Use of Early Warning Scores by GP Practices

NEQOS brief – following initial discussion within the AHSN

It was agreed to conduct a short survey of GP practices within the AHSN area to determine to what extent early warning scores were in use. Survey 1 was conducted in December 2019 and Survey 2, which is a repeat, in January 2021.

Summary of findings

- Survey 1 had a good response rate with 178 responses received from General Practices, giving a response rate of 35% for the North East and North Cumbria.
- Survey 2 had a much lower response rate of 5% (21 responses) and this is likely to be a consequence of the COVID-19 pandemic.
- The most common use of NEWS for onwards referral is to request an ambulance.
- For GPs around 13% use NEWS only in the surgery with the majority of GPs using it across settings.
- The findings of the surveys show that the use of NEWS is common in GP practices in the North East and North Cumbria albeit currently across a minority of GP practices.

Acknowledgements

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Background

National Early Warning Scores (NEWS) are in widespread use in hospitals to standardise the assessment and response to acute illness using six physiological parameters, often referred to as 'vital signs'. Use of NEWS has been increasing in out-of-hospital settings but it is not known how widespread the use is in General Practices across the UK.

National Early Warning Scores are being used by General Practices in the UK, predominantly by General Practitioners, mainly during the process of transferring patients to hospital. The first substantial published work on the use of NEWS in primary care was in June 2020, a publication based on data linkage for an area served by the North Bristol Trust. For more information about this publication and summary findings see Appendix 2. It may be that the COVID-19 pandemic, where assessment of vital signs, particularly oxygen saturations, became prominent, has increased interest in NEWS2, but no data is yet available to assess this possibility.

Introduction

The Royal College of Physicians (RCP) of England published the first version of the National Early Warning Score (NEWS) in 2012 and updated it in December 2017[1], when it became known as NEWS2. It advocates a system to standardise the assessment and response to acute illness and has been widely adopted in acute settings, with support from NHS Improvement who produced a Patient Safety Alert and resources to support the safe adoption of the revised NEWS2[2]. The RCP have published a position statement on the use of the NEWS2 score for assessing the patient at risk of deterioration[3].

NEWS requires the measurement of six parameters: temperature, pulse, systolic blood pressure, respiratory rate, oxygen saturation and level of consciousness. New-onset confusion was added into the 2017 update (NEWS2), along with adjustment for patients on oxygen. A score of 0–3 is given to each parameter, and the component scores are summed to produce the NEWS. The overall NEWS triggers a response, ranging from repeating the NEWS within a specific time frame to initiating an emergency medical assessment. In hospital settings, the ability of different NEWS thresholds to predict adverse health outcomes has been established[4], and there are standardised response charts. Use of NEWS has been advocated in community settings, including in care homes[5].

The extent to which General Practices are using NEWS is unknown and although it is possible to record both vital signs and NEWS in clinical records in General Practice this is not widely done in a way that allows data extraction. It was therefore decided that the only feasible method for assessing current use of NEWS in the region was via a survey method.

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[1] Royal College of Physicians. *National Early Warning Score (NEWS) 2: Standardising the assessment of acute-illness severity in the NHS.* Updated report of a working party. London: RCP, 2017. http://bit.ly/2AorjLw

[2] Patient Safety Alert: Resources to support the safe adoption of the revised National Early Warning Score (NEWS2). NHS Improvement 2018. https://www.england.nhs.uk/2018/04/safe-adoption-of-news2/

[3] Royal College of Physicians. *Position Statement; The use of the NEWS2 score for assessing the patient at risk of deterioration* RCP, 2020. https://www.rcgp.org.uk/-/media/Files/CIRC/Clinical-Policy/Position-statements/RCGP-position-statement-on-the-use-of-NEWS2-score-for-assessing-the-patient-at-risk-of-deterioration.ashx?la=en

[4] Downey CL, Tahir W, Randell R, Brown JM, et al. Strengths and limitations of early warning scores: a systematic review and narrative synthesis. Int J Nurs Stud 2017; 76:106–19

[5] West Hampshire Clinical Commissioning Group. RESTORE2: recognise early soft-signs, take observations, respond, Escalate (2019). Available at: https://www.westhampshireccg.nhs.uk/restore2-training-and-resources (accessed 23 December 2019)

Methods

Design and Setting

A short, eight question, on-line survey, distributed by email to all GP practices in the North East and North Cumbria (NENC), identified by Clinical Commissioning Groups. To assess uptake of NEWS by General Practices as reported through an on-line survey. The January 2021 survey is essentially the same as the original survey with a couple of the questions simplified.

