**Supplemental Table 23. Studies on prediction models**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Study Design** | **Number of delirious / Total (%)** | **Type IC** | **Method Delirium Assessment** | **Inclusion** | **Exclusion** | **Predictors** | **Predictor** **Effect Estimate** | **Outcome****Model** | **Quality** |
| vd Boogaard 2012 [1] | Prospective CohortMulticenter | 911/3056 (30%) | MixedICU | CAM-ICU8hrly*Bedside* | LOS ICU>24hrs | Persistent ComaDelirious <24hrs after admissionAuditory/visual impairmentMentally disbaledCNS disorderCompliance rate CAM-ICU <80% | AgeAPACHE IIComa No Drug induced Miscellaneous CombinationAdmission category Surgery Medical Trauma NeurosurgeryInfectionMetabolic acidosisUse of morphine None 0.01-7.1 mg 7.2-18.6 mg >18.6 mgUse of sedativesUrea concentration (mmol/L)Urgent admission  | 1.041.06Ref1.714.917.1Ref1.43.14.02.91.3Ref1.51.11.74.01.01.5 |  | ICU Delirium IncidenceLogistic Regression | ++ |
| Comments | * Internal validation: bootstrapping, temporal validation. External validation: 4 other Dutch Hospitals. Pooled results presented here. AUROC 0.85 (95% CI 0.82-0.87)
* Predictors available within 24 hours of admission.
* Predictor Effect Estimate: OR is the natural logarithm of the logistic regression coefficients of the prediction model. No 95% CI given.
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| ICU: Intensive Care unit, CAM-ICU: Confusion Assessment Method for use in the ICU, LOS: Length of stay, CNS: Central Nervous System, APACHE II: Acute Physiology and Chronic Health Evaluation II, AUROC: area under the receiver operating characteristic curve, hrly: hourly, hrs:hours, hr: hour, OR: odds ratio, CI: confidence interval |
| **Article** | **Study Design** | **Number of delirious / Total (%)** | **Type IC** | **Method Delirium Assessment** | **Inclusion** | **Exclusion** | **Predictors** | **Predictor** **Effect Estimate** | **Outcome****Model** | **Quality** |
| vd Boogaard 2014 [2] | ProspectiveCohortMulticenter | 410/1824(22,5%) | MixedICU | CAM-ICU12hrly*Bedside* | All patients | Delirious within 24 hrsComatose during ICU stayICU LOS < 24 hrsAuditory or visual disordersUnable to understand languageSeverely mentally disabledSerious receptive aphasiaCompliance rate CAM-ICU <80% | AgeAPACHE II scoreComa No Drug induced Miscellaneous CombinationAdmission category Surgery Medical Trauma NeurosurgeryPresence of infectionPresence of metabolic acidosisUse of morphine None 0.01-7.1 mg 7.2-18.6 mg >18.6 mgUse of sedativesUrea concentration (mmol/L)Urgent admission | 1.021.03Ref1.292.923.80Ref1.161.701.921.641.15Ref1.211.061.271.931.011.21 |  | ICU Delirium IncidenceLogistic Regression | ++ |
|  | Comments | * Multinational recalibration of the prediction model proposed in vd Boogaard 2012. AUROC 0.76 (95% CI 0.74-0.79)
* Predictor Effect Estimate: OR is the natural logarithm of the logistic regression coefficients of the prediction model. No 95% CI given.
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| Guenther 2013 [3] | Prospective Cohort | 69/215 (32,1%) | Cardiac ICU | CAM-ICU12-24 hrly*Bedside* | Elective or urgent cardiac surgery | Non-German speakingParticipation in other studiesAge < 50 yearsTransfer from other departmentsPatients needing urgent surgery | Age (years)MMSE (points)Charlson (points)Length of CPB (min)SIRS (ever vs never) | 1.6641.6731.5901.7384.765 | (1.099-2.518)(1.140-2.455)(1.072-2.358)(1.198-2.520)(1.950-11.638) | ICU Delirium IncidenceLogistic Regression | + |
| ICU: Intensive Care unit, CAM-ICU: Confusion Assessment Method for use in the ICU, hrly, hourly, LOS: Length of stay, APACHE II: Acute Physiology and Chronic Health Evaluation II, AUROC: area under the receiver operating characteristic curve, hrs:hours, hr: hour, OR: odds ratio, CI: confidence interval, MMSE: minimal mental state examination, CPB: cardiopulmonary bypass, SIRS: systemic inflammatory response syndrome. |
| **Article** | **Study Design** | **Number of delirious / Total (%)** | **Type IC** | **Method Delirium Assessment** | **Inclusion** | **Exclusion** | **Predictors** | **Predictor** **Effect Estimate** | **Outcome****Model** | **Quality** |
| Wassenaar 2015 [4] | ProspectiveCohortMulticenter | 481/1962(24,5%) | MixedICU | CAM-ICU8/12hrly*Bedside* | Age ≥ 18 years | Delirious at admissionICU LOS < 24 hrsUnable to assess for deliriumCompliance rate CAM-ICU <80% | AgeHistory of cognitive impairmentHistory of alcohol abuseAdmission category Surgery Medical Trauma Neurology/neurosurgeryUrgent admissionMAP at ICU admissionUse of corticosteroidsRespiratory failureBUN at ICU admission | 1.032.411.66Ref1.453.381.661.840.991.332.671.02 | (1.02-1.03)(1.70-3.40)(1.17-2.35)(1.06-1.98)(2.00-5.74)(1.06-2.58)(1.33-2.56)(0.99-1.00)(1.00-1.77)(2.10-3.40)(1.01-1.03) | ICU Delirium IncidenceLogistic Regression | ++ |
| Comments | * Development and validation of a prediction model with predictors readily available at ICU admission. Validation dataset AUROC 0.75 (95% CI 0.71-0.79)
* Predictor Effect Estimate: OR is the natural logarithm of the logistic regression coefficients of the prediction model.
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| ICU: Intensive Care unit, CAM-ICU: Confusion Assessment Method for use in the ICU, hrly: hourly, LOS: Length of stay, MAP: mean arterial blood pressure, BUN: blood urea nitrogen, AUROC: area under the receiver operating characteristic curve, hrs:hours, hr: hour, OR: odds ratio, CI: confidence interval. |

**References**

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