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Oral Sessions. ARDS: CLINICAL STUDIES

A1

Identification of distinct endophenotypes in patients with acute respiratory distress syndrome by unbiased cluster analysis, and their association with mortality

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Intensive Care Medicine Experimental 2016, **4(Suppl 1):**A1

Introduction: Pharmacological immunomodulatory interventions in 'acute respiratory distress syndrome' (ARDS) have been unsuccessful in clinical trials [1-3] despite promising results in preclinical studies using animals [4-5]. Poor phenotyping of patients could be responsible for these disappointing results.
Objectives: We hypothesized that ARDS patients can be clustered based on concentrations of plasma biomarkers and that such biological endophenotypes are association with clinical outcomes.
Methods: Patients were screened for presence of ARDS. Unbiased cluster analysis of plasma concentrations of 20 biomarkers of inflammation, coagulation and endothelial activation at diagnosis of ARDS provided the endophenotypes. A decision tree was then used to predict cluster membership based on a more restricted set of biomarkers. The independent association of endophenotypes with ICU mortality was studied by multivariate logistic regression.
Results: Three endophenotypes of ARDS were identified in 771 patients, which we named 'impassive' (N = 383), 'intermediate' (N = 224) and 'reactive' (N = 164), had mortality rates of 16 %, 26 % and 47 %, respectively (P < 0.01). Patients with a 'reactive' endophenotype were younger, had higher disease severity scores, more failing organs and more frequently had an indirect cause for ARDS than patients with an 'impassive' or 'intermediate' endophenotype. A 'reactive endophenotype' was independent from confounders associated with ICU mortality (OR 1.18 [95 % confidence interval: 1.09-1.28]). The concentration of interleukin 10, interleukin 8 and matrix metalloproteinase 8 were sufficient to predict the three endophenotypes.
Conclusions: ARDS patients can be clustered into three biological endophenotypes, with different mortality rates. Three easy to measure biomarkers can be used to predict the endophenotype.

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Table 1 (abstract A1). Endophenotypes versus clinical characteristics

	Impassive endophenotype	N=383	Intermediate endophenotype	N=224	Reactive endophenotype	N=164	P-value
Age	63	(53.5-72)	61.5	(51.8-72)	58	(45-66)	<0.001
Male	252	(65.8)	129	(57.6)	107	(65.2)	0.1
APACHE IV Score	72	(58-92)	83	(67.5-102)	104.5	(84-124)	<0.001
SOFA: Total score	7	(5-9)	9	(7-11)	11	(9-14)	<0.001
PaO2/FiO2	191.1	(138-260)	183.2	(146-234)	173.3	(124-225)	<0.001
PEEP	8	(5-11)	9	(6-12)	12	(10-15)	<0.001
Days free of MV at day 28	20	(8-25)	18 (0-24)		0	(0-18)	<0.001
ICU Mortality	61	(15.9)	60	(26.8)	76	(46.3)	<0.001
30-Day Mortality	75	(19.6)	70	(31.2)	78	(47.8)	<0.001

A2

Acute respiratory distress syndrome with no risk factor of the berlin definition: an ancillary analysis of the LUNG SAFE study

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Introduction: Patients meeting the Berlin definition criteria for the acute respiratory distress syndrome (ARDS) might lack exposure to one or more "common" risk factors. Such patients might exhibit different clinical phenotype and outcomes than others and constitute an individualized subgroup of patients.
Objectives: To compare the clinical presentation and outcome of patients having ARDS with *vs* without risk factors, to determine whether the lack of ARDS risk factor is associated with hospital mortality, and

4 hours, progressively improves the models ability to forecast future CRI development. Such forecasting information could enable clinicians to identify those patients who will become unstable in future very soon after admission in order to triage patients needing closer surveillance and potentially apply preemptive interventions.

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A40

What are the factors that impact on physical activity and rehabilitation for survivors of critical illness: a systematic review of quantitative and qualitative studies

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Introduction: Physical activity / rehabilitation forms a pivotal aspect of recovery after critical illness and studies have demonstrated it is safe, feasible and potentially efficacious at improving patient outcomes [1,2]. However, international data demonstrate low levels of mobilisation occur in the ICU[3,4]. A current gap exists between the perceived need and actual practice of implementing physical activity across the recovery continuum.

Objectives: To identify, evaluate and synthesise studies examining the barriers and enablers for patients with critical illness to participate in physical activity from the perspective of healthcare providers, patients and caregivers.

Methods: Systematic review of articles using electronic databases: MEDLINE, CINAHL, EMBASE, Scopus and Cochrane. Quantitative and qualitative studies which assessed the barriers, or enablers to physical activity for patients with critical illness were included. Registered on PROSPERO (number: CRD42016035454).

Results: 79 studies were included. Studies included primarily ICU survivors (69 %, n = 54 studies), healthcare providers (29 %, n = 23 studies) with only one study specifically examining caregivers and patients. Barriers and enablers to physical activity were identified (5 major themes and 28 sub-themes). Patient-level barriers included physical capability (physiological stability, illness severity, sedation, weakness, delirium), psychological influences (fear/motivation) and perceived relevance. Healthcare provider barriers included lack of time/knowledge and expertise, communication, and concern for line safety. Environmental barriers included lack of resources (staffing and equipment), lower prioritisation, and lack of an established rehabilitation pathway post ICU. Enablers included: presence of mobility teams/protocols, designated discipline and overall leaders, teamwork and development of daily care plans.

Conclusions: This systematic review has identified the volume of literature demonstrating that barriers and enablers to physical activity are multi-dimensional and span diverse factors. These factors need to be considered when developing rehabilitation interventions to facilitate cultural change in rehabilitation practices across the recovery continuum.

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END-OF-LIFE-CARE: GET IT RIGHT THE FIRST TIME

A41

Perceptions of end-of-life decision-making climate among healthcare providers working in european and us icus: differences between nurses and physicians

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Introduction: Literature depicts differences in perceptions of End-Of-Life (EOL) decision-making (DM) between nurses and physicians.

Objectives: To examine perceptions of nurses and physicians in regard to EOL DM in the ICU and to test the hypothesis that the worse the EOL DM climate, the greater the discordance between nurses' and physicians' rating of EOL DM.

Methods: Perceptions of EOL-DM among health care providers of 68 adult ICUs in 13 European countries and the US were measured in April-May 2014, using a validated self-assessment questionnaire. The questionnaire existed of 35 questions and was based on the Appropricus questionnaire [1], the IPEQS instrument and the LDBQ questionnaire [2].

Results: A total of 2,275 nurses and 717 physicians participated. Response rates were 63.1 % and 62.9 %, respectively. Using factor analyses and cluster analysis, seven meaningful factors (physician leadership, interdisciplinary reflection, not avoiding EOL decisions, mutual respect