

Vedlegg 2. Inkluderte kvantitative studier

Author	Country	Purpose	Study population	Study design	Key findings	What outcomes are used?
Barker, R. O., Stocker, R., Russel, S., Roberts, A., Kingston, A., Adamson, J., Hanratty, B (2019)	United kingdom	To explore the feasibility of measuring the NEWS in care homes and describe the distribution of NEWS readings	Patients and health care personnel	Descriptive analysis	Use of NEWS in care homes appear to be feasible. The majority is not elevated, and distribution of scores is consistent with other out-of-hospital settings	Frequencies of different values of NEWS compared to routine or concern measures
Bayer, O., Schwarzkopf, D., Syumme, C., Stacke, A., Hartog, C.S., Hohenstein, C., Kabisc, B., Reichel, J., Reinhart, K., Winning, J. (2014)	Germany	To develop and evaluate an early sepsis detection score for the prehospital setting	Patients	Cohort study	MEWS is less sensitive and has lower specificity compared to the prehospital early sepsis score.	Predictive validity of the prehospital early sepsis detection score (compared to MEWS, The robson screening tool an the BAS 90-30-90))
Camm, C. F.; Hayward, G.; Elias, T. C. N.; Bowen, J. S. T.; Hassanzadeh, R.; Fanshawe, T.; Pendlebury, S. T.; Lasserson, D. S.; (2018)	England	To evaluate the performance of the tools (SIRS, NEWS, NICE-HR, NICE ;R and qSOFA) by examining the association with care and clinical outcomes.	Patients	Service evaluation	NEWS showed better performance than qSOFA and NICE. Compared to SIRS it had lower predicting ability.	Need for escalated care, 30 day mortality, 30 day readmission
Challen, Kirty, Darren Walter (2010)	England	To analyze whether a similar physiological-social system would support prehospital decision-making.	Patients	cohort study	It is feasible that a scoring system can incorporate physiological and social variables in order to provide support and governance	Hospital admission and need for physiologically stabilizing treatment
Dillon, Kate; Hook, Chris; Coupland, Zoe; Avery, Pascale; Taylor, Hazel; Lockyer, Andy; (2020)	England	To evaluate lowest recorded prehospital oxygen saturation or pre hospital NEWS2 as a predictor of outcome in patients with covid-19	Patients	Service evaluation	The pre hospital NEWS2 was significant higher in patients who died, than patients who survived to discharge.	discharged or mortality
Essam, Nadya, Windle, Karen, Mullineaux, David et al (2015)	England	To evaluate the use of MEWS to support paramedics' decisions to transport patients to hospital, or treat at home	Ambulance personnel	interrupted time series	MEWS had no effect on transport or revisit rates	to consider all cases where the MEWS was 0 or 1, and decide whether patient needed to be transported to hospital or whether they could be treated at home.
Fullerton, J.N., Price C.L., Silvey N.E., Brace S.J., Perkins G.D. (2011)	England	To compare the predictive accuracy of MEWS with current clinical practice (clinical judgement).	Patients	cohort study	Clinical judgement alone has low sensitivity for critical illness in the pre-hospital environment. The addition of MEWS improves detection	an adverse event within 24 h of admission to the hospital
Gray, J.t., Challen K., Oughton L. (2009)	England	To assess the performance of PMEWS in adult patients seen in the community and its correlation with emergency care practitioners decision	Patients	cohort study	PMEWS correlates well with decisions to admit to hospital or leave at home	Management in the community or transport to hospital

