In the UK there are 200,000 cases of sepsis a year, 70% of which originate in the community (National Confidential Enquiry into Patient Outcome and Deaths, 2015). In 2012 NHS Wales introduced the National Early Warning Score (NEWS) into all secondary care hospitals to calculate, articulate and communicate patient deterioration and potential sepsis (Hancock, 2013). However, mandatory use of NEWS was never extended to primary and community care, meaning acute deterioration and sepsis are poorly identified and inconsistently recorded, graded and managed by community professionals (NCEPOD, 2015).

Back in 2016, as a band 5 nurse at Swansea Bay University Health Board, I introduced a bespoke community NEWS chart and scoring system to the acute clinical team (ACT) in Swansea, a community-based service that provides rapid assessments and acute interventions in patients’ homes to avoid hospital admission and expedite discharge. The aim was to better identify and treat acute deterioration and sepsis in patients in the community. In 2019, in accordance with the Welsh Government’s (2019) policy, the chief nursing officer for Wales instructed health boards to work towards implementing an adapted NEWS in all community settings.

Using NEWS for community patients will significantly improve patient outcomes, as delays in the presentation, identification and treatment of sepsis reduce survival and recovery rates, and increase the significant physical, physiological and emotional aftereffects of sepsis (Karikari-Boateng, 2017; The UK Sepsis Trust, 2017; National Institute for Health and Care Excellence, 2016).

Improving community recognition of sepsis using early warning scores

Author
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Abstract
Around 70% of sepsis cases originate in the community and, although the National Early Warning Score is mandatory in secondary care, its use has not been extended to primary and community care. Community NEWS scoring was introduced in an acute clinical team to improve patient outcomes and reduce patient mortality through better detection and treatment of sepsis. Staff confidence in recognising acute deterioration and sepsis increased from 77% to 92%, and community NEWS is now being rolled out to all community services in Wales.

Citation

There are an estimated 200,000 cases of sepsis in the UK each year, resulting in around 37,000 deaths; as many as 70% are thought to originate in the community (National Confidential Enquiry into Patient Outcome and Deaths, 2015). In 2012 NHS Wales introduced the National Early Warning Score (NEWS) into all secondary care hospitals to calculate, articulate and communicate patient deterioration and potential sepsis (Hancock, 2013). However, mandatory use of NEWS was never extended to primary and community healthcare, meaning acute deterioration and sepsis are poorly identified and inconsistently recorded, graded and managed by community professionals (NCEPOD, 2015).

Back in 2016, as a band 5 nurse at Swansea Bay University Health Board, I introduced a bespoke community NEWS chart and scoring system to the acute clinical team (ACT) in Swansea, a community-based service that provides rapid assessments and acute interventions in patients’ homes to avoid hospital admission and expedite discharge. The aim was to better identify and treat acute deterioration and sepsis in patients in the community. In 2019, in accordance with the Welsh Government’s (2019) policy, the chief nursing officer for Wales instructed health boards to work towards implementing an adapted NEWS in all community settings.

Using NEWS for community patients will significantly improve patient outcomes, as delays in the presentation, identification and treatment of sepsis reduce survival and recovery rates, and increase the significant physical, physiological and emotional aftereffects of sepsis (Karikari-Boateng, 2017; The UK Sepsis Trust, 2017; National Institute for Health and Care Excellence, 2016).

NEWS for community use
I joined the ACT in Swansea in 2015, after working in intensive care units and emergency departments where I had used NEWS charts in my everyday patient assessments. When I started work in the community, it was a surprise to discover that NEWS was not in use and neither were regulated observation charts to provide visual cues for changes or trends in vital signs that might indicate a patient is deteriorating. Observations were recorded in
basic box charts, while completion of vital signs was sporadic and depended on the clinical decisions of individual nurses or healthcare support workers, with little or no justification provided in the notes.

