P-23 External Validation of Prediction Models for Bacteremia in an Acute Care Hospital: A Retrospective Cohort Study

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Background: For appropriate management of patients with bacteremia, early diagnosis is crucial. Although several prediction models for the diagnosis of bacteremia exist, comparison among these models has not been conducted. Therefore, we compared the diagnostic performance of those models in an acute care hospital setting in Japan.

Study Design: Retrospective cohort study

Setting & Participants: All consecutive patients who had undergone two sets of blood-cultures presenting to Shirakawa Kosei General hospital (Fukushima, Japan) between April 1, 2015 and March 31, 2017.

Selection of published Models: We searched all published models for diagnosis of bacteremia between January 1, 1990 and June 1, 2017, using the PubMed database combining the term (predict OR predicting OR prediction) AND (bacteremia OR blood stream infection). Models eligible for inclusion were i) derivated using logistic models and ii) externally validated.

Statistical analysis: The performance of the prediction models was assessed by discrimination and calibration. Discrimination was evaluated using the Area Under the Curve (AUC). Calibration was assessed by the calibration plot.

Results: A total of 1280 patients were enrolled with 137 (10.7%) episodes of true bacteremia. We assessed the performance of five prediction models. The models by Shapiro and Takeshima demonstrated the highest AUC of 0.76 (95% CI 0.71-0.80) and 0.76 (0.71-0.80), respectively. Although both models showed relatively good agreement between observed and predicted probabilities, the model by Shapiro underestimated the probability especially among the high-risk population, whereas the model by Takeshima overestimated it.

Conclusion: Among the existing models, the models by Shapiro and Takeshima, demonstrated the highest performance with reasonable calibration. To avoid the misdiagnosis of bacteremia, a highly fatal condition, use of the model by Takeshima is recommended in clinical practice.

P-28 Usefulness of a mobile phone application for measurement of respiratory rate in adult patients

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Introduction: Measurement of respiratory rate (RR) is important for the early detection of exacerbation of patients' condition. However, it is sometimes bothersome for healthcare providers to measure respiratory rate visually over 60 seconds (one-minute method).

RR measurement using a mobile phone application (app method) has been reported to be accurate and completed in a short time, but investigated only in a pediatric setting.

Objectives: To validate the performance of the app method for measuring RR compared with the one-minute method in adult patients.

Methods

Study design: A cross-sectional study

Setting and participants: Nursing school students in a teaching hospital in Japan

Measurements: The movements of the thorax during spontaneous respiration of five adult inpatients were recorded on de-identified videos. Then reference RR was defined by two independent observers. Participants watched these videos and measured the RR with both the app and the one-minute methods. Also, the time taken for the measurement was recorded.

The RR measured by each method was compared with the reference RR. A Bland-Altman analysis was conducted to calculate bias, limits of agreement, and percentage error. The time taken for the measurement with each method was compared using a t-test.

Results: A total of 59 nursing school students participated; mean age was 20.9 years old (standard deviation 2.9) and 51 (86.4%) were female. When compared to the reference RR, the app method showed a small bias of 0.40 br/min and narrow limits of agreement (-2.8 to 3.6 br/min). The percentage error of the app method was 12.8%. The mean time taken for the measurements by the app method was 22.8 sec (95% confidence interval (CI) 13.9 to 36.6), which is significantly shorter than 65.8 sec (95%CI 61.0 to 73.2) taken by the one-minute method ($p<0.05$).

Conclusions: The RR can be measured accurately in a shorter time using a mobile phone application in adult patients.

P-55 The relationship between initial management in emergency department by junior residents and hospital deaths of pneumonia patients: a single-center retrospective cohort study

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INTRODUCTION: Some previous study showed that the experience of physician affects the prognosis of hospitalized patients, but it is not known whether the junior residents' management affect the prognosis of patients in emergency department in Japan.

Objective: To investigate the relationship between initial management in emergency department by junior residents and hospital deaths of pneumonia patients.

METHODS:

Study Design: A retrospective cohort study

Setting & Participants: In a tertiary care hospital we conducted continuous sampling for adult patients with pneumonia who admitted between April 2016 to November 2017.

Exposure: Initial management by junior residents

Comparison: Initial management by non-junior residents

Outcomes: In-hospital death

Statistical methods: We used logistic regression model by EZR (ver. 1.36)

RESULTS: A total of 630 patients were included. The number of males aged 70 years or older or females 75 years or older was 193 (73.1%) in junior resident care group and 197 (68.2%) in non-junior resident care group.

The risk ratio of in-hospital mortality for junior residents management was 1.17 (95%confidence interval (CI): 0.73 to 1.89) compared with non-junior residents. The adjusted odds ratio was 1.23 (95%CI 0.69 to 2.19), respectively.

CONCLUSION: The in-hospital mortality of pneumonia patients initially managed by junior residents was not inferior to patients managed by non-junior residents.