

MEETING ABSTRACTS

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## Best Abstracts

000265

### Antibiotic target failure in neurocritically ill patients: a DOLPHIN trial post-hoc analysis

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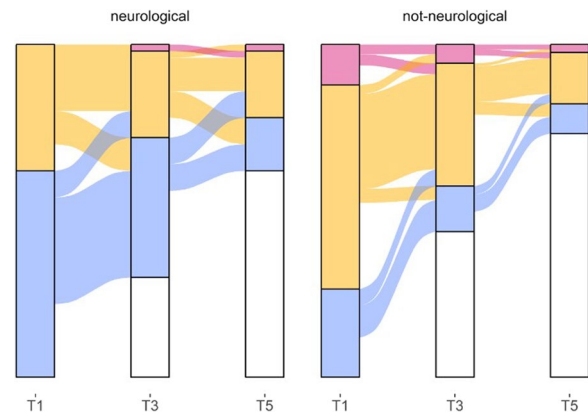
**Introduction.** Previous studies showed a high prevalence of augmented renal clearance (ARC), based on high creatinine clearance, in neurocritically ill patients and lower serum levels of vancomycin in these patients with ARC (1–3). In this post-hoc analysis of the DOLPHIN trial, we aimed to describe target attainment of beta-lactam antibiotics and fluoroquinolone in neurocritically ill patients and to explore underlying associated variables for differences in target attainment.

**Methods.** We performed a post-hoc analysis in the neurological ICU patients who were included in the DOLPHIN trial; a multicenter, open-label RCT comparing standard dosing of antibiotics based on local guidelines and model-informed precision dosing (MIPD). In this post-hoc analysis we primarily focused on antibiotic target attainment in neurocritically ill versus non-neurological patients. Secondly, we assessed ARC, defined as a creatinine clearance of  $\geq 120$  mL/min/1.73 m<sup>2</sup>, and patient characteristics that may influence ARC and target attainment.

**Results.** In total, data of 51 neurocritically ill patients were available, versus 337 non-neurological patients. Low target attainment was more prevalent among the neurocritically ill patients (Fig. 1), with a significantly higher chance for low target attainment; adjusted OR 2.53 (95% CI 1.29–5.09). Low target attainment was predominantly seen in the early stage after antibiotic initiation. Baseline creatinine clearance was higher in the neurocritically ill patients, with half of these patients reaching levels of ARC; median creatinine clearance neurocritically ill patients 120 mL/min/1.73 m<sup>2</sup> (IQR 95–136), median

creatinine clearance non-neurological patients 55 mL/min/1.73 m<sup>2</sup> (IQR 28–89) (Fig. 2). The neurocritically ill patients were significantly younger, however other factors associated with ARC including sex and trauma, did not differ between the neurocritically ill and non-neurological patients.

**Conclusions.** Target failure for beta-lactam antibiotics and fluoroquinolone is more frequently seen in neurocritically ill patients versus non-neurological patients and is associated with ARC. Therefore, neurocritically ill patients are at risk of suboptimal antibiotic dosing. Further research should assess the impact of adjusted antibiotic dosing, beyond the limits of the current standard dosing regimen, in the neurocritically ill patients.



**Figure 1 (abstract 000265)** Alluvial plot of target attainment over time in the neurocritically ill and the non-neurological patients. T1: first moment of antibiotic sampling, one day after antibiotic initiation; T3: second moment of sampling, 48h after T1; T5: third moment of sampling, 48h after T3. Blue: low target attainment, orange: adequate target attainment, red: high target attainment

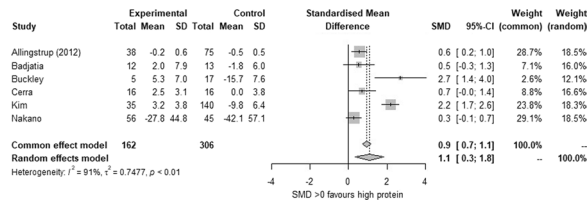


Figure 2 (abstract 001193) Forest plot for nitrogen balance

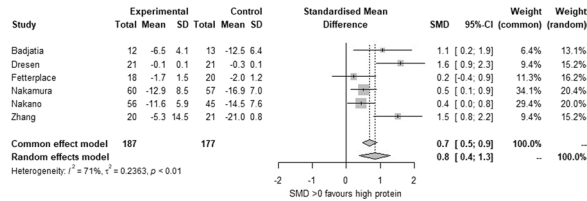


Figure 3 (abstract 001193) Forest plot for changes in muscle mass

References

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Topic: Metabolism, endocrinology, liver failure and nutrition

001194

Health related quality of life determinants in critical COVID-19 patients 6 months after ICU stay

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**Introduction:** COVID-19 pandemic overwhelmed critical care health services across the world, making an effect on selection of the patients, limitations of treatment and controversial choices of therapy. Now, in the aftermath of the pandemic the effect on health related quality of life (HR-QoL) can be evaluated.