In 2016, a chance meeting with a representative from 1000 Lives Improvement (www.1000livesplus.wales.nhs.uk), an NHS improvement service run by Public Health Wales, led to a discussion about NEWS. I was told no community services used NEWS in Wales but was given contacts for health boards that had produced bespoke NEWS charts and screening tools for community hospitals, out-of-hours services and pre-hospital emergency care.

I had already reviewed copies of secondary care NEWS charts used in Swansea Bay University Health Board, and created a smaller, bespoke chart that was more suitable for community use. I then used the examples from other contacts to produce a refined first draft of the Community NEWS chart. Using a quality-improvement model, I developed this into a more-robust, workable document that could be tested on the Swansea ACT caseload. A band 5 staff nurse and two healthcare support workers joined me to review and test the charts alongside the old observation chart, identifying any weaknesses they could see or that became apparent through use. Further reviews were carried out, before producing a final draft, which was implemented across the whole ACT for final testing.

**Training**

As part of this work, I had also prepared a training strategy for staff, which included:

- Mandatory completion of NEWS e-learning;
- Information boards on NEWS;
- Face-to-face training;
- One-to-one support;
- Upskilling and reassurance for staff who had recent experience of using NEWS in secondary care.

The training content was kept fluid to accommodate large differences in NEWS experience in the team and allow training to be focused where it was needed most.

**Audit**

In April 2017, one month after introducing NEWS to the ACT, I carried out an audit of 201 NEWS scores to measure completion of the scoring elements and assess whether vital observations had been converted into a correct score. This showed an accuracy rate of 84% and identified elements of NEWS that most commonly caused errors or omissions: 66% related to blood pressure, 16% to temperature, 9% to respiratory rate, 6% to peripheral capillary oxygen saturation (SpO2) and 3% to pulse.

Amendments were made to the community NEWS chart and a revised version distributed to the whole team for informal discussions on the reasons for alterations, whether the new charts were easily understood and any further changes that could improve their clarity and usability. The final chart was presented to the health board and ratified for community use in July 2018, making it official, statutory documentation for the Swansea ACT.

Table 1 shows the elements that make up the adapted NEWS tool.

**Staff evaluation**

Six months after full roll-out of the NEWS charts, surveys were distributed to 39 members of the ACT to gain feedback on its use, benefits for patients and the service, and to ascertain whether NEWS had improved communication across service boundaries. The survey comprised five statements with which respondents indicated whether they strongly agreed, agreed, disagreed or strongly disagreed; they could also provide free-text comments.

In total, 17 survey were returned; two were discarded as they were incomplete, leaving 15 that could be used for analysis and discussion. Results are given in Table 2. In total, 88% of responses to all five statements were positive (“strongly agree” or “agree” with statements 1-4; “strongly disagree” or “disagree” with statement 5).

Respondents were also asked to rate their ability to identify a deteriorating patient, both before and after the introduction of NEWS, on a scale of 1-10: 1 indicated “never able to identify deterioration” and 10 “always able to identify deterioration”. The average ratings rose from 7.6 before the introduction of NEWS to 9.2 afterwards.

Finally, members of the ACT were asked whether introducing NEWS had had, overall, a positive or a negative effect on their ability to perform their role; all said it had a positive impact. One respondent suggested the tool had succeeded in enabling practitioners to calculate, articulate and communicate patient deterioration and sepsis:

"Patients receive a rapid response to acute illness as all staff grades can use it [the adapted NEWS chart] as a universal tool to quantify a patient’s condition, and any variation is promptly escalated to senior staff for acute assessment of needs. Changing needs are identified and patients are treated accordingly" (advanced nurse practitioner).

Twelve (80%) respondents gave positive responses on the value of NEWS, either agreeing or strongly agreeing that it had helped them to identify when a patient may be unwell. As a community sister stated: "...the NEWS score initiates treatment/admission faster due to identifying sepsis symptoms early. It is a supportive tool in identifying a clinically sick patient."

