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Department of Anaesthesia and Intensive Care Medicine 3FM CU and UHKV

<https://www.lf3.cuni.cz/3LF-776.html>

<https://www.kar3lf.cz/en/research-2/>

Topic title

To be discussed individually. Could be in the field of bioenergetics and skeletal muscle weakness, acid base physiology or gut microbiome and critical illness.

Description of scientific activity

The Department of Anaesthesia and Intensive Care of Third Medical Faculty and FNKV University Hospital is a busy academic department of a tertiary teaching hospital, which provides perioperative care to over 18 000 patients a year and intensive care to over 1000 critically ill patients. Apart from our dedication to patients there is a strong research culture on our department. We do academic and industry sponsored randomized controlled trials, supported by 5 full time research nurses, and we ran two English speaking labs nicknamed Oxylab (focused on muscle bioenergetics) and Carboxylab (focused on acid base research). We are now opening new topic: investigating in a RCT faecal microbial transplantation for antibiotic-associated diarrhoea in the critically ill. Over the years we have built strong international relations and we currently prefer offering PhD studies on cotutelle, ie. on two universities at the same time as this ensures dedicated research time and facilitates funding.

Selected publications

Waldauf P, Hrušková N, Blahutova B, Gojda J, Urban T, Krajčová A, Fric M, Jiroutková K, Řasová K, Duška F. Functional electrical stimulation-assisted cycle ergometry-based progressive mobility programme for mechanically ventilated patients: randomised controlled trial with 6 months follow-up. *Thorax*. 2021 Jul;76(7):664-671. doi: 10.1136/thoraxjnl-2020-215755. Epub 2021 Apr 30. PMID: 33931570; PMCID: PMC8223653.

(Example of an academic randomized controlled trial designed and conducted at our department. This grant won nomination to the Prize of the Minister of Health)

Dhanani S, Hornby L, van Beinum A, Scales NB, Hogue M, Baker A, Beed S, Boyd JG, Chandler JA, Chassé M, D'Aragon F, Dezfulian C, Doig CJ, Duska F, Friedrich JO, Gardiner D, Gofton T, Harvey D, Herry C, Isac G, Kramer AH, Kutsogiannis DJ, Maslove DM, Meade M, Mehta S, Munshi L, Norton L, Pagliarello G, Ramsay T, Rusinova K, Scales D, Schmidt M, Seely A, Shahin J, Slessarev M, So D, Talbot H, van Mook WNKA, Waldauf P, Weiss M, Wind JT, Shemie SD; Canadian Critical Care Trials Group; Canadian Donation and Transplantation Research Program. Resumption of Cardiac Activity after Withdrawal of Life-Sustaining Measures. *N Engl J Med*. 2021 Jan 28;384(4):345-352. doi: 10.1056/NEJMoa2022713. PMID: 33503343.

(Example of collaborative project on physiology of dying appearing in prestigious New England Journal of Medicine)

Krajčová A, L?vsletten NG, Waldauf P, Frič V, Elkalaf M, Urban T, Anděl M, Trnka J, Thoresen GH, Duška F. Effects of Propofol on Cellular Bioenergetics in Human Skeletal Muscle Cells. Crit Care Med. 2018 Mar;46(3):e206-e212. doi: 10.1097/CCM.0000000000002875. PMID: 29240609.
(Example of an in vitro study performed in Oxylab)

Selected or ongoing grants/clinical studies

Oxylab: SATELLITE-1 Role of satellite cells in the development and outcomes of ICU acquired weakness

Carboxylab: Determination of the Dissociation Constant (Ka) of Plasma and Whole Blood in Septic Patients ENTERPRISE (NCT03966664)

Clinical: Effect of Two Different Doses of Dexamethasone in Patients With ARDS and COVID-19 (REMED, NCT04663555) and many others

PhD Students

Number of PhD students currently studying: 4 + 1 on cotutelle with University of Milan

Number of defended students with year of defence: 5 (2015, 2016, 2018, 2019, 2021)