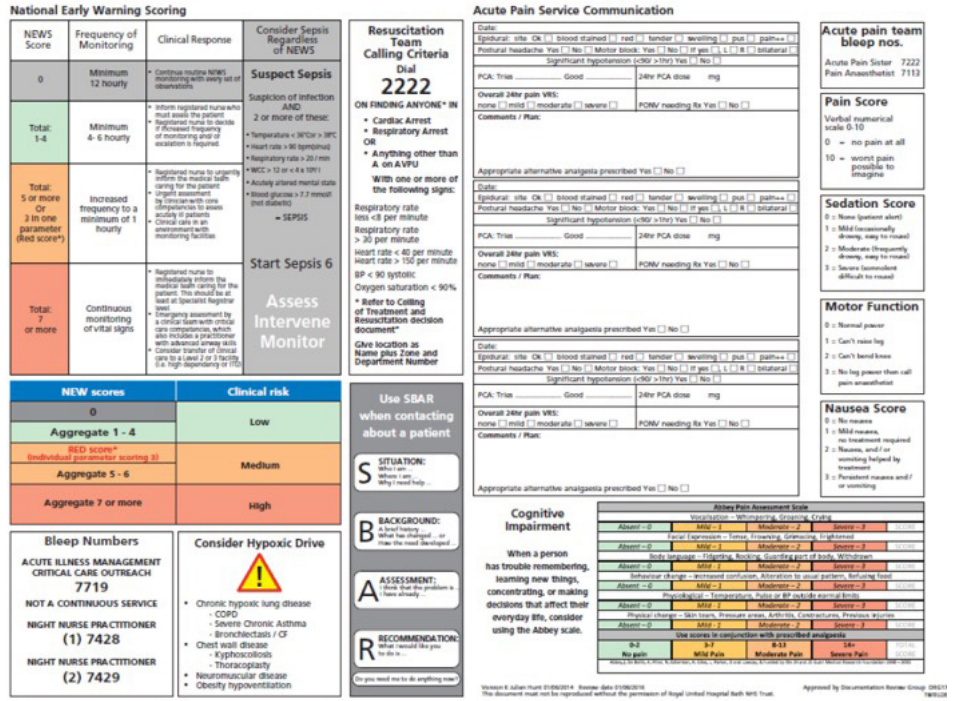






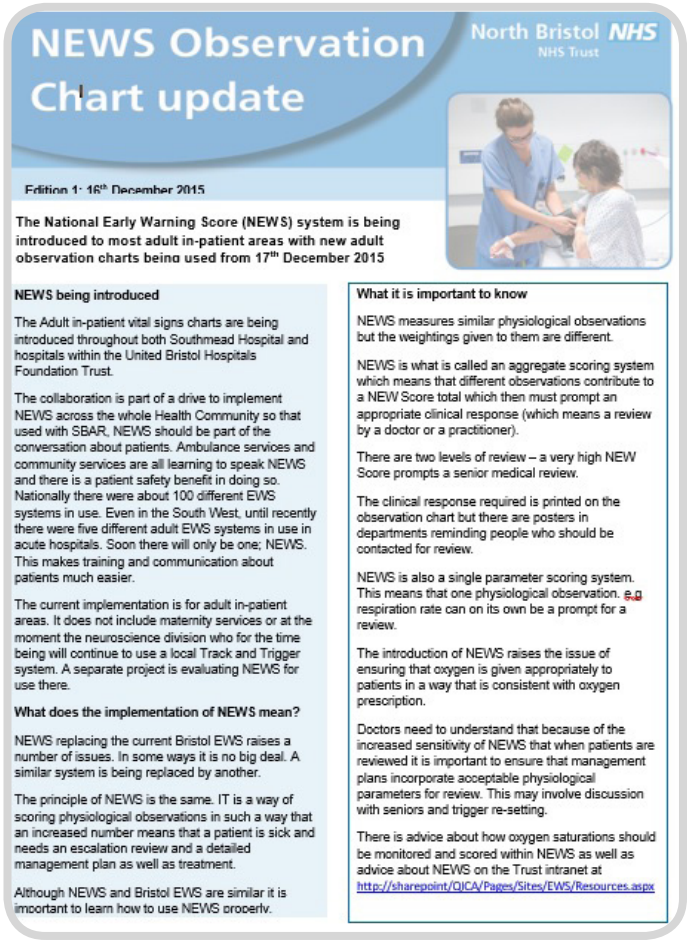






Initiation

With any communication strategy there is always the worry that staff may (legitimately) be able to turn round and say that they did not know anything about it. Good publicity using all available media is likely to lead to saturation. NEWS is a delightful acronym for an implementation.



NEWS Observation Chart update

North Bristol NHS NHS Trust

Edition 1: 16th December 2015

The National Early Warning Score (NEWS) system is being introduced to most adult in-patient areas with new adult observation charts being used from 17th December 2015

NEWS being introduced

The Adult in-patient vital signs charts are being introduced throughout both Southmead Hospital and hospitals within the United Bristol Hospitals Foundation Trust.

The collaboration is part of a drive to implement NEWS across the whole Health Community so that used with SBAR, NEWS should be part of the conversation about patients. Ambulance services and community services are all learning to speak NEWS and there is a patient safety benefit in doing so. Nationally there were about 100 different EWS systems in use. Even in the South West, until recently there were five different adult EWS systems in use in acute hospitals. Soon there will only be one; NEWS. This makes training and communication about patients much easier.

The current implementation is for adult in-patient areas. It does not include maternity services or at the moment the neuroscience division who for the time being will continue to use a local Track and Trigger system. A separate project is evaluating NEWS for use there.

What does the implementation of NEWS mean?

NEWS replacing the current Bristol EWS raises a number of issues. In some ways it is no big deal. A similar system is being replaced by another.

The principle of NEWS is the same. IT is a way of scoring physiological observations in such a way that an increased number means that a patient is sick and needs an escalation review and a detailed management plan as well as treatment.

