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IMPRESSUM

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Hinweis: Die Angaben über Dosierungsanweisungen und Applikationsformen erfolgen ausserhalb der Verantwortung von Redaktion und Verlag. Derartige Angaben sind im Einzelfall auf ihre Richtigkeit zu überprüfen.

C1

Alterations in cardiac hemodynamics following endotoxin are not due to reduced myocardial contractility and decreased cardiac inotropism.

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Background: Impaired cardiac function due to reduced myocardial contractility is a typical manifestation of septic shock (septic cardiomyopathy), whose mechanisms remain only partly defined. Experimentally, the administration of endotoxin (lipopolysacharride, LPS) to laboratory animals is thought to reproduce many aspects of sepsis, and is therefore classically used to study the mechanisms of septic cardiomyopathy. However, most studies evaluating the effects of LPS on the heart in vivo have relied onto indirect, load-dependent, indices of cardiac function, and thus could not precisely determine the real consequences of LPS on cardiac contractility. Therefore, in the present study, we evaluated the direct effects of LPS on cardiac contractility in mice, using left ventricular (LV) micro-tip pressure volume (PV) catheters, which provide load-independent measurements of cardiac function, including end-systolic elastance (Ees) and maximal elastance (Emax).
Methods: Male BALB/c mice received an intraperitoneal injection of E. Coli LPS (1, 5, 10, or 20 mg/kg). After 2, 6 or 20 h, selected groups of mice were anesthetized, intubated and mechanically ventilated. A PV catheter was inserted into the LV through the right carotid artery. LV pressure (end systolic, LVSP and end-diastolic, LVDP) and volumes (end systolic, ESV and end-diastolic, EDV), were recorded, allowing the calculation of stroke volume (SV), stroke work (SW), cardiac output (CO) and ejection fraction (EF). Ees and Emax were computed from the slope of the end systolic PV relationships of successive PV loops obtained at rapidly reduced preload, by inferior vena cava compression. Mice were sacrificed at the end of experiments. Results. EDV decreased with LPS, mostly after 6 h, whereas ESV did not change. LVSP was slightly decreased only after 6 h, and LVDP was not significantly influenced by LPS. SV, SW, EF and dp/dt max were reduced at all doses of LPS, mostly after 6 h and slightly recovered after 20 h. In spite of an increase in heart rate, CO decreased, especially after 6 h and at the high doses (10 and 20 mg/kg) of LPS. Most importantly, both Ees and Emax markedly increased after all doses of LPS, mostly after 2 and 6 h, and returned back to control values after 20 h. Conclusions. In striking contrast with the usual belief, LPS does not induce direct negative inotropic effects in the mouse, but instead markedly enhances contractility. The alterations in cardiac function induced by LPS are only, and entirely, due to altered loading conditions, which are mainly observed 6 h after the injection of LPS.

C2

A ten year epidemiological survey of brain death in Swiss ICUs

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In Switzerland, as in the rest of Europe, the number of patients waiting for transplants largely exceeds the number of transplants performed. Compared to other European countries the donation rate in our country is dramatically low. Most organ donors are patients who die in hospital due to brain death (BD). BD has been estimated to account for 1.2, 4.3% of hospital deaths in western countries and represents approximately 13% of all deaths in ICUs.
The aim of the present work was to define the epidemiology of BD in Swiss ICUs. We analysed the epidemiological data from 33 Swiss ICUs, collected over a period of 10 years through the medical record review system implemented by the Donor Action Program.
From 1997 to 2008 10464 patients died in the ICUs. Among them, 937 patients presented all the criteria of BD (9%), but only 607 were formally diagnosed as brain dead (5.8%). The mean age of these patients was 49.8 and 57.2% were males. The most frequent admission diagnosis leading to BD was stroke (40.1%). The leading stroke pathology was subarachnoid hemorrhage (21.8%) followed by intracerebral hemorrhage (12.5%). Post-anoxic brain injury represented 16.3% , while traumatic brain injury (TBI) represented only 17% of pathologies leading to BD. TBI patients from road traffic accidents represented only 5.4% of the patients.
Brain death is an infrequent event in Swiss ICUs and is underdiagnosed. The rarity of BD suggests that only very well conducted educational programs anchored in daily practice will help to improve our diagnostic performance. Hemorrhagic stroke is the leading cause of BD in ICU patients, while TBI accounts only for a very tiny proportion of patients who will develop BD. Improvement in stroke management will probably aggravate the shortage in organ donation.

C3

Does extracorporeal circulation induce an increase in resting energy expenditure in critically ill children?

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Introduction: In pediatric intensive care units, energy needs are complex to determine. Extracorporeal circulation (EC) that induces an inflammation could influence energy expenditure. The aim was to compare measured resting energy expenditure (REEm) with theoretical REE and energy intake (EI) in patients with (EC) and without EC (no-EC).
Methods: Ventilated children with a FiO2 ≤60% were prospectively studied. REEm was measured daily by indirect calorimetry and compared to predicted REE by the Schofield equation. EI and energy balance were calculated daily. Comparisons were tested by the t-test and the Bland-Altman method.
Results: 62 children were included, 24 EC and 38 no-EC. Mean age (± SD) was 21.5 ± 20.6 months with a weight and height of 9.1 ± 4.9 kg and 75.5 ± 19.7 cm, respectively. On day 1, CRP was 110.5 ± 65. 1 mg/dl in EC and 78.8 ± 87.7 mg/dl (ns) in no-EC. 337 measurements were performed. REEm was 57.9 ± 12.3 kcal/kg/d in EC and 53.7 ± 10.8 kcal/kg/d in no-EC (p <0.01). Schofield estimated REE correctly. The mean bias was –1.4 ± 14.4 kcal/kg/d in EC (ns; 95% CI–3.8 to 1.0) and 0.3 ± 14.0 kcal/kg/d in no-EC (ns; 95% CI –1.6 to 2.3). The balance was strongly negative for the first 6 days in EC and for the first 2 days in no-EC.
Conclusion: Extracorporeal circulation increases slightly REE in critically ill children but does not induce an hypermetabolism (REEm >10% of predicted REE). Schofield predicts accurately REE. The energy balance remains negative longer in patients with EC.

C4

Pulmonary Hypertension (PH) associated with myeloproliferative diseases. A study of four cases

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Background: Few case reports and small series have demonstrated an association between PH and myeloproliferative disorders (MPD); a recent study describes two distinct forms of PH in the context of MPD, CTEPH and classical pulmonary arterial hypertension (PAH).
Objectives: To illustrate the clinical and haemodynamic characteristics of PH associated with MPD in 4 patients (pts), 3 females and 1 male (71 ± 13 yrs; range: 55–83 yrs), followed between 2001 and 2008.
Methods: Baseline evaluation was accomplished by echocardiography (echo), 6'walking test (6'WT), V/Q scan, CT-angioscan and, in all but one pt, pulmonary artery catheter (PAC). Follow-up was established by echo and 6'WT.
Results: Two pts had polycythemia vera (PV); a chronic myeloid leukemia (CML) and an essential thrombocythemia (ET) were diagnosed in the 2 remaining pts. At baseline, before treatment, echo-measured peak PAPsyst was 73 ± 19 mm Hg; invasively measured mean PAP was 42 ± 11 mm Hg, CI 2.30 L/min/m^2, PVR 528 ± 289 dyn.sec.cm-5 and SvO_2 58 ± 10. Mean 6'WT at baseline was 321 ± 20 m and NYHA functional state was III in all pts. At follow-up after a median time of 49 months, echo peak PAPsyst was 62 ± 26 mm Hg (p = 0.03) and 6'WT was 323 ± 160 m (p = 0.9). Treatment was based on ACO, sildenafil and bosentan. In 2 pts, (CML and ET) the cytoreductive treatment (desatinib, litalir) strongly appeared to exert an improvement, respectively a reversibility affect on PH. In only one pt, a CTEPH was suspected as the prominent form of PH. After a median of 49 months after PH diagnosis, all pts are alive.