Fourteen (93%) respondents said NEWS helped them communicate a patient’s condition to other health professionals; a

## Table 1. The adapted NEWS tool

<table>
<thead>
<tr>
<th>Element</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory rate</td>
<td>3</td>
</tr>
<tr>
<td>SpO2</td>
<td>2</td>
</tr>
<tr>
<td>Oxygen</td>
<td>0</td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td>1</td>
</tr>
<tr>
<td>Pulse</td>
<td>2</td>
</tr>
<tr>
<td>ACVPU</td>
<td>3</td>
</tr>
<tr>
<td>Temperature, °C</td>
<td>5</td>
</tr>
</tbody>
</table>

Score ≥3: discuss with duty nurse or senior colleague; score ≥6: immediate discussion with ACT advanced practitioner or ACT doctor. Concern about patient or difficulty obtaining any single parameter should lead to escalation regardless of score.

ACT = acute clinical team; ACVPU = Alert, Confusion, Voice, Pain, Unresponsive; SpO2 = peripheral capillary oxygen saturation; NEWS = National Early Warning Score.

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**Table 2.** Complete a sepsis screen on all patients with NEWS ≥6 to ≥10. (Note: ≤5 indicates low risk of death; ≥6-10 indicates moderate risk of death; ≥11 indicates high risk of death.)

<table>
<thead>
<tr>
<th>Score</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

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ACT = acute clinical team; ACVPU = Alert, Confusion, Voice, Pain, Unresponsive; SPO2 = peripheral capillary oxygen saturation; NEWS = National Early Warning Score.
healthcare support worker stated:  
“I think that NEWS scoring is a good working tool to use alongside visual and other tools, such as sepsis screening – also you can relay this information to GPs, paramedics etc.”

Challenges  
At the start of the project some staff expressed concerns that NEWS charts would replace clinical judgement and assessment by community nurses. This was discussed throughout the process and practitioners were reassured that NEWS:

● Should support clinical judgement, rather than replace it;
● Could provide evidence for clinical decisions that could be communicated effectively within the team or to the wider health board.

The issue is still raised during education sessions and informal discussions but, after using the tool in different situations and appreciating how it can improve care, staff have become less critical.

Benefits  
Community NEWS is now fully integrated into all assessments and patient discussions in Swansea ACT. It provides a common language between clinical colleagues at all levels when identifying, discussing and escalating deteriorating patients, both within the ACT and when referring to other healthcare teams. Perseverance, robust models of change, audit, good communication and support from colleagues have been crucial to its success.

The change has benefited patients by providing a rapid, standardised assessment tool that can identify deterioration and sepsis at an earlier stage and allows for the right treatment at the right time, in the right place. The case study in Box 1 illustrates the case for introducing NEWS as a universal assessment tool across the community. It also demonstrates the potential for missed recognition of a deteriorating patient by experienced practitioners and the advantages NEWS can deliver to stratify risk, aid communication and implement treatment for all community patients.

I now work with 1000 Lives Improvement in Wales to help plan and implement NEWS across community care, and convince community health professionals of its benefits in reducing the time between identifying and treating sepsis. My experience of introducing NEWS to an acute response service is now being used to inform roll-out to the wider community to improve vital-signs completion, identification of deterioration and prioritisation of treatment, while promoting continuity of care in the treatment and management of sepsis (Goulden et al, 2018).

Conclusion  
Introducing a community version of NEWS to clinical assessments in acute clinical care has shown benefits for both patients and staff, and could be disseminated to all community services across the UK to improve recognition, treatment and outcomes for patients with sepsis.  

Table 2. Results of the staff evaluation survey, n=15

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. NEWS has been helpful to me in treating my patients</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2. NEWS has been beneficial to care</td>
<td>8</td>
<td>6</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>3. NEWS has helped me identify when a patient may be unwell</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4. NEWS has helped me to communicate my patient’s condition to colleagues</td>
<td>10</td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5. NEWS has not helped me to recognise when my patients are sick/deteriorating</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>9</td>
</tr>
</tbody>
</table>

NEWS = National Early Warning Score.