Although NEWS and Bristol EWS are similar it is important to learn how to use NEWS properly.

What it is important to know

NEWS measures similar physiological observations but the weightings given to them are different.

NEWS is what is called an aggregate scoring system which means that different observations contribute to a NEW Score total which then must prompt an appropriate clinical response (which means a review by a doctor or a practitioner).

There are two levels of review – a very high NEW Score prompts a senior medical review.

The clinical response required is printed on the observation chart but there are posters in departments reminding people who should be contacted for review.

NEWS is also a single parameter scoring system. This means that one physiological observation. e.g respiration rate can on its own be a prompt for a review.

The introduction of NEWS raises the issue of ensuring that oxygen is given appropriately to patients in a way that is consistent with oxygen prescription.

Doctors need to understand that because of the increased sensitivity of NEWS that when patients are reviewed it is important to ensure that management plans incorporate acceptable physiological parameters for review. This may involve discussion with seniors and trigger re-setting.

There is advice about how oxygen saturations should be monitored and scored within NEWS as well as advice about NEWS on the Trust intranet at http://sharepoint/QICA/Pages/Sites/EWS/Resources.aspx

It is noted elsewhere in this toolkit that a trial of NEWS implementation should be undertaken where possible and appropriate. This has the advantage of both testing the system, but also of providing a fair measure of publication. Where a trial is undertaken both formal and informal information systems within organisations will give the message that NEWS is coming, making its full implementation aware to all staff.

