and treatment. While this technology has been used in Helicopter EMS for over a decade, it has only recently entered the ground EMS arena. In the United States, fewer than 10% of EMS agencies have POCUS programs, with most use in air EMS services. As portability, durability, and cost have improved, it has allowed this technology to be utilized in several life-saving areas. This, coupled with the increasing literature base demonstrating the ability of paramedics to perform POCUS with accurate interpretation, has opened the possibility of its use in this space. Significant applications in the prehospital environment include identifying life-threatening traumatic injuries such as pneumothorax, cardiac tamponade, and abdominal bleeding, as well as differentiating heart failure from COPD in critically ill patients with respiratory distress. Furthermore, POCUS can be used in early assessment of ROSC in cardiac arrest, as well as determining hemodynamics and volume status to guide resuscitation. This case series will focus on various clinical scenarios from a large urban ground EMS service that has adopted POCUS in its agency. The case series will include differentiating causes of dyspnea, identification of traumatic injuries, and its use during cardiac arrest management. We will highlight how POCUS was utilized in this setting and how care was changed based on the POCUS findings.

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Advanced Forecasting of Military-Targeted Terrorism Using Time Series Analysis

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Introduction: Military-targeted terrorism poses a persistent threat to global security, impacting national defense and international stability. Accurate forecasting of such incidents is crucial for developing effective counter-terrorism strategies. This study leverages advanced time series analysis to predict future trends in military-targeted terrorism incidents, providing insights for policymakers and military strategists.
Methods: This study utilizes historical data from the Global Terrorism Database (GTD) from 1970 to 2020 to forecast incidents from 2021 to 2030. Three predictive models, such as ARIMA, Random Forest, and Long Short-Term Memory (LSTM) networks, were employed to capture patterns and predict future incidents. Model performance was evaluated using Mean Absolute Error (MAE), Root Mean Square Error (RMSE), and R-squared (R^2) metrics. The LSTM model was further optimized through hyperparameter tuning to enhance prediction accuracy.
Results: The LSTM model demonstrated superior performance compared to ARIMA and Random Forest models. Specifically, the LSTM achieved an MAE of 10.2 and an RMSE of 12.5, with an R^2 value of 0.82, indicating a strong fit and predictive capability. The ARIMA model recorded an MAE of 12.3 and RMSE of 14.8, while the Random Forest model had an MAE of 15.7 and RMSE of 18.2. The forecasts revealed an increasing trend in military-targeted terrorism incidents over the next decade, with predicted peaks of 65 incidents in 2022 and 71 incidents in 2023.
Conclusion: Integrating LSTM networks with traditional time series models enhances the predictive accuracy of military-targeted terrorism forecasts. These insights enable policymakers to allocate resources effectively, plan strategic interventions, and improve preparedness against potential threats. Future research should incorporate additional data sources, such as social media analytics and geopolitical factors, to refine predictions and enhance situational awareness. This study underscores the importance of leveraging advanced machine learning techniques to address complex security challenges.

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Remote Stroke Evaluation: NIHSS Certified Paramedics Using a Video-Enabled App for Prehospital Assessment and Remote Hospital Consultation

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Introduction: Early prehospital identification of stroke and triage to the right level of care may result in more patients receiving acute treatment. Approximately 25% of patients in Denmark receive revascularisation after an acute stroke. Further, 20 % of patients with stroke are not being recognized by paramedics when assessed on scene in a telephone conference with the stroke centre.

Accurate prehospital stroke identification is critical for treatment and patient outcomes. The National Institutes of Health Stroke Scale (NIHSS) is an established tool for assessing stroke severity, but it is not commonly used by paramedics. In this study, paramedics are using an app to assess the patient, guiding the paramedic through the NIHSS, while each step is documented in a short video, which is transferred to the centralized stroke center.
Methods: A stepped wedge randomized trial is performed, with paramedics being the subject which is randomized. First, paramedics are enrolled in October 2024. Data collection is terminated in December 2025. A paramedic in an intervention cluster uses a mobile app for patients with suspected stroke, recording videos of patients. The app analyses the videos, highlighting potential stroke predictors. Recorded videos and NIHSS scores are transmitted to the stroke center for thrombolysis decision-making. In the control group, standard procedures are followed.
Results: The primary outcome measure is for prehospital recognition of patients with acute stroke, defined as the proportion of patients accepted for stroke evaluation and discharged with a final stroke diagnosis. A power calculation yields that no less than 1200 patients will be enrolled in each arm of the trial for 95% power to detect a 5% improvement, with 85% sensitivity assumed in the control group.

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