Conclusions: Progressively increasing dyspnea in a patient with MPD warrants further investigations to rule out PH. In spite of historically reported dismal prognoses in these pts with PH, the combination between specific PH therapies and cytoreductive drugs may show unexpected benefits. In this perspective, a multinational registry of these rare conditions is strongly justified.

C5

Impact of an Education Program aimed to reduce the occurrence of Ventilator-Associated Pneumonia (VAP)

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Background: Multiple authorities have proposed ventilator-associated pneumonia (VAP) as a quality-of-care indicator in the ICU, because it is a common, morbid and expensive hospital-acquired infection (1). Evidence shows that implementing preventive measures may reduce the incidence rate of the disease.
Objective: to determine whether an education initiative (nursing and medical) could decrease the crude rate of VAP during a 3-years observation period in a 7-bed multidisciplinary ICU (2007: 695 patients admitted; 2142 patients-days; 1274 ventilator days).
Methods: An education program directed toward ICU nurses and doctors was developed by a ad hoc team to highlight evidence-based practices for the prevention of VAP. After this phase, VAP was tracked from April 2004 (official publication of an internal guideline protocol dealing with the nursing and medical prevention) to March 2007. VAP was defined according to the criteria of ATS statement guidelines (2). Rates of VAP per 1000 ventilator-days (VD) were calculated pre- and post-protocol implementation for all patients ventilated more than 48 hrs, with early and late-onset VAP, even considering more than one VAP episode for the same patient.
Results: The crude incidence rate was 15 episodes / 1000 VD in the pre-intervention period. Following implementation, the VAP crude incidence rate decreased to 4 per 1000 VA after 2 years (p = 0.04), corresponding to a relative reduction in rate of 73%.
Conclusions: A focused education intervention can decrease the crude incidence of this hospital-acquired infection. However, considering the notoriously difficult clinical diagnosis of ventilator-associated pneumonia and the presence of many confounding factors in the surveillance program, this beneficial result may not necessarily represent a strong quality-of-care indicator in the intubated patient.
Heyland DK et al Am J Respir Crit Care Med. 1999;159:1249–56.
ATS Statement: Am J Respir Crit Care Med. 2005;171:388–416.

C6

Effect of fluid management on hepatic lactate uptake in peritonitis and endotoxemia

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Introduction: Hyperlactatemia during sepsis has been associated with organ dysfunction and bad outcome. The effects of sepsis model and fluid management on hepatic lactate uptake have not been studied. We hypothesized that intra-abdominal infection and low volume administration are associated with decreased hepatic lactate uptake.
Material and methods: 48 anesthetized pigs were randomly assigned to endotoxin infusion (E, n = 16), fecal peritonitis (P, n = 16), or placebo (C, n = 16), and each group further to either high (H, 20 mL/kg bwt, n = 8) or moderate (M, 10 mL/kg bwt, n = 8) fluid resuscitation for 24 hours or until death, if earlier.
Systemic (thermodilution) and regional (ultrasound transit time) blood flows and lactate concentrations were measured, and hepatic lactate uptake and extraction calculated. Effects of sepsis model and fluid management were tested using ANOVA for repeated measurements. Baseline and end values were compared with Wilcoxon test.
Results: Mortality was 0% in CM, 11% in CH, 13% in EM, 75% in EH, 57% in PM, and 86% in PH. Cardiac output increased in CM from 90 ± 14 mL/kg/min to 103 ± 24 mL/kg/min, in CH from 75 ± 14 to 113 ± 34 (p = 0.023), in EM from 87± 17 mL/kg/min to 108 ± 23 mL/kg/min (p = 0.016), in EH from 73± 22 mL/kg/min to 104 ± 19 mL/kg/min (p = 0.043), in PM from 91 ± 17 mL/kg/min to 121 ± 29 mL/kg/min, in PH from 85 ±16 mL/kg/min to 140 ± 70 mL/kg/min (p = 0.031).
Hepatic artery blood flows were not different between groups. Hepatic lactate uptake and extraction are indicated in the table.
Conclusions: While the absolute hepatic lactate uptake was maintained in all groups, animals receiving high volume resuscitation were not able to compensate increased hepatic lactate influx by maintaining hepatic lactate extraction. In both sepsis groups, high volume administration was associated with increased mortality.
Grant Acknowledgement
Supported by grant 3200BO/102268 from the Swiss National Fund.
Table Lactate handling

	time	CM	CH	EM	EH	PM	PH
hepatic lactate uptake	baseline	9 ± 4	11 ± 4	12 ± 5	13 ± 5	9 ± 5	12 ± 7
	6h	13 ± 7	11 ± 3	15 ± 6	12 ± 4	18 ± 6	15 ± 5
	12 hours	11 ± 5	11 ± 3	15 ± 4	10 ± 6	17 ± 8	17 ± 7
	end	11 ± 4	9 ± 8	15 ± 5	14 ± 9	21 ± 15	18 ± 13
% hepatic lactate extraction *	baseline	54 ± 17	68 ± 11	63 ± 9	60 ± 16	47 ± 20	58 ± 19
	6h	60 ± 11	56 ± 7	58 ± 9	43 ± 11	45 ± 18	57 ± 16
	12 hours#	57 ± 12	49 ± 11	59 ± 11	28 ± 16à	42 ± 19	49 ± 19
	end	51 ± 8	41 ± 31&	57 ± 11	40 ± 16&	36 ± 22	39 ± 22&

* time group interaction p <0.002; time fluid interaction, p <035; anova repeated measurements within group. # ,one-way ANOVA between groups p <0.03. à ,Bonferroni correction p <0.01 vs CM and EM. Abbreviations are: CM: control moderate; CH: control high; EM: endotoxin moderate; EH: endotoxin high; PL:, peritonitis moderate; PH: peritonitis high. Units for lactate uptake are umol/kg/min

C7

Bacterial flagellin triggers myocardial innate immune responses and acute contractile failure

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Background: Septic shock is associated with severe cardiac dysfunction, whose mechanisms remain partly undefined. Recent data suggested that it might be triggered by the direct action of microorganisms and their products on the heart itself. We previously showed that flagellin, the protein monomer from bacterial flagella, is a potent activator of nuclear factor kappaB (NFKB)-dependent pro-inflammatory signaling in cultured cardiomyocytes. In the present study, we investigated whether flagellin might induce such an inflammation in the heart in vivo and contribute to cardiac dysfunction.
Methods: Mice were injected intravenously with 1microgramm flagellin. At selected time-points (30 min to 4h), the effects of flagellin were evaluated by its ability to activate NFKB, MAP kinases and downstream signaling. Expression of the flagellin receptor TLR5 was also investigated. Cardiac function was evaluated after 4h using a microtip pressure-volume (PV) catheter inserted into the left ventricle (LV). Also, human cardiac tissue was obtained from the right atrium in patients undergoing elective CABG surgery, to determine the presence of TLR5 in the human heart.
Results: Cutured cardiomyocytes, as well as hearts from mice and humans expressed TLR5 protein at a high level. Flagellin activated NFKB and the MAP kinases p38 and JNK in cardiomyocytes in vitro and in vivo, and also upregulated the transcription of TNF alpha and MIP-2. In vivo, flagellin also induced the recruitment of neutrophils within the heart. Functionally, flagellin induced significant increases in end-systolic and end-diastolic LV volumes, indicating cardiac dilation, and a significant reduction of end-systolic elastance and maximal elastance, indicating depressed myocardial contractility. In contrast, no change in the slope of the end-diastolic PV relationship (EDPVR) was noted.
Conclusion: Bacterial flagellin induces a prototypical inflammatory response in cardiomyocytes in vitro and in the myocardium in vivo. These effects are associated with a profound alteration of the LV systolic function in vivo, suggesting that flagellin may represent a critical mediator of cardiac dysfunction in septic shock.