Survey participation

All General Practices in the geographical area covered by the Academic Health Science Network were asked to take part in the on-line survey via emails sent by the North East Commissioning Support (NECS) unit. Survey 1 was sent to 398 General Practices in 12 CCGs in December 2019. Survey 2 was sent to the same geographical area although this had become 369 General Practices in 8 CCGs in January 2021, following CCG reconfiguration.

The survey was deliberately brief: Consent to participate and use of anonymised data plus seven questions, so as to maximise response rates. Respondents only identified themselves by professional role and CCG area. We did not specify who should complete the questionnaire in each practice, again in order to maximise the number of practices responding. We used the Smart Survey[6] on-line survey tool, and used its reporting tools to report the number and percentage of responses. The exact wording of the questions is shown in the tables of results. Skip logic was used so that respondents not using early warning scores were not asked questions about the context of their use. SPSS (version 26) used for further analysis.

[6] https://www.smartsurvey.co.uk

Results

In Survey 2 there is a much lower response rate to the survey (21) than the 178 responses received to Survey 1. The obvious conclusion to draw is that this has been given a low priority due to COVID-19 pandemic which peaked in early 2021.

For Survey 2 the response rate is around 5% while for Survey 1 it was estimated to be 35%.

Table 1 – use of NEWS by role (Survey 1)

Role		Yes	No	Row Total	Column Total
GP	Count	62	74	136	136/178
	(%)	46%	54%	100%	76%
Nurse	Count	15	11	26	26/178
	(%)	58%	42%	100%	15%
Other	Count	1	15	16	16/178
	(%)	6%	94%	100%	9%
All staff	Count	78	100	178	178
	(%)	44%	56%	100%	100%

Table 1 shows that more than two fifths of respondents (44%) reported using NEWS with the majority of responses received from GPs, 136/178 (76%). In survey 2 GPs made up 14/21 (66%) of responses. Table 2 & 2a summarise free text comments from the question which asked whether you were using NEWS, with some respondents questioning its applicability.

Table 2a – comments on use of NEWS December 2019 Survey

Category (number)	Example
Admissions (8)	"I only use it for patients I feel are clinically compromised and where I consider admitting them."
Applicability (10)	"Not using in primary care as it is precisely a tracking tool only validated for sequential measurements in secondary care situations."
Aware (4)	"In use at the community hospital but not at the surgery."
Not aware (3)	"No idea what this is".
Systems (10)	"Computer system has sepsis warning triggers and prompts."
Vital signs (7)	"I document all the NEWS parameters but do not use them to make up a score."

Table 2b – comments on use of NEWS January 2021 Survey

Category (number)	Example
Applicability (4)	"NEWS score is not validated for use in primary"
Virtual	"Impossible to use in remote consulting"

Two thirds of respondents (67%) using early warning scores reported using NEWS2 with the remainder using either NEWS or another early warning score. Question 7 in the survey asked how the NEWS information was recorded for patients with the most common response being that this is 'Inputted to the clinical record'. This information is presented in Table 3.