A useful resource to plan your communication is the Health Foundation communication toolkit available at http://www.health.org.uk/collection/communications-health-care-improvement-toolkit

Resources are available to support training and communication including:

- NEWS Frequently Asked Questions
- Key messages to support use of new adult observation charts
- NEWS in 10 minutes
- NEWS on Steroids: Scenarios and Discussion Questions
- NEWS for doctors, teaching plan, and slides
- Example slides for teaching nursing staff

Publicity can be achieved in a large number of ways:

- Informal and formal staff meetings
- Publication of steering group minutes
- Publication of results of tests and trials
- Drop in sessions for both awareness and education
- Senior / middle manager meetings
- Sister / Charge nurse meetings
- Medical Grand Rounds
- Clinical Governance meetings
- Intranet or local information systems
- Message of the day (or similar)
- Hijack front page of intranet
- Introduction within existing education
- Posters
- Emails
- Newsletters
- Twitter campaign

The Life System Platform

The West of England AHSN would be grateful if participating EDs submit their data on a monthly basis on the Life System platform. This platform will also have run chart and notice board capabilities to facilitate the sharing of information between LITs and across the programme.

The Life System is a web based platform designed to assist front line staff running Quality and Safety improvement projects and has been developed as part of the Patient Safety Collaborative in partnership with SeeData and South West Academic Health Science Network.

The Life System has been built to support team working and collaboration whilst maintaining the principle of an open and transparent culture. It is not designed to collect detailed information on users, organisations or patients, and is not a performance management tool; instead the information collected is only to be used to support improvement.

Contact your Academic Health Science Network to find out if you have access to the Life System. West of England members can sign up for free access here: https://life.seedata.co.uk/login/

There are three phases to establishing NEWS within an organisation:

- Introduction
- Implementation
- Instillation

While the three is may overlap to some extent; they cannot be regarded as discrete phases.

Introduction

Introduction involves all of the groundwork to allow the system to be rolled out through the organisation. The introduction involves all of the development work to get the tool right for applying.

Implementation

Once this is done the implementation is the rolling out of NEWS through the organisation. In small services this can be achieved quite quickly. In larger and more complex organisations, this process may take several months, and may require ongoing development and refinement.

Instillation

Instillation (or embedding) is ensuring that the use of NEWS is thoroughly embedded into the organisation. If the aim is to use NEWS as a communication device throughout a service, then instillation has happened when the use of NEWS is fully embedded. The degree of integration within the processes of an organisation can be measured.

Initial implementation is a process of weeks and months, instillation is a process that may take many months or even years, depending on the culture in which NEWS is being used.

"It is important to remember when implementing NEWS that it is not just about introducing a new observation chart."

Anne Pullyblank, Consultant colorectal surgeon, North Bristol Trust

Project completion

A project has a beginning, a middle and an end. The project steering group meeting regularly can appraise its various stages. One important role of the steering group is to evaluate what worked and what didn't during the course of the project. This will allow an adaptive response from the project team making implementation smoother.

Celebration

On project completion, even though there may be a recognition that there is still much to do, it is important to remember celebration.

Celebrate project completion with the team:

- Ensure the sponsor and stakeholders are involved (if possible).
- Acknowledge everybody's efforts.
- Share and reflect on the positive lessons learned.
- Use corporate recognition systems.
- Avoid "institutionalised recognition" – be sincere.
- Say "thank you" and mean it.

Evaluation

As well as considering the structuring and implementation of appropriate audit, the effectiveness of all of the approaches listed in the Introduction leading to implementation section where used should be appraised. The timeline of the project should also be reviewed so that any departure from planned timetable to actual delivery can be examined to identify themes that may inform future projects.

Some key points are as follows:

- There is no ideal time to implement a change. Implementation in any health care environment has to fit on with other priorities.
- Seasonal variation in workload is less variable than it once was, but new clinical implementation in January are not recommended
- Where logistics are involved (such as printing) avoiding holiday periods is recommended (unless logistics shortfalls have contingency plans)
- If possible training should be appropriately resourced.

Reliance on cascade training to be successful requires formal establishment, monitoring and reporting.

- Ongoing education can be easily factored into future training plans.

Some known issues

What is the issue?

NEWS itself has a number of known issues associated with it. Unanticipated problems may be avoided by considering what is raised in this section. Some of the issues are niche specific and relate to specific areas, and may be more problematic in acute services, but the principles can be generalised.

Specific issues that are discussed are:

- Trigger re-setting
- Training
- Cultural change
- Oxygen saturation Target Range
- Neurological Assessment

What is the solution?

