

suit local circumstances such as department layout, patient demand levels, skill mix and interests of GPs practitioners and the accessibility of community primary care services. Pathways to redirect patients with non-urgent primary care problems to community primary care services were also used, with local variation in protocols based on staffing, patient demand and links to community primary care services. Local clinical leads and managers need to consider which pathway(s) may best suit their local context and needs. Consistency of terminology used to describe pathways between EDs and primary care services is necessary for multi-site evaluation, quality improvement and performance measurement.

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#### THE TYPES AND EFFECTS OF FEEDBACK RECEIVED BY EMERGENCY AMBULANCE STAFF: A SYSTEMATIC MIXED STUDIES REVIEW WITH NARRATIVE SYNTHESIS

<sup>1</sup>Caitlin Wilson, <sup>1</sup>Jonathan Benn, <sup>2</sup>Gillian Janes, <sup>3</sup>Rebecca Lawton. <sup>1</sup>University of Leeds; <sup>2</sup>Manchester Metropolitan University; <sup>3</sup>University of Leeds/Bradford Institute for Health Research

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**Aims/Objectives/Background** The phenomenon of feedback is well-researched within the wider healthcare context, where it is suggested that feedback can improve patient care and patient safety by enhancing clinical performance and staff mental health. Within prehospital care, reviews have been conducted for automated feedback from defibrillators and debrief after simulation, but not on the wider concept of feedback. The aim of this systematic review is to identify, describe and synthesize the published literature on the types and effects of feedback received by emergency ambulance staff. PROSPERO CRD42020162600.

**Methods/Design** The search strategy consisted of three facets: ambulance staff synonyms, feedback synonyms and feedback content. Databases searched from inception were MEDLINE, EMBASE, AMED, PsycInfo, HMIC, CINAHL and Web of Science. Studies were included if they were qualitative or quantitative empirical research exploring the concept of feedback, i. e. the systematised provision of information to emergency ambulance staff regarding their performance within prehospital practice. Study quality was appraised using the Mixed Methods Appraisal Tool and data analysed using narrative synthesis.

**Results/Conclusions** The search strategy yielded 2424 articles excluding duplicates. 94 studies met the inclusion criteria after full-text review, of which 36 fleetingly mentioned increased feedback as a solution to improving specific circumstances (e. g. decision-making, burnout). The remaining 58 studies consisted of 48 interventional prehospital feedback studies, 8 non-interventional studies and 2 feasibility studies. Narrative synthesis revealed a wide range of prehospital feedback types with the majority of studies focusing on performance or patient outcome feedback. The effects of feedback encompassed both personal and professional development, such as improved decision-making, reflection and closure. Mechanisms of providing prehospital feedback varied from electronic dashboards to case reviews and performance appraisals. Further empirical research is required to explore whether the published literature reflects current prehospital practice, as well as to determine the when, what, how and why of ambulance staff desiring feedback.

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#### THE RELATIONSHIP BETWEEN INTRACRANIAL MRI ABNORMALITIES AND POST-CONCUSSIVE SYMPTOMS IN ED PATIENTS WITH A NORMAL CT: AS DEMONSTRATED ON THE RIVERMEAD POST CONCUSSION SYMPTOM QUESTIONNAIRE (RPQ)

<sup>1</sup>Daniel Whitehouse, <sup>2</sup>Sophie Richter, <sup>2</sup>Stefan Winzeck, <sup>2</sup>Evgenios N Komaropoulos, <sup>2</sup>Tilak Das, <sup>3</sup>Thijs Vande Vyvere, <sup>4</sup>Jan Verheyden, <sup>5</sup>Guy B Williams, <sup>6</sup>Marta M Correia, <sup>2</sup>David K Menon, <sup>1</sup>Virginia FJ Newcombe, <sup>7</sup>CENTER-TBI MRI Sub-Study Participants and Investigators. <sup>1</sup>University of Cambridge, University Division of Anaesthesia; <sup>2</sup>Division of Anaesthesia, Department of Medicine, University of Cambridge, Cambridge, UK; <sup>3</sup>1 - Research and Development, Icometrix, Kolonel Begaultlaan 1b/12, 3012 Leuven, Belgium 2- Department of Radiology, Antwerp University Hospital and University of Antwerp; <sup>4</sup>Research and Development, Icometrix, Kolonel Begaultlaan 1b/12, 3012 Leuven, Belgium; <sup>5</sup>Department of Clinical Neurosciences, Wolfson Brain Imaging Centre, University of Cambridge; <sup>6</sup>MRC Cognition and Brain Sciences Unit, University of Cambridge; <sup>7</sup>CENTER-TBI MRI Sub-Study Participants and Investigators

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**Aims/Objectives/Background** Mild traumatic brain injury (TBI) is common presentation to the ED. Mild, however, is a misnomer with 10–40% of patients suffering from post-concussion symptoms for months to years following injury.<sup>1</sup> <sup>2</sup>Patients often re-present to primary care or ED with these symptoms, and the role of repeat imaging in this cohort remains uncertain. Aims: assess TBI patients discharged from the ED with no acute intracranial findings on CT head scan, who subsequently had a research-driven MRI and documented 3-month RPQ, to determine the association between ongoing post-concussion symptoms and MRI pathology.