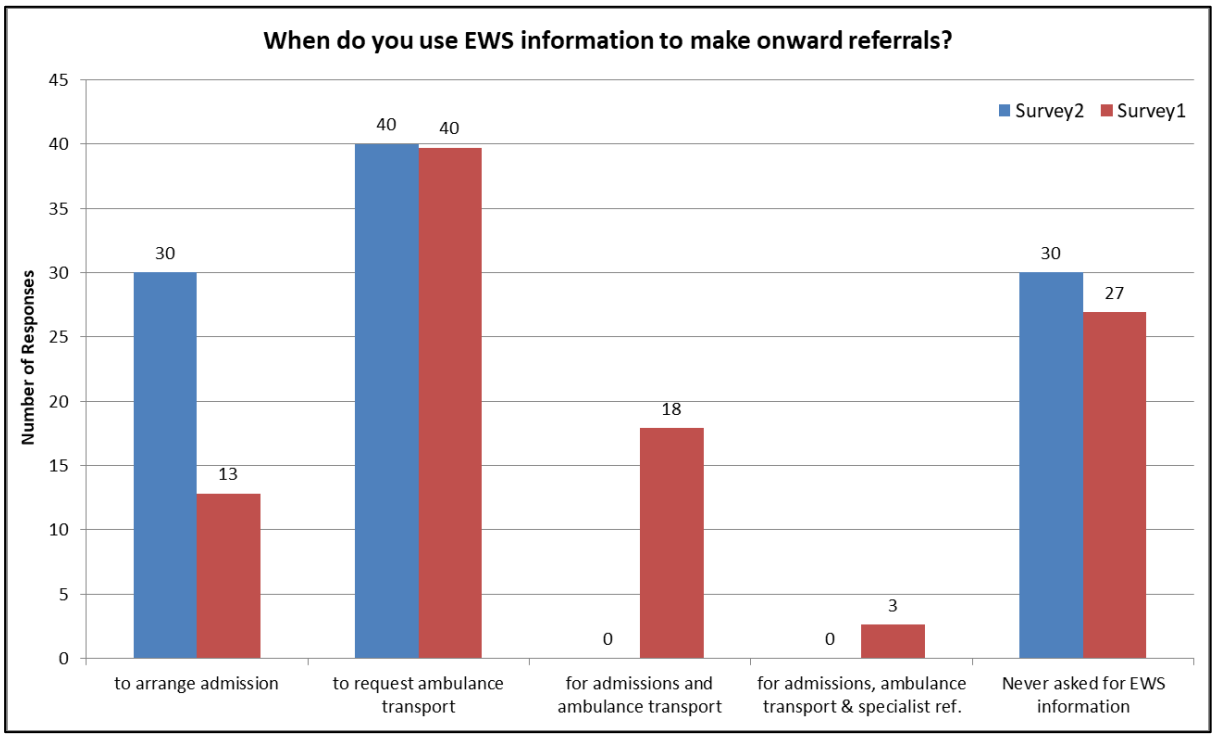
Survey 2 found that almost all of the respondents who used a NEWS score in January 2021 were using NEWS-2 (9 out of 10). Table 3 shows that for most patients where the NEWS score is collected it is being added to the patient's clinical record.

Table 3 – recording of NEWS (Survey 2 and Survey 1)

Means of recording (%)	Survey 2	Survey 1
Inputted to clinical record	70	63
Hand written notes	10	3
Used to inform clinical judgement (not recorded)	0	5
Mixture of the above	20	26
Other	0	4
Total	100	100

The chart below is based on the responses to Question 8 of the survey which asked whether early warning score information was used for making onwards referrals. The responses show that the most common use of NEWS was requesting an ambulance and around 30% of respondents were never asked for this information to make onwards referrals.

Chart – use of NEWS for onwards referrals



The key point to make is that there were 78 respondents to this question in Survey 1 and in Survey 2 there were 10 with 7 from GPs. In consequence it's important not to over interpret this. Table 4 shows that across the years NEWS is used by the respondents both within and outside of the surgery. In the two years the proportions of GPs using NEWS only in the surgery were 13% and 14% respectively.

Table 4 – use of NEWs in Surgery and Outside

Role	Survey	Surgery only	Surgery and other	Outside surgery	**Total**
GP	Survey 2 (%)	14%	71%	14%	100%
	Survey 1 (%)	13%	55%	32%	100%
Nurse	Survey 2 (%)	67%	0%	33%	100%
	Survey 1 (%)	40%	60%	0%	100%
All staff	Survey 2 (%)	30%	50%	20%	100%
	Survey 1 (%)	18%	55%	27%	100%

Discussion

- Summary

This small survey indicates that General Practices are taking up use of NEWS and vital signs despite the relatively weak evidence base in out of hospital settings. A minority of practices are concerned that NEWS2 may not be validated adequately in primary care and by implication that the opportunity costs of using NEWS has not been adequately assessed. Whilst advocates of NEWS emphasise the importance of end of life care it is not known whether use of NEWS changes the likelihood of being transported to hospital.

The findings from the North Bristol Trust study (Appendix 2) were that NEWS benefitted patients in terms of the speed of their treatment and the review by hospital doctors.

- Strengths and limitations

The original survey had a 35% response rate (if we assume one respondent per practice); survey 2 had a response rate of 5%. Respondents were self-selecting and are likely to be from General Practices with an interest in this topic. We therefore think it is unlikely that uptake of NEWS is higher than reported here. Given the low response rate to survey 2 it is not possible to estimate from this the use of NEWS for all practices in the region.