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		making to either treat and leave or transfer for hospital assessment				
Hargreaves, D. S.; de Carvalho, J. L. J.; Smith, L.; Picton, G.; Venn, R.; Hodgson, L. E.; (2020)	England	Is a change in NEWS a better predictor of mortality than an isolated score when screening for suspicion of sepsis?.	Patients	Cohort study	Persistently elevated NEWS, from prehospital through the ED to the time of ward admission, combined with an elevated ED lactate identifies patients with suspicion of sepsis at highest risk of in-hospital mortality	30 days mortality and ICU admission
Hernes, Synnøve Karin; Baste, Valborg; Krokmyrdal, Kurt Arild; Todnem, Silje Longva; Ruths, Sabine; Johansen, Ingrid Hjulstad; (2020)	Norway	The aim of this study was to examine associations between characteristics of the patient at admission to MAU and further transfer to hospital	Patients	Cohort study	Likelihood of transfer to hospital increased with male gender and higher TEWS on admission. TEWS > 2 at admission should make physicians alert to the need of close monitoring for lack of improvement.	transferred to hospital
Philip Hodgson, Professor Glenda Cook, Juliana Thompson and Hilary Abbott-Brailey (2017)	Scotland	Assess the relationship between NEWS score and frailty, cognitive impairment, dependency, functional ability and treatment outcomes in the acutely ill older care home resident indicators. To examine the impact of the introduction of NEWS on clinical decision-making process	Both patients and health care personnel	Mixed method	Skåringer utenfor baseline ble gjort på bakgrunn av klinisk forverring. Ekstra EWS førte til henvisning til andre i mint 50% av tilfellene.	1. Assess the relationship between NEWS score and frailty, cognitive impairment, dependency, functional ability and treatment outcomes Examine the impact of the introduction of NEWS on clinical decision-making process in relation to treatment of the acutely ill older care home resident.
Hoikka, M., Länkimäki, S., Silfvast,, T., Ala-Kokko T.I (2016)	Finland	To evaluate the accuracy of the protocol by comparing risk-assessment guided by the national criteria-based dispatch protocol at the time of the emergency call with the NEWS at the EMS scene to quantify the rate of over- and under-triage	patients	Cohort study	The risk assessment made by the dispatcher was correct (compared to risk score NEWS) in 67% of the cases.	Over and under triage at the medical scene
Hoikka, M., Länkimäki, S., Silfvast,, T., Ala-Kokko T.I (2018)	Finland	To examine the accuracy of the prehospital NEWS in predicting, and describe the causes of death.	Patients	cohort study	low sensitivity to 30 days mortality. High risk in NEWS could predict early death.	1 and 30 days mortality
Ivic, R.; Kurland, L.; Vicente, V.; Castren, M.; Bohm, K.; (2020)	Sweden	to determine the prevalence of serious conditions in patients presenting with NSCs to the EMS	Patients	Cohort study	The presence of serious conditions as well as increased mortality rates were associated with Rapid Emergency Triage and Treatment system (RETTs)	serious condition and mortality within 24 h and 30 days

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					as well as National Early Warning Score (NEWS) irrespective of triage score.	
Jouffroy, R., Saade, A., Ellouze, S., Michaloux, M., Carli, P., Vivien, B. (2017)	France	To evaluate the predictive ability of qSOFA, RST, MEWA and PRESEP scores on out-of-hospital triage of septic patients, to predict intensive care unit admission	Patients	Cohort study	None of the scoring systems is relevant in the setting to identify septic patients requiring ICU admission.	ICU admission
Kitahara, O., Nishiyama, K., Yamamoto, B., Inoue, S., Inokuchi S. (2018)	Japan	To determine the accuracy of the qSOFA score in predicting mortality among prehospital patients with and without infection	Patients	cross sectional study	The prehospital qSOFA was more accurate than MEWS in predicting in-hospital mortality in noninfected patients	In-hospital mortality and hospital admission
Lane, D. J.; Wunsch, H.; Saskin, R.; Cheskes, S.; Lin, S.; Morrison, L. J.; Scales, D. C.; (2020)	Canada	To identify which screening strategies to use when identifying patients with sepsis	Patients	Cohort study	NEWS has a good predictive ability in detecting sepsis from minimum to maximum score	diagnosed sepsis
Leung, S.C., Leung, L.P., Fan, K.L., Yip, W.L. (2016)	China	To investigate whether prehospital MEWS can identify non-trauma patients requiring life-saving intervention within 4 h of presentation to ED	Patients	Cohort study	Prehospital MEWS may perhaps play a role in predicting the need for LSI within 4 h of ED presentation	adverse event in which a LSI was undertaken within 4 h of presentation to ED
Magnusson, C., Herlitz J., Axelsson C. (2020)	Sweden	To evaluate RETTS-A performance, compare RETTS-A with NEWS and NEWS2 and evaluate the emergency medical service (EMS) nurses field assessment with the physicians final hospital diagnosis	Patients	Cohort study	NEWS and NEWS2 appeared to perform better on outcomes related to vital signs (higher specificity), RETTS-A predicted time-sensitive conditions better and more correctly classified low risk triaged patients.	Time-sensitive condition, occurrence of complication within 48 h, admission to in-patient care, 48 H mortality, 30 day mortality
Martin-Rodriguez F., Castro-Villamor, M.A., Vegas, C.d.P., Martin-Conty, J.L., Mayo-Iscar A., Benito, J.F.D., Ibañes, P.D.B., Arnillas-Gómez P., Escudero-Cuadrillero C., López-Izquierdo R. (2018)	Spain	To evaluate different scales for use in the prehospital setting and to select the most relevant one by applicability and capacity to predict mortality in the first 48 h.	Patients	Cohort study	all scales have high capacity to predict short term mortality. The early warning core studied (except MEWS) show no statistically significant differences between the,	mortality within 48 h (after what not described)
Martin-Rodriguez F., López-Izquierdo R., Vegas, C.d.P., Sanchez-Soberion, I., Benito, J.F.D., Martin-Conty, J.L., Castro-Villamor, M.A. (2019)	Spain	To assess the predictive capacity of the NEWS2 at prehospital level for the detection of early mortality in the hospitals	Patients	cohort study	the study supports the hypothesis that NEWS2 performed prehospital level can help identify patients at high risk of suffering early mortality both within 24 and 48 h.	early hospital mortality (within the first 24 h) due to any cause. Secondary: mortality after 2, 7 and 30 days