C8

A network-based analysis of cardiac dysfunction and survival in a septic rat model

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The hierarchy of mechanisms leading to sepsis-induced cardiac dysfunction is still uncertain and the variation in severity between septic individuals inadequately explained.
Methods: We developed a long-term (3-day), awake, fluid-resuscitated rat model of fecal peritonitis, in which echocardiography (GE Healthcare) was performed at set timepoints. In subsequent experiments, we performed terminal fluid loading at 6h. We also collected cardiac tissue for light/electron microscopy and for gene analysis (Illumina).
Results: Echo derived stroke volume measurements at 6h distinguished eventual survivors and non-survivors with a sensitivity of 93% and a specificity of 80%. Predicted non-survivors attained lower maximum stroke volume on volume loading (0.33 ± 0.1 vs 0.40 ± 0.1 ml, p <0.05) and tolerated less fluid than predicted survivors (31 ± 7.3 vs 49 ± 6.4 ml; p <0.05). Gene analysis at 6h detected transcripts significantly upregulated in sepsis (e.g. JAK2, STAT3). Predicted poor outcome was associated with significant up- or downregulation of genes expressing proteins in the ß-adrenergic/calcium signalling

pathway (incl. phosphodiesterase, PP-1, SERCA). Microscopy at 24h revealed mitochondrial damage, but no gross structural changes.
Conclusion: Cardiac dysfunction was present as early as 6h, and the degree of dysfunction was associated with an increased risk of mortality. A gene expression analysis of heart tissue identified prognostically relevant signaling pathways.

C9

Passive leg raising did not predict fluid responsiveness in hemodynamically unstable medical ICU patients

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Objective: To investigate whether passive leg raising (PLR) can predict volume responsiveness in hemodynamically unstable critically ill medical ICU patients.
Methods: Fluid responsiveness was tested in 17 consecutive patients (6 sepsis, 6 respiratory failure, 4 heart failure, 1 liver failure) with a mean arterial pressure (MAP) <60 mm Hg and/or a cardiac index (CI) <2.4 L/min/m^2. CI, stroke volume index (SVI) and global end-diastolic volume index (GEDVI) were measured using the PICCO method at baseline and 15 minutes after the infusion of 500 mL of 0.9% NaCl over 15 minutes. To test the possible hemodynamic effect of fluid challenge, prior to NaCl infusion, a PLR manoeuvre was performed. Changes in heart rate (HR), MAP and CI were recorded after 2 min. An improvement of CI ≥ 15 % was considered as volume responsive.
Results: Patients' median age was 61 (20, 78) years and their SAPS II score 52 (28, 77). 15/17 received vasopressors and/or inotropics. Baseline hemodynamics and changes after PLR and fluid challenge are shown in table 1, where results are given as median (range); n/a = not available; * = p <0.05 vs. baseline. CI increased 15% after PLR in 1 and after fluid infusion in 5 patients. PLR predicted fluid responsiveness in none of the 5 patients.
Conclusion: Unlike previously reported, PLR did not predict volume responsiveness in our heterogeneous medical ICU patients.

Parameter	Baseline 1	After PLR	Baseline 2	After 500 ml 0.9% NaCl
HR (1/min)	94 (48–126)	94 (48–125)	95 (50–126)	94 (51–127)
MAP (mm Hg)	68 (55–79)	71 (55–98) *	69 (54–92)	73 (54–97) *
GEDVI (ml)	690 (494–1110)	na	na	697 (501–1287) *
CI (L/min/m^2)	3.2 (1.6–7.5)	2.9 (1.6–7.5)	3.1 (1.6–7.8)	3.4 (1.7–7.4) *
SVI (ml/m^2)	35 (17–103)	36 (18–100)	35 (15–103)	38 (13–95) *

C10

Non hypotensive endotoxemia inhibits dermal nitric-oxide-dependent vasodilation in obese subjects.

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Background: Intensive care units (ICU) have to treat an ever increasing number of obese patients. Sepsis is a leading cause of ICU death. Accompanied by low-grade inflammation, obsesity may exacerbate the systemic inflammatory response syndrome (SIRS). In animals, a component of SIRS is endothelial dysfunction, i.e a reduced ability of the vascular endothelium to mediate vasodilation via the nitric oxide (NO) pathway. In humans, SIRS can be induced experimentally by the i.v. infusion of endotoxin (LPS) at very low dose. Our purpose was to test whether low dose LPS infusion attenuates an NO-dependent vasodilatory response in the skin of obese subjects.
Methods: 8 obese (body mass index >30 gk/m^2) normotensive, nondiabetic volunteers with normal 12 lead ECG were enrolled. None took any vasoactive or anti-inflammatory medication. They were studied in a quiet, air-conditionned room (part of our ICU), on two different visits 7–10 days apart. In randomized order, they received a bolus i.v. injection of either E.Coli LPS (2 ng/kg) dissolved in saline on one visit, or saline alone on the other (Control). Because local heating is known to cause a NO-dependent vasodilation in the dermal microcirculation, the response of skin blood flow (SkBF, measured with a laser Doppler imager) to a step increase in local temperature from 34°C to either 39°C or 41°C, was recorded immediately before (T0) and 4 hours after (T4) LPS or saline administration.
Results: (mean ± SD) are shown in the Table, where SkBF, expressed in perfusion units, is reported immediately before (baseline) and after 30 minutes of heating to the indicated temperature (plateau).
* p <0.05, ** p <0.01 vs Baseline § p <0.05, §§ p <0.01 LPS vs Control at T4.
At T4, LPS caused tachycardia, light fever, but no arterial hypotension. Skin temperature increased slightly from T0 to T4, to the same extent after injection of saline or LPS. LPS significantly blunted the response of SkBF to local heating.
Conclusion: In obese volunteers, nonhypotensive endotoxemia inhibits NO-dependent vasodilation in the skin.

		Control		**LPS**	
		T0	**T4**	**T0**	**T4**
Mean BP (mm Hg)		84 ± 8	86 ± 5	84 ± 5	84 ± 12
Heart rate (bpm)		65 ± 7	69 ± 8	65 ± 8	93 ± 8**§§
Rectal temperature (C)		36.7 ± 0.3	37.1 ± 0.3	36.8 ± 0.3	38.2 ± 0.68**
Skin temperature (C)		31.4 ± 1.3	33.1 ± 0.9**	31.8 ± 0.9	33.4 ± 1.28**
SkBF, skin heated from 34 to 39 °C					
	Baseline	58 ± 16	59 ± 12	55 ± 16	63 ± 25
	Plateau	366 ± 141	397 ± 171	392 ± 91	250 ± 568**
SkBF, skin heated from 34 to 41 °C					
	Baseline	55 ± 15	57 ± 21	53 ± 13	54 ± 10
	Plateau	639 ± 164	634 ± 146	675 ± 124	600 ± 106*