- Comparison with existing literature

There is one important piece of work which was published in June 2020 by the North Bristol Trust which linked primary care and secondary care data together. Currently heath data linkage is only done by a small number of institutions but this is the 'gold standard' in understanding benefit of the use of NEWS in GP practices. Although the study does not conclude this, there does seem to be some evidence that GPs use NEWS when they 'Think sepsis'. This would be an interesting topic to explore; it is likely that currently GPs only use NEWS for seriously ill patients to make onwards referrals.

- Implications for research and/or practice

It is unlikely that the move towards the greater use of vital signs and of early warning scores in out of hospital settings will stop despite the relatively meagre evidence base because of the inherent value in having a standardised approach to deterioration across care settings and in the capture and monitoring of the patient's vital signs.

There are signs that the use of NEWS by GPs is starting to gain traction and to become the norm for seriously ill patients. It is likely that the pandemic will have 'nudged' GPs practice in the management of seriously ill patients from Summer 2020, this merits further investigation.

Conclusions

National Early Warning Scores are being used by General Practices, predominantly by General Practitioners and mainly during the process of transferring patients to hospital.

Survey1 showed 46% (95% CI 37% to 54%)[7] of General Practitioners who responded are using NEWS. However due to the relatively small number of responses received to survey 2 it has not been possible to produce another estimate.

NEQOS found that the proportion of GPs using NEWS is higher than might be expected, given the controversy surrounding use of vital signs and NEWS in primary care. There is an important minority of respondents who do not believe NEWS is applicable in General Practice.

There is some evidence that the use of NEWS by GPs is starting to gain traction and to become the norm for seriously ill patients (e.g. with suspected sepsis).

[7] Confidence intervals are based on the method described by Altman D et al. Statistics with confidence: Confidence Intervals and Statistical Guidelines, 2000

Appendix – Survey 1 questions

Q1

- We estimate that this survey will take 5 minutes to complete.
- Please do not add any patient, clinical or any other personal identifiable information.
- I give permission for my survey results to be recorded.
- I understand that results will be looked at by staff undertaking the project.
- I understand that any personal information collected during this survey will be anonymised and remain confidential.
- I understand that my participation is voluntary.

Q2

2. What is your role?

- (•) GP
- ( ) Nurse
- ( ) Other

Q3

3. Please select the CCG your practice belongs to from the list

- [ ] NHS South Tees CCG
- [ ] NHS Newcastle Gateshead CCG
- [ ] NHS Northumberland CCG
- [ ] NHS North Tyneside CCG
- [ ] NHS North Durham CCG
- [ ] NHS Durham Dales, Easington & Sedgefield CCG
- [ ] NHS Darlington CCG
- [ ] NHS Hartlepool & Stockton-on-Tees CCG
- [ ] NHS Cumbria CCG
- [ ] NHS Sunderland CCG
- [ ] NHS South Tyneside CCG

Q4

4. Are you personally using an early warning score (also sometimes known as a 'track and trigger' tool) in the detection, management or communication of physical deterioration in adult patients (ie not including patients less than 16 years of age or in women who are pregnant)?

- ( ) Yes
- ( ) No - please add any comments and press 'next page'. That will be the end of the survey

Q5

5. What early warning score do you use?

- ☐ National Early Warning Score (NEWS) – RCP 2012
- ☐ National Early Warning Score (NEWS2) – RCP 2017
- ☐ Other

Q6

6. In what context do you use your early warning score?

- ☐ Nursing home visits
- ☐ Residential care home visits
- ☐ Home visits
- ☐ Surgery appointments
- ☐ Other

Q7

7. How do you record the early warning score?

- ☐ Inputted onto patient records via clinical systems
- ☐ Handwritten onto patient notes and subsequently scanned into clinical systems
- ☐ Handwritten onto patient notes, but data not inputted into clinical systems
- ☐ Results used to make a judgement, but not recorded
- ☐ A mixture of the above
- ☐ Other

Q8

8. Are you asked for early warning score information when making onward referrals? If so, is this

- ☐ when arranging admission
- ☐ when requesting ambulance transport
- ☐ during a specialist referral
- ☐ I have never been asked for Early Warning Score information
- ☐ Other (please specify):

Appendix 2 – study on use of NEWS in Primary care

https://bjgp.org/content/70/695/e374

Association between NEWS in primary care and clinical outcomes: an observational study in UK primary and secondary care (Lauren J Scott et al) British Journal of General Practice June 2020

Conclusion This study has demonstrated that higher NEWS values calculated at GP referral into hospital are associated with a faster medical review and poorer clinical outcomes.