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Martin-Rodrigues F., Lòpez-Izquierdo R., Vegas, C.d.P., Benito, Ibanez, P.D.B., Mangas I.M., Martin-Conty, J.L., Castro-Villamor, M.A. (2018)	Spain	To evaluate the ability of the prehospital NEWS2-L to predict early mortality	Patients	Cohort study	The preNEWS-L is a useful prognostic tool that can be assessed quickly and easily in prehospital settings	Mortality within 2 days from the index event(and 7 days and 30 days)
Martin-Rodrigues F., Vegas, C.d.P., Mohedano-Moriano A., Polonio-lopez B., Miquel C.M., Vinuela A., Fernandez C.D., Correas J.G., Lòpez-Izquierdo R., Martin-Conty, J.L. (2020)	Spain	To evaluate the predictive capacity of the NEWS2 and prehospital lactate, individually and combined at the prehospital level to detect patients with syncope at risk of early mortality	Patients	cohort study	NEWS2-L better predicted early mortality	Mortality within 48 hours. Secondary: advanced life support, and need for ICU
Martin-Rodrigues F., Lòpez-Izquierdo R., Benito, J.F.D., Sanz-Garcia A., Vegas, C.d.P.,Castro-Villamor, M.A. Martin-Conty, J.L., Ortega G.J. (2020)	Spain	To assess wheter the use of prehospital lactate can increase the prognistic accuracy of the NEWS2	Patients	Cohort study	The NEW2 can be improved by incorporating lactate determination to more accurately predict the risk of mortality	mortality within 48 h.
Martin-Rodriguez, F.; Sanz-Garcia, A.; Medina-Lozano, E.; Castro Villamor, M. A.; Carbajosa Rodriguez, V.; Del Pozo Vegas, C.; Fadrique Millan, L. N.; Ortega Rabbione, G.; Martin-Conty, J. L.; Lopez-Izquierdo, R.; (2020)	Spain	to contrast the validity of seven early warning scores in the prehospital setting and specifically, to evaluate the predictive value of each score to determine early deterioration-risk during the hospital stay,	Patients	Cohort study	All the analyzed scores have a good predictive capacity for early mortality, and no statistically significant differences between them were found. The National Early Warning Score 2, at the clinical level, has certain advantages	Mortality after 1, 3 and 7 days
Mitsunaga, T., Hasegawa, I., Uzura, m., Okuno, K., Otani, K., Ohtaki, Y., Sekine, A., Taked, S. (2019)	Japan	To evaluate the usefulness of the pre-hospital national early warning score (pNEWS) and the pre-hospital modifies early warning score (pMEWS) for predicting admission and in-hospita mortality in elderly patients presenting to the emergency department. They also compare the pNEWS with emergency department NEWS and MEWS	Patients	Cohort study	low utility of the pNEWS and pMEWS as predictors of admission and in-hospital mortality in the elderly patients. Emergency NEWS/MEWS predict admission and mortalitu more accurately	admission and in-hospital mortality (until discharged or maximum 28 days)