C11

Post-Traumatic Stress Disorder one year after ICU

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Introduction: Post-Traumatic Stress Disorder (PTSD) is a known complication after ICU stay, and its prevalence by self-report measure is of 5–64% of patients. Associated factors frequently reported are age, length of ICU stay, some medications and delusion memories. We sought to investigate its occurrence at 1 year after ICU, associated factors and the potential impact on QOL after ICU.
Methods: Adults admitted to a surgical ICU, who stayed >36 h were included after informed consent. Variables were collected prospectively during the ICU stay and tested for association with PTSD
(PCL -17 items) measured 1 year after discharge from ICU. Those factors were then assessed for potential association with QOL measures at 1 year.
Results: Of 762 included patients, 642 (84%) completed the 1 year follow-up, 579(76%) were alive and 547 (72%) answered the questionnaire. 64 (12%) patients presented criteria of high PTSD. In the multivariate analysis, younger age, longer ICU length of stay, bad memories of their ICU stay were associated with high PTSD as previously shown. Other factors such as lower educational status, pre-existing depression or anxiety were found to be associated with occurrence of PTSD in our study, as well as significantly lower EQ and SF-36 QOL outcomes, even in physical domains,.
Patients with PTSD had significantly higher consumption of sleep medication after the ICU.
Conclusion: PTSD is frequent 1 year after ICU. Several risk factors have been identified. PTSD probably impacts significantly on QOL.
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C12

Evaluation of the user-friendliness of new generation ICU ventilators

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In the ICU setting, incidents are often caused by human errors, most frequently related to mechanical ventilation (1). ICU ventilators are becoming more and more sophisticated and complex, which can lead to errors, in particular in emergency situations. The aim of this study was to evaluate the user-friendliness of 7 new generation ICU ventilators.
10 Physicians well trained in mechanical ventilation but without knowledge of the 7 ICU ventilators tested performed 8 timed tasks per machine. Time performances were compared between each other and with a reference time established by a trained respiratory therapist (RT). Tasks were successively: switch on the ventilator, recognize the already adjusted mode, recognize and set alarms, change mode, find the pre-oxygenation command, adjust parameters for pressure support mode, stand-by and find NIV mode. Physicians rated their subjective assessment of task difficulty on a visual analogue scale
(0: very easy-10 very difficult).
Results are expressed as medians and interquartile range (IQR: 25th-75th percentile). For each task physicians were slower than the RT:
44 (25-89) for the most rapid, vs. 14 (5-22) for the RT. A mean of 9
(7-13) failures was observed by ventilator; on 3 machines more than
10 failures occurred. The most rapid task with the fewest failures was pre-oxygenation (5 (3-17)). Tasks with the most failures were adjus-ting pressure support mode and finding NIV mode. The longest task
was mode recognition (106 (74-146)). The most common errors were: confusion between adjusted and measured parameters, type and level of trigger and plateau pressure assessment. Visual analogue scores ranged from 3.8 to 7.3. Physicians without prior experience with specific ICU ventilators perform poorly when confronted with specific tasks. These results suggest a need of standardization between machines and improved interface user-friendliness in the design of ICU ventilators.
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C13

Impact of a multimodal and multidisciplinary strategy for weaning from mechanical ventilation (MV) in a mixed ICU

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Introduction: Specific measures, such as daily interruption of sedation (DIS), and systematic spontaneous breathing trials (SBT), reduce the duration of MV in selected patients. We implemented a multimodal and multidisciplinary weaning strategy in our mixed ICU.
Methods: In our ICU, a weaning strategy was buid by a multidisciplinary team. It enclosed detailed recommendations, for DIS, and SBT before extubation. Responsibilities for nurses, physicians and res-piratory physiotherapists were specified. Targeting all patients with
MV >48 h, it was implemented over 6 months in 2006. It was diffused through information system and pocket cards, trained in specific workshops reinforced by bedside teaching of all healthcare workers. For each patient, the potential for a weaning trial was checked daily and written in a structured section of the order sheet. Using a "before-after" design, we compared the duration of invasive MV
(log-rank test), and the rate of reintubation (chi-square) during 15 months before, and after strategy implementation. Tracheostomized patients and those on MV during the implementation were excluded.
Results: Of 7400 ICU stays (Jan. 2005 to Dec. 2007), 3838 episodes of invasive MV were considered, including 1755 >48h. The underlying characteristics of the patients did not change over this period. The median (quartiles) duration of MV decreased from 3.6 days
(1.9–6.9) before to 3.0 (1.8–6.1) after (p <0.02). The reintubation rate increased from 4% (28/651) to 6%(40/677) (p <0.01) which remains below usual standards. This saved 700 days of MV.
Conclusion: A multimodal weaning strategy elaborated and implemented at the ICU level effectively reduced the duration of MV of unselected patients ventilated >48h.

C14

Praxisentwicklungsprojekt zum Therapieabbruch auf der Intensivstation: Interprofessionelle Arbeitsgruppe entwickelt Procedere zur Entscheidungsfindung und zur Umsetzung

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Hintergrund: Bei immer mehr Menschen, die auf Intensivstationen sterben, gehen dem Tod eine Therapieenthaltung oder ein Therapieabbruch voraus. Das Treffen und Umsetzen solcher Entscheidungen stellt für viele Ärzte und Pflegende eine Belastung dar. Die Literatur empfiehlt Intensivmedizinern, nach definiertem Procedere vorzugehen und die Entscheidungsfindung interprofessionell abzustützen.
Ziel: Entwicklung eines definierten Vorgehens für die Entscheidungsfindung betr. Therapieabbruch und deren Umsetzung im Alltag einer interdisziplinären intensivstation. Übergeordnete Ziele: a) Wohlergehen der Patienten, b) Entscheidung anhand transparenter Kriterien, Ausschluss von Willkür durch interprofessionelle Einflussnahme und kontrolle, c) Reduktion der Belastung für das Personal durch gemeinsame Orientierung, d) Erhöhung der Arbeitszufriedenheit durch Reduktion unfruchtbarer Diskussionen und Konflikte.
Methode: Schulung und Training zu ethischer Entscheidungsfindung, ganztägige Retraite für interessierte Pflegende und Ärzte zur Klärung gemeinsamer Werte und Ziele. Interprofessionelle Arbeitsgruppe entwickelt Checkliste zur Entscheidungsfindung und zu deren Umsetzung unter Berücksichtigung von a) Literaturübersicht, b) unsystematischer Befragung anderer Intensivstationen, c) Besprechung exemplarischer Fälle, d) Rückfragen im Team.
Resultat: 1. Checkliste «Vorgehen beim Entscheidungsprozess betr. Therapieenthaltung und Therapieabbruch» (Auslösen der Diskussion, zu besprechende Themen, Kommunikation der für alle bindenden Entscheidung), 2. Checkliste «Umsetzung von Therapieabbrüchen» mit definiertem Handlungsspielraum, resp. Optionen, u.a. bzgl. Beatmung, Vasoaktive, Monitor).

C15

Wahrnehmungs- und entwicklungsfördernde Pflege der Abteilung für Pädiatrische Intensivbehandlung

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Wahrnehmung, Bewegung und Kommunikation sind Fähigkeiten, die uns die sensomotorische, psychosoziale und emotionale Entwicklung ermöglichen. Das Kind braucht ein Umfeld wo diese Fähigkeiten geübt werden können. Ein krankes Kind im Spital hat diese Bedingungen nicht.
Die wahrnehmungs- und entwicklungsfördernde Pflege bei Kindern ist eine Kombination von Basiswissen aus den Konzepten Basale Stimulation in der Pflege und Kinästhetik oder Kinästhetik Infant Handling. Diese Methoden knüpfen an die intrauterin erlernten Fähigkeiten und Ressourcen eines Menschen an. Beide Konzepte basieren auf den gleichen Grundhaltungen und beinhalten das gleiche Menschenbild. Sie können miteinander verbunden werden und ergänzen sich gegenseitig. Sie liefern die Grundlagen für eine individuelle, umfassende und humane Betreuung und Pflege.
Das Konzept wird folgendermassen umgesetzt: Die Praxisbegleiterin geht auf die Bedürfnisse der Patienten und Pflegenden ein. Sie klärt Fragen bezüglich Positionsunterstützungen, Waschungen, Berührungen. Sie leitet das Fachteam für wahrnehmungs- und entwicklungsfördernde Pflege.
Das Fachteam hilft mit, das Konzept auf der Abteilung zu integrieren, Fortbildungen zu halten, die Pflegedokumentationen nachzuführen. Damit verfolgen wir die zentralen Ziele des Konzeptes. Das Kind kann Sicherheit und Vertrauen aufbauen. Durch das Bewegungskonzept wird seine Selbstkontrolle verbessert. Dadurch ist eine gezielte Förderung der Körperwahrnehmung und Orientierung möglich.