When it comes to problem solving through issues, you can use this framework:

- **What** is the problem?
- **Why** is it a problem?
- **When** is it a problem?
- **Where** is it a problem?
- **How** is it a problem?
- **Who** is it a problem for?

If you don't truly understand the problem, you cannot solve it! The cornerstone of any effective root cause analysis is having an accurately defined problem.

Using robust problem solving techniques will ensure you address the 'real' issue – not just the symptoms. It's not difficult - just have a questioning attitude. Never stop with the first reason given or the obvious.

There may be multiple root causes for any given problem. Make sure you follow all of them through – they may all need fixing!

The **five whys** is a tool that helps to identify the root cause of a problem by verbally questioning the reasons given. It enables the peeling away of layers through a process of questions repeatedly asking "why" until you reach the root cause.

Known issue: trigger re-setting

What is the issue?

NEWS is designed to identify patients who are high risk for deterioration or patients who are in the process of deteriorating. It does this by scoring physiology so that abnormal physiology is scored highly.

Abnormal physiology is caused by acute illness or is a reflection of chronic ill health. A high score should be linked to the formation of a detailed management plan. Once that is done, if the care and treatment plan is appropriate, no further review is necessary unless the NEWScore increases further. It may take time in an acute illness for a patient's physiology to improve.

It is important to develop processes that allow high NEWScores in some circumstances to be acknowledged but not require action.

What is the solution?

NEWS needs to be regarded as both a physiological risk assessment and a prompt for escalation of treatment, transfer or referral. It is important to consider any patient with abnormal physiology being regarded as high risk for deterioration.

Where care is appropriate and a high NEWScore can be tolerated, the solution is for the trigger to be reset to a different level from the standard clinical response.

This might require development of a local standard or an individualised management plan. In both instances the new trigger response for review or action must be clearly agreed documented and communicated.

Trigger re-setting is not risk free and needs to be crafted with skill. Some advice relating to an acute setting is accessible.

Known issue: training

What is the issue?

Training in NEWS is key and often underrated. An assumption is often made that implementation is simple because there is already a well-established understanding of recording vital signs. If an existing EWS is already in use then introducing NEWS may be perceived as a simple swap process. A similar assumption is often made that staff recording vital signs will act when they are awry.

Once the recording of vital signs is subjected to scrutiny a number of issues tend to emerge that relate to the accuracy of vital signs recording, and interpretation of the results. Where NEWS is replacing an existing EWS there is some nuance in how it is used. NEWS is more sensitive than most other EWS systems it replaces, which is often interpreted as producing "false positives". This is inaccurate because as well as being a device to prompt the escalation of care it is a risk assessment (see previous section).

What is the solution?

In an acute situation where NEWS has increased from baseline there are three tiers of escalation response:

1. An individual management plan which offers the physiological parameters that will require review. This is established as a patient's treatment is initiated and optimised. It may be appropriate in and out of hospital.
2. The second tier of response is a local (or departmental) standard where (usually condition-specific) situations are managed by a documented and agreed local protocol.
3. The third tier of response is a generic clinical response prescribed by a specific NEWScore.

Training needs to focus on these three responses, which are often not well understood. Training needs to be focused on accuracy of scoring, what to do with high NEWScores and assuring appropriate escalation. There also needs to be a focus on training people to audit compliance with using NEWS appropriately.

The default position for NEWS implementation is often a round of cascade training. The reality is that if timing allows a structured approach to cascade training is indicated to ensure that a critical mass of staff are trained.

It is also important to maintain ongoing training through core skills updates, induction, and mandatory training. For NEWS this is likely to require ongoing specific training.

A number ot training resources have been produced and are available online at http://www.weahsn.net/what-we-do/enhancing-patient-safety/the-deteriorating-patient/

Known issue: cultural change

What is the issue?

It is well know that implementing a change may take many years from the publication of the original idea. NEWS is no exception; it represents a culmination of over a decade of proposal relating to "Track and Trigger" systems and other EWSs.