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Pirneskoski, J., Kuisima, M., Olkkola, K. T., Nurmi, J., (2019)	Finland	To investigate the diagnostic accuracy of NEWS in a prehospital setting using large population-based databases in term of short-term mortality	Patients	cohort study	NEWS predicts early mortality in a prehospital setting, and especially well in trauma victims	Mortality within 1 day of emergency medical services dispatch. Secondary: death within 7 and 30 days
Pirneskoski, J.; Laaperi, M.; Kuisma, M.; Olkkola, K. T.; Nurmi, J.; (2021)	Finland	to examine whether age has an effect on predictive performance of short-term mortality of NEWS in a prehospital setting. We also evaluated whether adding age as an additional parameter to NEWS improved its short-term mortality prediction.	Patients	Cohort study	Age should be considered as an additional parameter to NEWS, as it improved its performance in predicting short-term mortality in this prehospital cohort.	mortality within 1 day, 7 day in three different age groups
Scott, L.J., Niamh M Redmond, Alison Tavaré, Hannah Little, Seema Srivastava, Anne Pullyblank (2020)	England	The objective of this study was to investigate whether NEWS calculated at the point of GP referral to hospital affects timely process of care, that is, sicker patients seen faster, and to investigate clinical outcomes in hospital	Patients	Cohort study	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.	whether NEWS was associated with the following process measures and clinical outcomes: time from referral to arrival in hospital (by ambulance or other transport), time from arrival to review by doctor, grade of reviewing doctor, LOS, suspicion of sepsis (SOS), primary diagnosis of sepsis, ICU admission, 2-day mortality, and 30-day mortality.
Silcock, D.J., Corfield, A. R., Gowens, P. A., Rooney, K. D. (2014)	Scotland	To assess the validity of the NEWS in unselected prehospital patients	Patients	cohort study	Elevated NEWS among unselected prehospital patients are associated with a higher incidence of adverse outcomes. Calculation of NEWS may facilitate earlier recognition of deterioration patients, early involvement and appropriate critical care	Survival to discharge or 30 days, death within 48 hours of hospital admission, ICU admission within 48 hours of hospital admission, a composite adverse outcome of death or ICU admission within 48 h
Sletner, A., Halvorsrud, L. (2020)	Norway	Hensikten med denne studien var å undersøke kommunale helsearbeideres erfaringer med å bruke observasjonsverktøyet Modified Early Warning Score (MEWS) etter at de hadde blitt undervist i ALERT og sammenhengen mellom	Helsepersonnel	Tverrsnittstudie	opplæringen i og bruken av MEWS bidro til bedre kunnskap, økt trygghet ved observasjon, mer bevissthet om kritisk syke, trygghet med å prioritere tiltak, mer faglig trygghet og struktur i samarbeid med andre	Jobbtilfredshet etter implementering av MEWS

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		disse erfaringene og jobbtilfredsheten.				
Spangler D., Hermansson T., Smekal D., Blomberg H. (2019)	Sweden	To validate a machine learning-based approach to generate risk score and compare them to NEWS	Patients	Cohort study	News has a lower prediction on hospital admission. NEWS was better in prediction of intensive care and two days mortality prediction.	Admission to hospital ward, admission to intensive care unit, in hospital mortality within 30 days or mortality within 2 days
Stow, D., Robert O Barker, Fiona E Matthews, Barbara Hanratty (2020)	England	To investigate whether patterns of National Early Warning Scores (NEWS/NEWS2) in care homes during the COVID pandemic correspond with area-level COVID-19 death registrations from care homes.	Patients	Cohort study	NEWS may make a useful contribution to disease surveillance in care homes during the COVID-19 pandemic. Oxygen saturation, respiratory rate and temperature could be prioritised as they appear to signal rise in mortality almost as well as total NEWS.	weekly deaths at care home, covid-19 deaths, and increasing NEWS
Usul, E.; Korkut, S.; Kayipmaz, A. E.; Halici, A.; Kavalci, C.; (2020)	Turkey	To assess the use of the quick sequential organ failure assessment score (qSOFA) and modified earlywarning score (MEWS) scoring systems in emergency health care services for sepsis to predict intensive care hospitalization and 28-day mortality.	Patients	Cohort	qSOFA was found be more valuable than MEWS in determining the prognosis of pre-hospitalization sepsis.	28 day mortality, hospital admission, admission to intensive care
Vihonen, H.; Laaperi, M.; Kuisma, M.; Pirneskoski, J.; Nurmi, J.; (2020)	Finland	To determine if prehospital blood glucose could be added to National Early Warning Score (NEWS) for improved identification of risk of short-term mortality.	Patients	Cohort	addition of blood glucose improved the ability of NEWS to enhance identification of patients at risk of death.	Survival of 24 hours and 30 days