P1

Prevalence and predictors of malnutrition in a general internal hospital caucasian population

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Background: Protein-energy malnutrition (PEM) in a hospital setting continues to be an important condition affecting clinical outcome. Identifying patients at risk is the first step in its treatment. Rapid and simple identification of PEM and effective management are essential. The aim of the study was to investigate whether there are clinical predictors that can quickly identify malnourished patients at hospital admission.
Methods: One hundred and one patients consecutively admitted to the general medical wards were enrolled. Current medical conditions, symptoms, participant history, eating and drinking habits, diagnoses, laboratory findings, drugs and anthropometrics were recorded. As a screening instrument to identify the risk of PEM we used the Nutrition Risk Score 2002 (NRS 2002) introduced by Kondrup et al.
Results: Forty-eight percent of the patients had a high risk of PEM according to the NRS 2002. Predictors for PEM were low serum albumin, drugs at risk, supplementation of micronutrients, as well as immobility, constipation and low muscle mass represented by mid-arm muscle area. The use of metoclopramide and or corticosteroids increased the odds for PEM 15-fold (p = 0.002), immobility by 5.0 (p = 0.015) and constipation by 4.5 (p = 0.013). An increased level of serum albumin reduced the odds by 16.6% (p = 0.001), a high mean upper-arm muscle area by 35% (p <0.001) and supplementation of micronutrients by 23% (trend, p = 0.072).
Conclusion: Our results demonstrate that a patient who is immobile, is undergoing steroid treatment, and has impaired gastrointestinal motility at hospital admission has an 87.5% probability of being malnourished. This is the first study showing clinically relevant predictors of an increased risk of PEM defined by the NRS 2002 in a non-geriatric population. When these predictors are present the clinician should begin adequate nutritional support immediately at hospital admission.

P2

Erfassung des Mangelernährungsrisikos – Konzept zur Einführung am Beispiel von zwei Kliniken

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Fragestellung: Einführung eines Mangelernährungsmanagements zur Verbesserung der Identifizierung von mangelernährten Patienten, zur Optimierung der Erfassung der gegessenen Menge und zur schnelleren Einleitung einer adäquaten Ernährungstherapie durch medizinisches Personal. Zudem Erfassung problematischer Aspekte bei der Einführung der Instrumente und Ausarbeitung von Lösungsansätzen.
Material und Methodik: Einführung des Nutritional Risk Screening nach Kondrup et al. (NRS 2002) auf zwei universitären Kliniken.
Zur Erfassung der gegessenen Menge wurden das Tellerdiagramm eingesetzt. Bei mangelernährten Patienten oder Patienten mit hohem Mangelernährungsrisiko wurde ein ernährungstherapeutischer Aktionsplan für das medizinische Personal und für die betroffenen Patienten erstellt.
Ergebnisse: Während 6 Monaten wurden 138 Patienten auf der Dermatologischen und 74 Patienten auf der Gynäkologischen Klinik in Bezug auf ihren Ernährungszustand konsekutiv erfasst, 31% respektive 37% davon waren mangelernährt oder hatten ein hohes Risiko für Mangelernährung. Auf der Dermatologischen Klinik wies kein Patient unter 60 Jahren und auf der Gynäkologischen Klinik keine Patientin mit Mammakarzinom eine Mangelernährungsrisiko auf. Diese Gruppe wurde deshalb bei der definitiven Einführung vom Screening ausgeschlossen.
Die Berechnung des Gewichtsverlusts in Prozent für den NRS 2002 erwies sich als umständlich, weshalb eine entsprechende Tabelle zur Verfügung gestellt wurde.
Der zusätzliche Zeitaufwand der Pflege für die Erfassung und die Schwierigkeiten der genauen Mengenerfassungen der Mahlzeiten wurden diskutiert.
Gewichtsverlust und BMI werden nur bei der ersten Erfassung verwendet. Für den wöchentlichen Verlauf wird die Mengenerfassung gebraucht, da besonders bei älteren Patienten die Hydratation häufig durch Herz- oder Niereninsuffizienz verfälscht wird.
Schlussfolgerungen: Das medizinische Personal wurde für das Problem der Mangelernährung im Spital stark sensibilisiert. Die Behandlungsstrategien und die therapeutischen Ziele wurden interdisziplinär erfolgreich entwickelt und getragen. Seit der Vorstellung der Resultate vor den entsprechenden Klinikleitungen, ist das eingeführte Ernährungsscreening und -managment zu einem festen Bestandteil der täglichen Routine geworden.

P3

Nutritional management study: Screening part

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Background: In developed countries, malnutrition is frequently overlooked, considered to be a minor problem compared with that of overnutrition. The aim of this study was to study the prevalence of risk for malnutrition on a general medical ward of a university hospital.
Methods: Screening and randomized prospective clinical intervention study at a general medical ward in a university hospital with consecutively screened patients according the NRS 2002 introduced by Kondrup et al.
Results: Between 2/07 and 4/08 2207 patients (n = 100%) have been screened with the NRS to identify MN. The prevalence of patients with a score NRS ≥3 was 51% (n = 1129). Patient characteristics (mean ± sd): age 63.1 ± 17.9 years, height 1.69 ± 0.09 m, weight 73.6 ± 25.6 kg, BMI 25.5 ± 8 kg/m^2, NRS-Total 2.86 ± 1.41 pts, energy needs (BEE + 20% activity) 1762 ± 464kcal. The risk of having ME was the same for every age group, but the age group 81–90 years old, the odds were 1.45 (95% CI: 1.14–1.84). Regarding age, 41% (n = 893) of patients ≥70 y. Especially patients with cancer had a significant higher score of having MN than patients without (NRS 3.4 ± 1.4 vs. 2.7 ± 1.4 p <0.001). The risk group was significantly older (27.3 ± 9.2 vs. 63.8 ± 17.9 J, p = 0.01), had a significant lower BMI (24 ± 5.9 vs. 27.3 ± 9.2 kg/m^2, p <0.001) and therefore significantly lower energy needs (1681 ± 316 vs. 1855 ± 557 kcal, p <0.001). Loss of appetite during the past 7 days and pathological weight loss were the most common reasons for more points in the NRS. Only 8% (n = 94) had a high NRS due to isolated low BMI (<18.5 kg/m^2). A mild metabolic stress, due to the chronic disease has been found in 88% (n = 1934) patients; 12% (n = 258) of patients had a higher metabolic stress.
Conclusion: In a general medical ward of a university hospital, the risk for malnutrition is high and needs specific intervention, also as nutritional status decreases during hospital stay. The question for weight loss and low appetite will identify numerous patients at nutritional risk.