Summary

This is the first UK study investigating the association between NEWS at the time of referral from primary care and resulting process measures and clinical outcomes in secondary care. Importantly, this study found higher NEWS values were associated with increased LOS, ICU admissions, sepsis (suspected and diagnosed), mortality (2-day and 30-day), decreased time from referral to arrival for patients conveyed by ambulance, and decreased time from arrival in hospital to doctor review.

Patients without a NEWS value (NEWS = NR) had increased LOS, ICU admissions, and mortality compared with patients with NEWS = 0 to 2 but conveyances and time to treatment on average as long as, or even longer than, patients with NEWS = 0 to 2. This suggests the group without NEWS may include a spectrum of sick and less sick patients, and highlights a potentially missed opportunity for earlier conveyance and review of sicker patients, which may have been mitigated if NEWS had been calculated. Alternatively, this group may include patients with clear referral pathways, for example, patients who have had a stroke, for whom NEWS would not have provided additional information. However, primary diagnosis data do not support this hypothesis, for example, 16/2848 (0.56%) were myocardial infarctions and 12/2848 (0.42%) were strokes.

Unlike the other clinical outcomes, patients with NEWS = NR had the same odds of diagnosis of sepsis and slightly lower odds of SOS than patients with NEWS = 0 to 2. As NEWS is recommended by the National Institute for Health and Care Excellence to identify sepsis GPs might be more inclined to calculate NEWS, or its component parts, if they suspect sepsis.

The inference is that GPs are using NEWS when they ‘Think sepsis’ but it is not possible to draw this conclusion definitively.

The link below is to the charts and tables presented in the study findings.

https://bjgp.org/content/70/695/e374/tab-figures-data

Table 1 (abbreviated) Summary of outcomes by NEWS on referral

Process outcomes	NEWS = NR (*N* = 2848)		NEWS = 0 to 2 (*N* = 5514)		NEWS = 3 to 4 (*N* = 2162)		NEWS = 5 to 6 (*N* = 1458)		NEWS ≥7 (*N* = 1065)		Overall (*N* = 13 047)	
Time from referral to arrival in hospital, median minutes (IQR)	79	(48–142)	74	(47–122)	79	(50–126)	85	(57–132)	90	(64–127)	79	(50–129)
Conveyed by ambulance	133	(82–240)	132	(84–236)	115	(78–193)	104	(77–159)	94	(69–139)	116	(78–200)
Conveyed by other transportc	71	(44–124)	68	(44–106)	72	(46–110)	75	(49–118)	85	(60–119)	71	(46–112)
Time from arrival in hospital to review by doctor, median minutes (IQR)	80	(36–156)	78	(34–158)	72	(34–144)	68	(31–130)	54	(25–114)	74	(33–148)
Process outcomes												
Length of stay, median days (IQR)	2	(0–6)	1	(0–5)	3	(1–7)	4	(2–10)	5	(2–11)	2	(0–7)
Admission to ICU, n (%)	17	(0.7)	24	(0.5)	11	(0.5)	15	(1.1)	20	(2.0)	87	(0.7)
Suspicion of sepsis, n (%)	374	(17.9)	764	(19.8)	655	(36.9)	676	(51.3)	669	(67.1)	3138	(31.3)
Primary diagnosis of sepsis, n (%)	54	(2.6)	97	(2.5)	90	(5.1)	102	(7.7)	117	(11.7)	460	(4.6)
2-day mortality, n (%)	13	(0.6)	12	(0.3)	12	(0.7)	10	(0.8)	24	(2.4)	71	(0.7)
30-day mortality, n (%)	147	(7.0)	158	(4.1)	122	(6.9)	117	(8.9)	120	(12.0)	664	(6.6)

Careful interpretation is needed because there is missing data for a number of categories; the North Bristol Trust has a 'NEWS on referral' field. Typically trusts within the North East make limited use of primary care data (ie data on NEWS doesn't flow into clinical systems).