**Introduction:**
Augmented renal clearance (ARC) might lead to subtherapeutic plasma levels of drugs with predominant renal clearance. Early identification of ARC remains challenging for the intensive care unit (ICU) physician. We developed and validated the ARC predictor, a clinical prediction model for ARC on the next day during ICU stay, and made it available via an online calculator. Its predictive performance was compared with that of two existing models for ARC, i.e. the ARC score and the ARCTIC score.

**Methods:**
A large multicenter database including medical, surgical and cardiac surgery ICU patients (n = 33258 ICU days) from three Belgian tertiary care academic hospitals was used for the development of the prediction model. Development was based on clinical information available during ICU stay. We assessed performance by measuring discrimination, calibration and net benefit. The final model was externally validated (n = 10259 ICU days) in a single-center population.

**Results:**
ARC was found on 19.6% of all ICU days in the development cohort. Six clinical variables were retained in the ARC predictor: day from ICU admission, age, sex, serum creatinine, trauma and cardiac surgery. External validation confirmed good performance with an area under the curve of 0.88 (95% CI 0.87 – 0.88), and a sensitivity and specificity of 84.1 (95% CI 82.5 – 85.7) and 76.3 (95% CI 75.4 – 77.2) at the default threshold probability of 0.2, respectively.

**Conclusion:**
ARC on the next day can be predicted with good performance during ICU stay, using routinely collected clinical information that is readily available at bedside. The ARC predictor is available at www.arcpredictor.com.