P4

MedGem, ein einfaches Gerät zur Bestimmung des Ruheenergieumsatzes

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Einleitung: Um bei schwer Kranken eine bedarfsgerechte Ernährung zu gewährleisten ist es unerlässlich den Energiebedarf ermitteln zu können. Als Goldstandard zur Messung des Energieumsatzes gilt die klassische indirekte Kalorimetrie, deren Durchführung im Spitalalltag sehr aufwendig ist. Seit einigen Jahren ist ein handliches, indirektes Kalorimeter auf dem Markt, welches den Ruheenergiebedarf allein durch Messung des Sauerstoffverbrauchs in kurzer Zeit und unter einfacher Handhabung ermittelt. In der vorliegenden Pilotstudie haben wir die Messwerte dieser zwei Techniken verglichen.
Methoden: Es wurden gesunde Personen sowie Patienten mit verschiedenen Krankheitsbildern eingeschlossen. Zunächst wurde die Messung mit dem indirekten Kalorimeter Vmax 29n (Sensor Medics, Yorba Linda, CA, USA) vorgenommen und danach mit dem MedGem (MedGem, Healthetech, Golden, CO, USA). Beide Messungen fanden am ruhig liegenden Patienten unter gleichen und für die indirekte Kalorimetrie vorausgesetzten Bedingungen statt. Zudem wurden die klassischen Formeln von Harris-Benedict und Ireton-Jones mit den Messwerten des Vmax verglichen.
Resultate: Der Ruheenergieumsatz betrug mit Vmax bei den Gesunden (n = 11) 1531 ± 247 kcal, bei den Patienten (n = 22) 1428 ± 384 kcal, mit MedGem 1558 ± 324 kcal (p = 0.896 gegenüber Werten mit Vmax), bzw. 1482 ± 390 kcal (p = 0.481). Zwischen Vmax und MedGem bestand eine hochsignifikante positive, lineare Korrelation, sowohl bei den Gesunden (r = 0.85, p <0.001) als auch den Patienten (r = 0.88, p <0.001). Beim Vergleich mit den Formeln ergab sich ebenfalls eine signifikante Korrelation, allerdings mit tieferen Korrelationskoeffizienten.
Diskussion: Die Messungen mit MedGem korrelieren sehr gut mit denjenigen der Messung mittels klassischer indirekter Kalorimetrie. Die individuellen Werte müssen jedoch mit Vorsicht interpretiert werden, da sie deutlich voneinander abweichen können. Die Resultate sollen immer unter Einbezug der klinischen Verlaufsbeurteilung genutzt werden. Der gezielte Einsatz von MedGem beim schwer Kranken ermöglicht eine einfache und schnelle Ermittlung des Energieumsatzes im Spitalalltag.

P5

Un protocole de nutrition suffit-il à garantir des pratiques “evidence based” (EBM)? – réalité clinique et propositions

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Le support nutritionnel en soins intensifs est désormais basé sur des études de niveau A et B. La participation du SMIA au «Nutrition Day 2008» avait mis en évidence des déviations par rapport aux recommandations. Cette étude a pour objectif de réaliser une analyse approfondie sur un mois.
Méthodes: Analyse des patients sortis ayant séjourné plus de 3 jours en mars 2008 dans un service de 32 lits bénéficiant d’une diététicienne à 60% et du Protocole NUTSIA depuis 2006. Extraction de la database: variables démographiques, nutrition risk score (NRS), jours de démarrage et voie de nutrition, bilan calorique cumulé.
Résultats: 69 patients âgés de 60 ± 17 ans ont séjourné 9 ± 10 jours. Le NRS est réalisé tardivement dans 29% des cas. A 48h, le support nutritionnel est défini chez 67% des patients avec 43% de nutrition artificielle, une prédominance de NE (73%) sur PN (27%). Seuls 3 patients ont un bilan cumulé < -10000 kcal. La couverture des séjours par la diététicienne est de 50%.
Conclusion: Comparé à l’EBM, les pratiques nutritionnelles sont globalement satisfaisantes, mais l’évaluation systématique est insuffisante. L’introduction de la NE est tardive et sa progression trop lente comparé au protocole. Les remèdes proposés sont une administration de NE par défaut, une augmentation de la présence de la diététicienne et son «empowerment» sur la prescription.

P6

Hypocaloric nutrition and outcome in critically ill patients with prolonged ICU stay

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Background: While implementation of protocols for nutritional support is associated with less energy deficit, the impact of hypocaloric feeding on clinical relevant outcomes is more controversial: Recent studies suggested both positive and negative effects, in patients receiving the recommended intakes. The aim of this study was to assess the incidence and magnitude of hypocaloric feeding in an ICU without explicit nutrition protocols together with standardized mortality ratios.
Methods: Retrospective analysis of data from all patients staying >72 h in a mixed medical-surgical 30 bed University Hospital ICU in 2006 for maximally 50 days.
Results: Data from 562 patients (medical 270, surgical 292) resulting in 5043 observed days were analyzed. Length of ICU and hospital stay were 9 ± 9 days and 27 ± 25 days. The age was 61 ± 16 years, the weight 77 ± 17 kg, BMI 26 ± 5 kg/m^2, and APACHE II and SAPS scores 24±8 and 50 ± 17. Daily energy and protein intake were 302 ± 334 kcal and 12 ± 15 g (recommended according to ESPEN: 1549 ± 342 kcal and 114 ± 29 g). The measured ICU (14%) and hospital mortality (22%) was significantly (p <0.001) below the expected mortality estimated by APACHE II (50%) and SAPS II scores (46%). Total caloric deficit per patient was 9820 ± 11260 kcal. The cumulated energy deficit on the ICU is in 442 (79.9%) greater than 5000 kcal. Of observed days 50% of the patients received enteral nutrition, 7% parenteral nutrition, 6% par- and enteral nutrition and 38% had no nutrition at all except for fluids. Overall 71% of patients were fed with less than 5 kcal/kg per kg bodyweight daily.
Conclusion: Most patients with an ICU stay >72 h acquired a substantial caloric deficit during the study period when compared to recommendations. It is mandatory to introduce a standardized feeding protocol to prevent such high caloric deficits. A prospective study is running now to improve feeding support and evaluate outcome.

P7

The NRS-2002 is an excellent clinical predictor of postoperative complications in surgery of colonic cancer

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Background: Malnutrition is a well known risk factor for surgery, especially in oncology patients. Despite this knowledge, a established and easy practicable diagnostic tool to screen for patients at risk for malnutrition, as proposed by ESPEN in 2002. has not yet been validated in the high risk colorectal cancer patients with surgical treatment.
Objective: The aim of the study was to investigate whether the nutrition risk score (NRS 2002) predicts postoperative complications when applied at hospital admission in patients with surgery for colorectal cancer.
Methods: One hundred and eighty six patients consecutively admitted to the department of surgery of the Kantonsspital Aarau, Switzerland, were enrolled in this prospective cohort study. The NRS 2002, together with current medical findings, patient history, eating and drinking habits, diagnoses, laboratory findings, drugs, anthropometrics, tumour staging and the type of operation were recorded and checked for significance by univariate analysis and multiple logistic regression.
Results: 186 patients treated between January 2003 and January 2005 were included in the study upon informed consent. The prevalence of malnutrition in this population was 39%. There was a higher mortality in malnourished (= NRS 2002 ≥3) patients (6.4 % vs. 1.6%, p = 0.08) and a higher postoperative complication rate (68.5 vs. 41.6 %, p <0.001) compared to well-nourished patients. In addition, prevalence of infections (49.3% vs. 31.9%, p = 0.02) and length of hospital stay (21.6 vs. 19.3 days, p <0.01) were higher in malnourished compared to well-nourished subjects. In a multivariate model, the OR of malnutrition for postoperative complications was 3.2 (95% CI 1.6–6.4), independently of the tumor stage.
Conclusion: The NRS 2002 is an excellent tool to screen for malnutrition and a good clinical predictor of postoperative complications in patients with colorectal cancer undergoing surgery.