If the process of fully adopting NEWS is to be truly successful, a longer timescale is required. There are processes of introduction, implementation and installation that are needed. The first two can be achieved quite promptly. A full installation of NEWS requires considerable change in sometimes well-entrenched tradition.

Full instillation of a system is where the effectiveness of the use of NEWS has a tangible and measurable effect on reducing avoidable system failures or failures in care.

What is the solution?

It is recommended to "stay the course", in the sense that a longer term view is more likely to produce a positive result. The full instillation of NEWS will outlive a project to implement it.

Once a project is completed ongoing development will need to be considered.

NEWS must not be perceived as a nurse only issue in an acute hospital.

Full adoption of NEWS requires a change in medical behaviour, particularly on ward rounds.

If NEWS is to be developed as a "language" of health care, its full use will have different trajectories in different environments.

In the short term, it is important to resist changing too much relating to NEWS documentation. There is a tendency to "blame" shortfalls in service delivery on NEWS when in reality it may be something completely different and more fundamental that may need to be changed.

Known issue: oxygen saturation target range

What is the issue?

NEWS as implemented in many acute trusts has a balance added for the oxygen saturation target range. The idea of NEWS is that a high score is associated with high (physiological) risk or the need for escalation of clinical response. For different target saturation ranges as recommended in the prescription of oxygen via the British Thoracic Society, NEWS is too sensitive if the target range is set at 88-92%. Additionally there is a potential safety risk in having a NEWScore which increases as a patient receives the correct treatment (i.e. appropriately targeted oxygen therapy).

It is less of an issue where oxygen therapy is of short duration, but it should be noted that any system that increases the risk of over-oxygenation can have serious consequences (including ventilatory failure and death).

What is the solution?

Balancing measures are not risk free, but may be necessary. It is generally better to adopt a fix that does not score oxygen saturations that are within the target saturation range. If there are adjustments made to NEWS on this basis, this needs to be taught and communicated well. There is a trade off in the safety gain of getting the scoring system right versus an added complexity which may influence the accuracy of NEWS calculation.

There is a criticism that can rightly be levelled that if the oxygen saturation score is manipulated that it is no longer NEWS. The "fix" is widely implemented and so long as it is communicated, it is not a problem. If NEWS is a language then the oxygen saturation "fix" is merely a dialect. It is hoped that the fundamental problem of oxygen saturation target range scoring is improved when NEWS is revised.

The British Thoracic Society guidelines for emergency oxygen use are recommended and available at https://www.brit-thoracic.org.uk/guidelines-and-quality-standards/emergency-oxygen-use-in-adult-patients-guideline/.

The guidelines (as is NEWS) are planned for review in 2016.

Known issue: Neurological assessment

What is the issue?

Neurological assessment forms part of the overall NEWScore. It is unfortunately the one aspect of vital signs assessment that is least well done. It uses AVPU which is essentially a simple system compared to a fuller neurological assessment as in the Glasgow Coma Score. Because of its weighting, anything other than Alert (A) scored in AVPU is a single parameter score of 3 means that a patient should receive and escalation review or referral.

What is the solution?

There is a clear need to address this area of assessment thoroughly in any training that is provided. Although training is another known issue, this one is important enough to require special attention.

The teaching message is that the key emphasis in using AVPU is that the system should record the best response that the patient can muster, so if a patient awakes and then drifts off to sleep again, that should be scored as A and not V. Neurological assessment should record the best neurological response that can be elicited.

In addition there are circumstances where NEWS may be used during procedural sedation, where neurology will always score, or in some situations where a patient may remain V (Responding to Voice and not Alert) perhaps for a few hours after an anaesthetic. In these (and similar instances) a documented and agreed local standard may be an appropriate way of avoiding unnecessary requests for review, but still maintain patient safety.