**Methods/Design** 91 patients in the CENTER-TBI dataset met the inclusion criteria.<sup>3</sup> Mann-Whitney U test used to compare 3-month RPQ and MRI findings. Numbers and percentages of patients with RPQ >35 and >19 presented owing to a score of 35 predicting moderate to severe activity limitation,<sup>4</sup> and 19 representing mean RPQ in patients with diagnosed post-concussion syndrome (PCS).<sup>2</sup>

**Results/Conclusions** 15/91 CT-ve (16.5%) patients had abnormalities on acute MRI (2 intraparenchymal haemorrhages, 13 Diffuse Axonal Injury (DAI)). No significant difference between median 3 month RPQ between MRI -ve (2.00 [IQR 0.00 – 14.00] and MRI +ve (0.00 [IQR 0.00 – 8.50]) patients (p=0.51, Mann-Whitney U test). Of patients with a RPQ >35, only 1/8 (12.5%) had a +ve MRI. Of patients with a RPQ >19 2/14 (14.3%) had +ve MRI, both DAI.

No difference was found between RPQ scores of MRI positive and negative patients, suggesting no significant relationship between ongoing symptomatology following mild TBI and gross MRI findings in patients with a negative acute CT. This study is limited by a small number of patients with positive neuroimaging and a lack of quantitative MRI data. Further prospective research is required to assessing a larger patient cohort and more sensitive imaging modalities to examine the utility of repeat neuroimaging in patients with ongoing concussive symptoms.

#### REFERENCES

1. Polinder S, Cnossen MC, Real RGL, et al. A multidimensional approach to post-concussion symptoms in mild traumatic brain injury. *Front. Neurol* 2018;**9**:1113. doi:10.3389/fneur.2018.01113
2. Ingebrigtsen T, Waterloo K, Marup-Jensen S, et al. Quantification of post-concussion symptoms 3 months after minor head injury in 100 consecutive patients. *J Neurol* 1998;**245**:609–12. doi:10.1007/s004150050254
3. Maas AIR, Menon DK, Steyerberg EW, et al. Collaborative European neurotrauma effectiveness research in traumatic brain injury (CENTER-TBI): A prospective longitudinal observational study. *Neurosurgery* 2015;**76**:67–80. doi:10.1227/NEU.0000000000000575

4. De Guise E, Bélanger S, Tinawi S, *et al.* Usefulness of the rivermead postconcussion symptoms questionnaire and the trail-making test for outcome prediction in patients with mild traumatic brain injury. *Appl Neuropsychol* 2016;**23**:213–22. doi:10.1080/23279095.2015.1038747

### 356 COMPARISON OF QSOFA, AND HOSPITAL EARLY WARNING SCORES FOR PROGNOSIS IN SUSPECTED SEPSIS IN EMERGENCY DEPARTMENT PATIENTS: A SYSTEMATIC REVIEW

<sup>1</sup>Lisa Sabir, <sup>2</sup>Shammi Ramlakhan, <sup>3</sup>Steve Goodacre. <sup>1</sup>Northern General Hospital; <sup>2</sup>Sheffield Children's Hospital NHS Foundation Trust, Western Bank, Sheffield, S10 2TH; <sup>3</sup>School of Health and Related Research

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**Aims/Objectives/Background** Sepsis is a major cause of morbidity and mortality and many tools exist to facilitate early recognition. The current international consensus definition of sepsis recommends the use of the quick Sequential Organ Failure Assessment (qSOFA) score in the emergency department (ED) to rapidly identify those who are likely to have poor outcomes. Early Warning Scores (EWS) are used more routinely; if these could provide the same information, they could allow standardisation and streamlining of effort.

**This review compares two tools** qSOFA and EWS (National/Modified Early Warning Scores (NEWS/MEWS)) for predicting intensive care (ICU) admission and mortality when applied to suspected sepsis patients in the ED.

**Methods/Design** A literature search was conducted using Medline, CINAHL, Embase, and Cochrane Library, hand searching of references and a grey literature search with no language or date restrictions. Two authors selected studies and quality assessment completed using QUADAS-2. Area under the Receiver Operating Characteristic Curve (AUROC), sensitivities, and specificities were compared.