P8

Can Omega-3 Poly-Unsaturated Fatty Acids (PUFA) Prevent Neutropenic Colitis in Patients with Acute Myelogenous Leukemia (AML)? A Prospective Phase II Study (LUNCH1 Trial)

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Background: AML is a malignant clonal disorder of myeloid cells requiring myeloablative chemotherapy. This procedure contributes to a 40% incidence of neutropenic colitis. Apart from supportive concepts, there is no standard prevention or treatment strategy, and mortality remains high. Omega-3 PUFA are agents with documented anti-inflammatory properties, mediated by their active eicosanoid metabolites. In particular, there is evidence of protective activity in inflammatory bowel disease.
Methods: In an ongoing first part of this phase II study, 13 adult AML patients requiring total parenteral nutrition (TPN) after myeloablative chemotherapy are enrolled. An intravenous omega-3 PUFA formulation (OmegavenTM, Fresenius Kabi) is administered throughout the entire TPN period at a dosage of 100 mL/d. Abdominal status, serum albumin, citrullin, and liver enzymes are monitored regularly. Endpoints are incidence and severity of colitis, and safety.
Results: Between November 2007 and March 2008, 13 subjects have been enrolled (8 males, 5 females, median age 58y, range 25–69y). Seven patients are evaluable for safety and efficacy endpoints. Median TPN duration was 16d (range 4–31d). Omegaven TM was well tolerated; as in most TPN recipients, transient liver enzyme elevations occurred. Only one patient developed a brief period of colitis°3, transaminases°4, and sepsis with complete recovery after 7d. Another patient’s colitis°3 at baseline resolved rapidly within 5d.
Conclusion: Adding omega-3 PUFA to TPN is safe. Both incidence and severity of colitis are low compared to previous cohorts.
This novel intervention may thus offer a promising strategy against chemotherapy-related mucosal damage. Further data will be presented after an interim analysis of 13 evaluable patients.

P9

PHICUSS 1: Diagnostic and therapeutic approach of Swiss ICUs to pulmonary hypertension

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Background: Pulmonary hypertension (PH) is a threatening condition of various origin commonly encountered in Intensive Care Units (ICU) patients. Despite the deleterious effects of PH in critically ill patients and the increase of both morbidity and mortality, no data investigating the general prevalence of PH in the ICU setting exist.
Aim: The aim of our study is to investigate 1) the prevalence of PH of any cause in the setting of surgical, medical, paediatric or interdisciplinary ICUs of primary, secondary and tertiary Swiss hospitals; 2) the most frequent causes of PH in the ICU setting above, and 3) the diagnostic and therapeutic approach to PH by the Swiss ICU physicians.
Methods: Prospective multicentric investigational study conducted september 2008 during a definite two weeks period in all participating Swiss centres. All consecutive patients admitted to ICU will be screened for presence or suspicion of PH using a specific questionnaire.
Expected results: We expect an underestimation of the crude prevalence of PH in the ICU setting, which could affect further attitude of treating physicians against PH in critically ill patients. Study concept and action plan are presented.

P9a

PHICUSS 1: Diagnostic and therapeutic approach of Swiss ICUs to pulmonary hypertension

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Background: Pulmonary hypertension (PH) is a threatening condition of various origin commonly encountered in Intensive Care Units (ICU) patients. Despite the deleterious effects of PH in critically ill patients and the increase of both morbidity and mortality, no data investigating the general prevalence of PH in the ICU setting exist. Diagnostic and therapeutic attitude of different ICUs in regards to PH varies broadly. The PHICUSS1-study (Pulmonary Hypertension in the ICU – Swiss Survey 1) investigate the prevalence of PH of any cause in the setting of surgical, medical, paediatric or interdisciplinary ICUs of primary, secondary and tertiary Swiss hospitals and the most frequent causes of PH in the ICU setting above.
Aim: to assess the diagnostic and therapeutic approach to PH by the Swiss ICU physicians, in the contest of the PHICUSS-1 and before study begin.
Methods: PHICUSS-1 is a prospective multicentric investigational study conducted september 2008 during a definite two weeks period in all participating Swiss centres. During spring-summer 2008 and before begin of the study we investigated the diagnostic and therapeutic approach to PH of all participating centres by a standardized questionnaire.
Results: the approach of Swiss ICUs to patients with suspected or confirmed PH will be presented. We expect a broad difference in the attitude of Swiss ICUs regarding the diagnostic and therapeutic approach to PH.

P10

Three years' experience in the evaluation of suspected pulmonary hypertension in a regional hospital

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Introduction: Pulmonary hypertension (PH) is a very rare but life-threatening disease. Screening for PH is performed by echocardiography but definitive diagnosis requires right heart catheterization (RHC).
Methods: Between July 2005 and May 2008, 20 elective RHCs were performed by internal jugular or subclavian vein puncture in 19 patients referred due to suspected PH in steady state conditions. The patients with confirmed PH were classified according to the Venice 2003 classification 1. PH was considered mild if the mean pulmonary arterial pressure (mPAP) was 25–35 mm Hg, moderate if mPAP was 35–45 mm Hg and severe if mPAP was >45 mm Hg. If mPAP was >35 mm Hg and capillary wedge pressure was <15 mm Hg, RHC was completed by acute vasoreactivity testing (VRT) with 10 mg of inhaled Iloprost.
Results: 8 patients had no or mild PH. One patient had moderate PH and 13 patients had severe PH. Distribution according to the clinical Venice classification was as follows: 4 Class I (pulmonary arterial hypertension – PAH), 3 Class II (PH associated with left heart diseases), 5 Class III (PH associated with lung respiratory diseases), 3 Class IV (PH due to chronic thrombotic and/or embolic disease), none Class V (miscellaneous). VRT was negative in all but one patient. No complication of RHC and/or acute VRT was observed.
Discussion: Our experience shows that evaluation of PH is feasible in a regional hospital and important for clinical follow-up. Acute VRT allowed introduction of calcium channel blocker in one patient.

References: 1) Europ Heart J 2004;25:2243–78. ESC Guidelines

P11

Comparison of systolic pulmonary artery pressure by Doppler echocardiography and right heart catheterization

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Introduction: Doppler Transthoracic echocardiography (TTE) is an excellent non-invasive screening test for patients with suspected pulmonary hypertension (PH). Right heart catheterization (RHC) remains, however, the gold standard to confirm and quantify PH in symptomatic patients in order to guide therapeutic decisions. We present the comparison between systolic pulmonary artery pressure (sPAP) as estimated by TTE and as measured by RHC in 19 patients referred due to echocardiographically suspected significant PH.
Methods: Elective RHCs were performed by internal jugular or subclavian vein puncture. RHC measurements were made according to an internal protocol. We compared estimated (TTE) and mesasured (RHC) sPAP. The correlation between estimated versus measured sPAP values was made using the Spearman's coefficient. A p value <0.05 was considered statistically significant.
Results: As shown in Fig. 1, sPAP was overestimated by TTE in 9 patients (2x 10–20 mm Hg; 4x 21–30 mm Hg; 3x >30 mm Hg) and underestimated in 4 patients (15–27 mm Hg). Spearmen's correlation coefficient was highly significant ($r = 0.67$, $p = 0.0013$).
Discussion: Our study of 19 patients found a statistically significant correlation between sPAP estimated by TTE and sPAP measured by RHC; these findings are in agreement with the data of the literature 1. The dispersion of the values being important, RHC remains the gold standard to evaluate the severity of PH.

References: 1) Br J Rheumat 1997;36:239–43. Denton CP et al. Comparison of doppler echocardiography and right heart catheterization to assess pulmonary hypertension in systemic sclerosis.

