Are Early Warning Scoring Systems effective in Identifying Deterioration Early

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Background

• Confidential inquiry into the quality of care pre- ICU admission
• Studied 100 consecutive admissions finding:
  • 20 managed well
  • 54 received suboptimal care
  • Disagreement over remaining 26

(McQuillan et al 1998)
• 60% of primary events studied (deaths, cardiac arrests and unplanned admissions to ICU) were preceded by abnormal physiology.

(Kause et al 2004)
Detailed analyses of serious patient safety incidents identified that 11% of deaths were related to ‘deterioration not recognised or not acted upon’

(National Patient Safety Agency 2007)

‘Preventable deaths due to problems in care in English acute hospitals: a retrospective case record review study’.

BMJ Quality and Safety Online First 10.1136/bmjqs-2012-001159
http://qualitysafety.bmj.com
Preventable Deaths 2012

- Retrospective case review of 1000 adult deaths in 10 hospitals.
- 5.2% had ≥ 50% chance of being preventable.
- These deaths were attributed to poor clinical monitoring, diagnostic errors, and inadequate drug or fluid management.
Time to Intervene?

• Looked at 585 cases of cardiac arrest in hospitals:
  – In 17.8% of cases the admitting doctor did not recognise the severity of the patient’s condition.
  – 1 in 10 doctors did recognise severity but failed to escalate.
  – 1 in 6 cases were not escalated in a timely manner.
  – Only 23% had a monitoring plan documented.

» National Confidential Enquiry into Patient Outcome and Death (NCEPOD) 2012.
Time to Intervene?

• Resuscitation status:
  – Out of 526 patients 36.8% had inappropriate resuscitation decisions made.
  – 1% of patients who received CPR were on an end of life care pathway!
  – 62% of patients showed instability for more than 6 hours preceding cardiac arrest.
  – Cardiac arrest was considered predictable in 63.7% of cases and avoidable in 37.8%.
  – 78% of patients had no explicit resuscitation decision made.
Early Warning Scoring

- 1st known EWS system developed in James Paget Hospital in 1997 using a simple weighted score based on 5 parameters

- Use of EWS recommended in Comprehensive Critical Care Report (DOH 2000)

- 72 modified EWS identified questioning their validity (Smith et al 2008)
• Royal College of Physicians (2012) published a report recommending the use of a national early warning score (NEWS) to standardise practice

• NEWS with its rigorous evidence base and performance evaluation became the gold standard EWS
• According to Odell (2015) nurses use EWSs to support clinical intuition, and use the recognition of deterioration patterns and family concerns to guide the timing of vital signs checks.

• Hope & Ball (2018) identified that relationships with other professionals, equipment problems and the clinical environment affect when observations are done.
Electronic Scoring systems

• Computer programmes can chart variables, calculate scores and immediately alert staff to deteriorating patients

• However they are reliant on timely and complete observations being carried out

  Nwulu et al (2012)
Accuracy of Monitoring

• Availability of functioning equipment

• Understanding of vital signs & significance

• Recording data timely and effectively

• What about accurate fluid balance monitoring
Accuracy of monitoring

- Evidence suggests respiratory rate is an under-reported sign and is often estimated by nurses (Flenady et al 2016)
- Grant S (2018) highlights that systolic blood pressure does not score until it reaches 220mmHg and diastolic is not considered
- SpO2 can be affected by several factors including heart rate & rhythm, peripheral perfusion and nail polish
Frequency of Monitoring

• Hope and Ball (2018) identified that patient vital signs monitoring can be missed or delayed at night

• According to Robinson et al (2016) survival following cardiac arrest is worse when the arrest occurs at night which could be related to reduced observations

• Freathy et al (2019) found considerable variation in instructions given to staff regarding frequency of monitoring and response times for staff
Co-Morbidities

• Patients with Co – Morbidities often trigger concern due to high NEWS scores and are escalated inappropriately

• In COPD patient higher respiratory rate, lower SpO2 and use of supplemental oxygen can be normal
NEWS 2

• Modified to account for concerns about NEWS and T2RF
• Includes a new SpO2 scoring scale for patients with T2RF at risk of retaining CO2
• Aims to maintain SpO2 88 – 92% the range recommended for these patients
• Also includes the oxygen delivery system and flow rate to improve accuracy of monitoring
NEWS 2 and T2RF

• The NEWS 2 report advocates a blood gas analysis be performed before instituting the adjusted score

• However Hodgeson et al (2018) argue that there is a risk of the adjusted scale being applied to patients with T2RF without a blood gas analysis putting them at risk of delayed recognition of deterioration
• According to Pimentel et al (2018) the changes proposed in NEWS 2 do not improve the outcomes for patients with T2RF including in-hospital death, unanticipated ICU admission and cardiac arrest.

• They suggest modifying the clinical care escalation protocol and response to triggering as a more appropriate alternative to changing the weighting system for NEWS.
NEWS 2 and ACVPU

• Includes new confusion including disorientation and delirium
• Should always be considered as new until otherwise known
• New onset or worsening confusion should always prompt concern about potentially serious underlying causes
• Warrants urgent clinical evaluation
• Does NEWS 2 scoring lead to complacency amongst staff?

• What about clinical judgement?

• Back to basics – look, listen and feel

• Gut feeling??
ANY QUESTIONS?
References

• Hope J, Ball J (2018) Why are vital signs observations missed at night? Nursing Times {online} 114, 8 pp 34-35
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References


- Robinson et al (2016) Risk- adjusted survival for adults following cardiac arrest by day of week and time of day: observational cohort study BMJ Quality and Safety 25:11 pp 832- 841
