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Teamwork, communication and collaboration: a co-design approach to developing a national Maternity Early Warning Score (MEWS)

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Introduction

Early recognition of potential maternal illness is essential as deterioration can be alarmingly rapid, with catastrophic consequences. Although maternal mortality in the UK has improved, sub-standard care in detection and escalation of maternal deterioration remains an issue across the UK.[1,2]

Scotland had some challenges in terms of early detection of maternal deterioration. In 2016, 14 different Maternity Early Warning Scores (MEWS) were in operation in maternity services. Thirteen NHS boards used colour trigger charts, with 75 different combinations of normal and abnormal vital signs, ranges and escalation pathways.

For over 15 years, national maternal morbidity and mortality audits have recommended implementation of a national MEWS for use on all obstetric women to combat the above challenges. Until 2017, only two such systems existed across the world – one in Norway and one in Ireland.

The maternity care programme within the Maternity and Children Quality Improvement Collaborative (MCQIC) set out to become the third country in the world to implement a national MEWS aimed at promoting and facilitating standardisation and consistency of practice. It was intended for this to be co-designed by clinical multi-professional teams across Scotland – midwives, anaesthetists and obstetricians.

Board	BP Systolic Trigger	BP Diastolic Trigger
National MEWS	Red	Yellow
Board 1	None	None
Board 2	Yellow	Yellow
Board 3	Yellow	Red
Board 4	None	None
Board 5	Yellow	Yellow
Board 6	Yellow	Yellow
Board 7	Orange	Yellow
Board 8	Yellow	Yellow
Board 9	Red	Yellow
Board 10	None	None
Board 11	Yellow	Yellow
Board 12	Yellow	Yellow
Board 13	None	None
Board 14	none	None

Figure 1: Snapshot variation of local versus national charts, using case scenario of sepsis

Method

Formation of core focus group – 10 NHS boards formed the team

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Literature review and physiological parameters and escalation pathway agreed

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Chart co-designed by core focus group and SPSP MCQIC (Figure 2)

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Use of quality improvement methodology, rapid-cycle PDSA testing of front and back pages of the chart

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Virtual and face-to-face meetings to study quantitative and qualitative data from testing

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Communication with NHS boards on progress and social media plan developed for launch

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Collaboration with colleagues in Ireland to learn from their success

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Chart validation from Royal College of Gynaecologists and Obstetricians

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Collaboration with Clevermed (company delivering paperless maternity records)

Results

Simulation and testing demonstrated national MEWS is more sensitive to predicting potential deterioration than any existing chart in Scotland and is the only chart with a robust pathway for escalation (Figure 1). From rapid-cycle PDSA testing, the maternity community has had the opportunity to be involved in its design and provide suggestions for change (Figure 3).

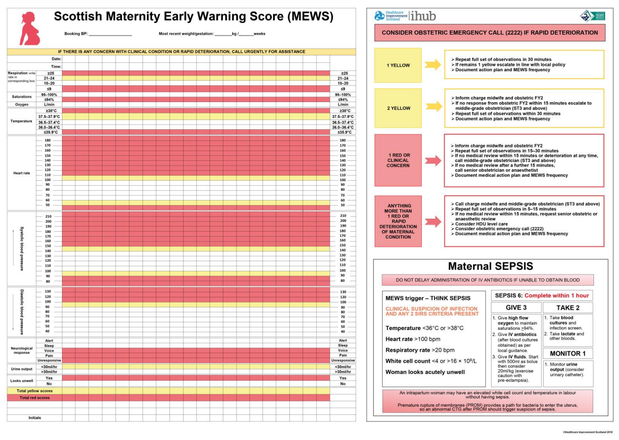

Figure 2: Front page of national MEWS chart

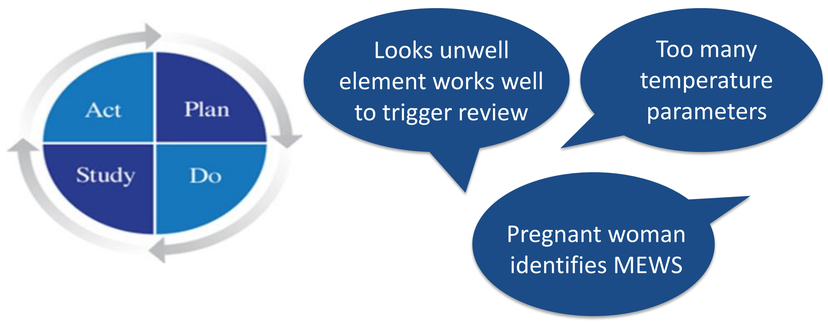

Figure 3: Testing feedback from clinicians

Conclusion

The national MEWS was launched on 24 October 2018, making Scotland only one of three countries in the world to have such a system. Almost all NHS boards have created an implementation plan, supported by Clevermed where electronic patient records are in operation.

The MCQIC team has developed resources to support local implementation, including a lanyard/pocket guide (Figure 4).

Work is now under way to validate national MEWS for out-of-hospital use and in non-obstetric settings, such as the Scottish Ambulance Service and A&E, thereby providing a national system-wide approach to assessing and responding to deteriorating maternity patients.

Scottish Maternity Early Warning Score (MEWS)

Physiological parameters	Red	Yellow	Normal	Yellow	Red
Respiration rate	≤9		10–20	21–24	≥25
Oxygen saturation (%)	≤94		95–100		
Temperature (°C)	≤35.9		36.0–37.4	37.5–37.9	≥38
Heart rate	≤50	51–60	61–99	100–109	≥110
Systolic BP	≤90	91–99	100–139	140–149	≥150
Diastolic BP			40–89	90–99	≥100
Neurological response (ASVPU)			A or S		V, P or U
Urine output (ml/hr)		<30	>30		
Looks unwell			No		Yes

If there is any concern with clinical condition or rapid deterioration, call urgently for assistance (2222)

Figure 4: Front of the lanyard/pocket guide

References:

1. Saving mothers lives: reviewing maternal deaths to make motherhood safer 2006-08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom BJOG 2011. Available at: www.ncbi.nlm.nih.gov/pubmed/21356004
2. The Seventh Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. London: CEMACH Centre for Maternal and Child enquiries (CEMACE). Available at: www.publichealth.hscni.net/sites/default/files/Saving%20Mothers%27%20Lives%202003-05%20.pdf