AVPU

- **A** **Alert**
- **V** **Responds to voice**
- **P** **Responds to Pain**
- **U** **Unresponsive**

Recommended resources

West of England Academic Health Science Network Improvement journey http://www.weahsn.net/what-we-do/west-of-england-academy/improvement-resources-and-tools/the-improvement-journey/steps-in-the-improvement-journey/

The Royal College of Physicians key document: https://www.rcplondon.ac.uk/projects/outputs/national-early-warning-score-news

Article explaining sensitivity and specificity: http://ceaccp.oxfordjournals.org/content/8/6/221.full.pdf+html

National Confidential Enquiry into Patient Outcome and Death (NCEPOD) sepsis report: http://www.ncepod.org.uk/2015report2/downloads/JustSaySepsis_FullReport.pdf

NICE guidelines on acute kidney injury: https://www.nice.org.uk/guidance/cg169

Care bundles to supplement NEWS for sepsis and AKI [SHOUT]: http://qir.bmj.com/content/4/1/u207938.w3198.full.pdf+html

NPSA 2007: http://www.nrls.npsa.nhs.uk/EasySiteWeb/getresource.axd?AssetID=60151

NPSA checklist: http://www.nrls.npsa.nhs.uk/resources/?EntryId45=59834

NICE CG50: at: https://www.nice.org.uk/guidance/cg50

NICE "How to change practice" (2007): https://www.nice.org.uk/Media/Default/About/what-we-do/Into-practice/Support-for-service-improvement-and-audit/How-to-change-practice-barriers-to-change.pdf

Gap analysis diagram: http://systemicpov.com/old-school-strategy-new-school-success/gapanalysis

Driver diagram help: http://www.weahsn.net/what-we-do/skills-knowledge-development/quality-improvement-tools/quality-improvement-toolkit/qi-toolkit-driver-diagrams/

Mike Davidge (NHS institute) "Measurement for Improvement": https://youtu.be/Za1o77jAnbw

Developers guide for observation charts: http://www.safetyandquality.gov.au/wp-content/uploads/2012/02/ORC-Developers-Guide-4-Oct-2010.pdf

Communication in healthcare: http://www.health.org.uk/collection/communications-health-care-improvement-toolkit

National Cardiac Arrest Audit: NCAA https://www.resus.org.uk/research/national-cardiac-arrest-audit/

IHI Global trigger tool: http://www.ihi.org/resources/pages/tools/ihiglobaltriggertoolformeasuringaes.aspx

The British Thoracic Society guidelines for emergency oxygen use: https://www.brit-thoracic.org.uk/guidelines-and-quality-standards/emergency-oxygen-use-in-adult-patients-guideline/

NICE guidance Sepsis: recognition, diagnosis and early management https://www.nice.org.uk/guidance/ng51 and resources https://www.nice.org.uk/guidance/ng51/resources

UK Sepsis Trust have published clinical toolkits in a variety of settings including OOH, community, pre-hospital, general practice, ED and AMU, inpatients and labs http://sepsistrust.org/clinical-toolkit/

Health Education England have created a video https://www.youtube.com/watch?v=vxmUVCu6CDI and e-learning materials http://www.e-lfh.org.uk/programmes/sepsis for GPs. More details at https://www.hee.nhs.uk/news-events/news/film-puts-spotlight-recognising-signs-sepsis-children

NHS Improvement published a number of patient safety alerts for the deteriorating patient: https://improvement.nhs.uk/uploads/documents/Patient_Safety_Alert_Stage_2_-_Deterioration_resources_July_2016_v2.pdf

The adult patient who is deteriorating: sharing learning from literature, incident reports and root cause analysis investigations report https://improvement.nhs.uk/uploads/documents/Deterioration_in_adults_report_7july.pdf

Resources for the deteriorating patient https://improvement.nhs.uk/resources/detection-and-management-deterioration-adult-patients/ including a reference to this toolkit.

A safe system framework for recognising and responding to children at risk of deterioration: http://www.rcpch.ac.uk/safer-system-children-risk-deterioration and resource http://www.rcpch.ac.uk/sites/default/files/user158/A-safe-system-for-children-at-risk-of-deterioration-2016-07.pdf

Notes

Upodated August 2016

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