**Objectives:** The aim of this study is to evaluate the HR-QoL in critical care survivors of severe COVID-19 pneumonia and to determine the risk factors that may be associated with it.

**Methods:** This was a retrospective analysis of patients treated for COVID-19 in ICU in the period from 2021 June to 2022 January in Vilnius, Lithuania. The study was conducted in a tertiary reference hospital. The patients who survived the stay in the ICU and agreed to participate in the follow up program were included in the study. Demographic, co-morbidity and general ICU course indicators were collected. The HR-QoL was measurement with 36-Item Short-Form Health Survey (SF-36). Mental and physical components were evaluated separately, regression analysis was conducted to determine the risk factors of worse HR-QoL.

**Results:** The data of 53 patients was collected. These patients were typical ICU patients for the 3rd wave of the COVID-19 pandemic in Lithuania. The cohort favors the moderate risk definition according to APACHE II (median=7 [5–10]) and ISARIC 4C scores (median=7 [5–10.5]), a shift expected as only ICU survivors were included in the

study. Mean follow up time of the patients was  $7.64 \pm 1.61$  months. The mean physical health composite was  $60.89 \pm 25.33$ , and the mean mental health composite was  $64.97 \pm 22.78$ . For the physical health composite in the univariate regression model higher age ( $B = (-)0.575$  CI95%:  $(-)1.14- (-)0.01$   $p=0.048$ ), presence of diabetes ( $B = (-)18.78$  CI95%:  $(-)36.80- (-)0.74$   $p=0.042$ ) and higher ISARIC 4C mortality risk ( $B = (-)2.665$  CI95%:  $(-)4.18- (-)0.59$   $p=0.006$ ) were shown to have an effect on worse scores. In the final regression model only ISARIC 4C mortality risk remained as sole independent predictor ( $B = (-)2.655$  CI95%:  $(-)4.72- (-)0.59$   $p=0.013$ ). The univariate regression of SF-36 mental health composite determinants did not reveal any statistically significant predictors.

**Conclusions:** The patients after severe COVID-19 pneumonia and stay in critical care are affected and present with lowered HR-QoL after 6 months, mostly in the physical composite score. The main risk factors for worse physical condition are co-morbidities and age, a similar pattern observed in other respiratory infections.

Topic: Critical care organisation, quality management, information systems, outcomes

001196

Validation of 2021 ERC/ESICM guidelines in TTM2-trial data: a retrospective analysis of the prognostic accuracy in neurological prognostication after cardiac arrest

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**Introduction:** About two thirds of in-hospital deaths following successful resuscitation after cardiac arrest are due to hypoxic-ischaemic brain injury. (1,2) Most occur after a decision to withdraw from life sustaining therapy (WLST) in patients where meaningful neurological recovery is unlikely. (2) In 2021 the European Resuscitation Council (ERC) and the European Society of Intensive Care Medicine (ESICM) published a simplified guideline algorithm for prediction of neurological outcome after cardiac arrest, broadening the screening criteria to also include flexion posture. (3) External validations on its prognostic accuracy have previously reported 53–60% sensitivity with 100% specificity. (4,5).

**Objectives:** This study aims to validate the ERC/ESICM 2021 guidelines on neurological prognostication after cardiac arrest in a large international multicenter population. (3).

**Methods:** Retrospective descriptive analysis of the Targeted Hypothermia versus Targeted Normothermia after Out-of-Hospital Cardiac Arrest (TTM2) trial data. Patients with available motor score on day 4 and neurological outcome at 6 months were included. (6) The prognostic accuracy of ERC/ESICM 2021 algorithm, including clinical examinations (pupillary and corneal reflexes  $\geq 72$  h (h), early status myoclonus  $\leq 72$  h), neurophysiological tests (EEG  $> 24$  h, SSEP  $\geq 24$  h), neuroimaging (CT  $\leq 72$  h, MRI 2–7 days) and biomarkers (serum neuron-specific enolase (NSE) at 48 and/or 72 h), was assessed.

**Results:** A total of 1324 patients met the inclusion criteria, of which 753 (57%) were eligible for neurological prognostication according to the screening criteria (Tab.1, Figure 1). Preliminary results indicate that the ERC/ESICM algorithm correctly identified 258 patients with poor neurological outcome and 213 of the total 491 patients not fulfilling the guideline criteria had a good outcome. The overall sensitivity for the algorithm was 48% (95% CI: 44–52%). Four cases of false positive predictions were identified, yielding a specificity of 98% (95% CI: 95–99%). Further results will be presented at the conference.

**Conclusions:** This validation study is the first to report a non-perfect specificity for the ERC/ESICM 2021 guidelines on neurological prognostication after cardiac arrest. The individual reports of false positive predictions and the potential interference with sedation must be further evaluated to assure validity in prognostication and avoid patients unrightfully being put at risk of WLST in clinical practice. Increasing the number of patients correctly identified with poor