#### Results/Conclusions

**Results** 12 studies were included, totalling 395,661 patients. All reported mortality and six reported ICU admission.

AUROC estimates were variable ranging from little better than chance to good prediction. The ranges demonstrated overlap between scores suggesting little difference for predicting mortality (NEWS: 0.59–0.88; qSOFA: 0.57–0.79; MEWS 0.56–0.75). However, individual papers mostly reported higher AUROC values for NEWS than qSOFA. NEWS demonstrated a trend to better sensitivity for ICU admission (NEWS $\geq$ 5 0.46–0.91; qSOFA $\geq$ 2 0.12–0.53) and mortality (NEWS $\geq$ 5 0.51–0.97; qSOFA $\geq$ 2 0.14–0.7) but lower specificity (ICU: NEWS $\geq$ 5 0.25–0.91; qSOFA $\geq$ 2 0.67–0.99. Mortality: NEWS $\geq$ 5 0.22–0.91; qSOFA $\geq$ 2 0.58–0.99).

**Conclusion** The wide range of AUROC estimates and high heterogeneity limit our conclusions. Allowing for this, the NEWS AUROC was consistently higher than qSOFA within individual papers. Both scores allow threshold setting, determined by the preferred compromise between sensitivity and specificity. At established thresholds NEWS trended to higher sensitivity whilst qSOFA favoured specificity.

### 161 ANALYSIS OF AN AMBULATORY CARE PATHWAY FOR PATIENTS WITH COVID-19 UTILISING REMOTE PULSE OXIMETRY

Jonathon Kyriakides, Aria Khani, Charlotte Kelly, Reginald Coleman. *Barnet Hospital, Royal Free London NHS Foundation Trust*

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**Aims/Objectives/Background** The safe discharge of COVID-19 patients from the emergency department (ED) is difficult due to uncertainties surrounding the trajectory of the disease course. The infectivity of COVID-19 also limits follow-up options. A novel pathway consisting of home pulse oximetry with telephone follow-up was created to facilitate safe discharge from the ED of a London district general hospital. The primary objective was to utilise home pulse oximetry to prevent hospital admission. The secondary objective was to identify those requiring further care or investigation.

**Methods/Design** Adult patients with confirmed or suspected COVID-19 with oxygen saturations of between 90–94% who were otherwise suitable for discharge were identified. These patients were discharged from the ED with a pulse oximeter. Oxygen saturations were measured three times a day for seven days. Patients received a structured telephone consultation on days two, five and seven post-discharge from the ED, and a decision was made as to whether further clinical assessment in the ED was necessary.

**Results/Conclusions** Of the twenty patients discharged on the pathway, 85% avoided hospital admission, whilst 15% were re-assessed and subsequently admitted to hospital. 20% of patients required re-assessment in the ED but did not require admission.

Home pulse oximetry with telephone follow-up was used to prevent hospital admission in a considerable proportion of patients who would have otherwise been admitted in the absence of this pathway. Telephone follow-up effectively identified patients who required further clinical assessment. Increasing age, the presence of co-morbidities, and pulmonary infiltrates on chest radiograph were more common in the cohort who required re-assessment. This study demonstrates the potential for safe ambulation of a subgroup of patients with COVID-19, whilst identifying practical inclusion criteria which could be replicated in ambulatory units across the UK.

### 185 A CLINICAL RISK SCORE TO IDENTIFY PATIENTS WITH COVID-19 AT HIGH RISK OF CRITICAL CARE ADMISSION OR DEATH: AN OBSERVATIONAL COHORT STUDY

James Galloway, Ruth Snee, Fleur Cantle, Raeesa Jina, Andrew Brookes, Carole Reid, Leah Sugarman, Sam Norton. *King's College Hospital*

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**Aims/Objectives/Background** The COVID-19 pandemic continues to escalate. There is urgent need to stratify patients. Understanding risk of deterioration will assist in admission and discharge decisions, and help selection for clinical studies to indicate where risk of therapy-related complications is justified.

**Methods/Design** An observational cohort of patients acutely admitted to two London hospitals with COVID-19 and positive SARS-CoV-2 swab results was assessed. Demographic details, clinical data, comorbidities, blood parameters and chest radiograph severity scores were collected from electronic health records. Endpoints assessed were critical care admission and death. A risk score was developed to predict outcomes.

**Results/Conclusions** Analyses included 1,157 patients. Older age, male sex, comorbidities, respiratory rate, oxygenation, radiographic severity, higher neutrophils, higher CRP and