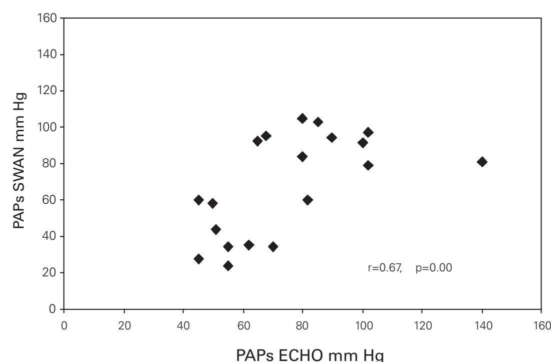

Figure 1

P12

Effects of hypoxia and cardiac tamponade on hepato-splanchnic blood flow distribution and ex vivo nor-epinephrine vascular reactivity

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Introduction: Low blood oxygen content and low systemic oxygen delivery trigger different systemic and regional hemodynamic responses. While the physiologic response to hypoxia is an increase in cardiac output, regional abdominal blood flow redistribution has been described in low flow states. We hypothesized that hepato-splanchnic vascular reactivity is different in these two conditions.
Methods: We studied 16 anesthetized and mechanically ventilated pigs randomized to cardiac tamponade (CT, n = 8) and hypoxic hypoxia (HH,n = 8). In CT, cardiac output was reduced in 6 hr-steps to reach 50, 40 and 30 $ml.kg^{-1}.min^{-1}$. In HH, FiO_2 was reduced in 6 hrs to reach a PaO_2 of 50–60 mm Hg and then at 12 hrs to <50 mm Hg. The lowest levels were kept until 24 hrs. Cardiac output was measured by thermodilution and celiac trunk (CT), superior mesenteric (SMA) and hepatic artery (HA) blood flows by Doppler ultrasound. At the end, vascular samples from HA and SMA were analyzed by the tissue bath method. Dose response curves were constructed for norepinephrine, and maximum force was calculated.
Results: Cardiac output decreased in CT from 68 ± 14 to 46 ± 15 ml/kg/min (mean ± SD, p = 0.038) and increased in HH from 72 ± 14 to 112 ± 25 ml/kg/min (p = 0.030). In CT, SMA and portal vein blood flow decreased while celiac trunk and HA flow remained unchanged. In HH, SMA and portal vein blood flow did not change while celiac trunk and HA flow increased (table). In-vitro contractile responses to norepinephrine were similar in both groups (maximum force CT: 3 ± 2 G for both HA and SMA; HH: 3 ± 2 G for HA, 4 ± 2 G for SMA).
Conclusions: In both cardiac tamponade and hypoxic hypoxia, regional hepato-splanchnic blood flow was redistributed with preserved or increased hepatic arterial blood flow at the expense of mesenteric and portal perfusion. This occurred despite similar in-vitro contractile responses to nor-epinephrine in HA and SMA. We conclude that blood flow redistribution in CT and HH is not related to different contractile properties of the respective vessels.
This work was supported by SNF grant number I 08/03 and a grant from Novartis to F. Porta

Blood flow (ml/kg/min)	Celiac Trunk		Superior mes. artery		Hepatic artery		Portal vein	
	Baseline	end	Baseline	end	Baseline	end	Baseline	end
Hypoxia	7 ± 3	13 ± 6*	16 ± 4	20 ± 4	2 ± 1	5 ± 3*	18 ± 5	21 ± 9
Cardiac tamponade	7 ± 3	6 ± 3	18 ± 5	12 ± 2*	4 ± 2	3 ± 1	20 ± 6	11 ± 2*

*p 0.05, Wilcoxon test.

P13

Physiological response to endotoxin in healthy obese subject

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Introduction: Obesity has recently been associated with a low-grade chronic systemic inflammation. Endotoxin (LPS) is known to induce an acute inflammatory state mimicking sepsis in healthy non obese subjects. There is no published data in obese subjects. The aim of this study was to describe the effect of LPS injection in healthy obese subjects.
Methods: 8 healthy obese volunteers (BMI >30) were designed to receive LPS bolus (2 ng/kd) or placebo at two different sessions in a randomized order. The lapse in time between the two observations was 7–10 days. Variables: Physiological variables (Cardiac output, heart rate, blood pressure, systemic vascular resistance and temperature), energy expenditure (indirect calorimetry) and blood samples (cytokines, stress hormones). Variables were measured at 30 min intervals, starting 60 min before LPS/placebo bolus till T360 min after injection. Analysis: A two sided t-test, Area under the curve (AUC).
Results: Significant differences (p <0.05) where found between placebo and LPS for the following variables: heart rate, cardiac output, temperature ,TNF, alpha, interleukin-6, cortisol and glucagon. No significant differences were observed in adrenaline, noradrenalin and insulin plasma levels, in indirect calorimetry results and for glucose plasma levels and turnover
Conclusion: Intravenous endotoxine induces extensive physiological change in healthy obese subjects, with similar pattern to already published non obese healthy subjects.

P14

The flagellin/toll-like receptor 5 axis elicits diffuse pro-inflammatory signaling and innate immune defenses in vivo.

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Background: The development of septic shock is related to the activation of non-specific (innate) immune responses, triggered by the interactions between molecules released by pathogens and specific cellular receptors in the host, termed toll-like receptors (TLRs). Flagellin is a 55 kDa protein isolated from the flagellum of Gram-negative bacteria, which may activate such responses through its recognition by TLR5. The tissue distribution of TLR5, as well as the actions of flagellin on various organs in vivo has not been previously established. We therefore conducted the present study to determine the presence of TLR5 receptor in major organs from mice, and to evaluate whether flagellin could trigger prototypical innate immune responses through activation of nuclear factor kappa B (NFKB) and Mitogen-Activated Protein Kinases (MAPK) signaling pathways in these organs.
Methods: Mice were injected intravenously with 1 microgram of recombinant Salmonella flagellin. At selected time-points (30 min to 6h), the mice were sacrificed and major organs (lung, liver, gut and kidney) were harvested for a) expression of the flagellin receptor TLR5; b) the activation state of NFKB (monitored by the degree of phosphorylation and degradation of its inhibitor IkappaB-alpha and by the NFKB-DNA-binding activity); c) the activation state of MAPK (monitored by the degree of phosphorylation of JNK, p38 and ERK), and d) the expression of inflammatory cytokines. Plasma was obtained for the measurements of cytokine levels. Results. TLR5 protein was constitutively expressed in all organs. The injection of flagellin activated NFKB and MAPKs at 30 minutes, and markedly enhanced the generation of the cytokines TNFalpha, IL-1beta, IL-6, TREM-1, and MIP-2 at 1 and 3h. Similarly, these cytokines significantly increased in the plasma from 1 to 6h after flagellin. Conclusion. Bacterial flagellin activates inflammatory signalling in most major organs in vivo, and thus may represent a critical mediator of multiple organ failure during Gram-negative septic shock.

P15

CAAT/Enhancer Binding Protein; regulates human md-2 expression through PU.1 cis-activation

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Introduction: MD-2 is a LPS binding protein associating with Toll-like receptor (TLR)4. It is necessary for the activation of cells by LPS and

Gram-negative bacteria. We have recently shown that MD-2 was an acute phase protein specifically binding to Gram-negative bacteria, and an opsonin mediating Gram-negative bacteria phagocytosis by neutrophils and macrophages (Tissieres et al, Blood 2008). The study of the regulatory mechanisms controlling MD-2 expression should help to understand how and why the md-2 gene is turned on in the context of the host response to bacterial infection and sepsis.
Methods and results: Bioinformatic analysis of md-2 GenBank sequences, outlined three putative variants. Using RT-PCR directed screening of all putative MD-2 mRNA variants in four different human cell lines (THP-1, HL-60, HepG2, Sw620), we found only one MD-2 sequence (NCBI RefSeq). Our work next focused on the identification of key regulatory elements in the human md-2 promoter (hPMD-2), responsible for basal activity of the gene and for MD-2 inducibility by IL-6, a classical cytokine driving the acute phase response. Sequential deletions of the hPMD-2 promoter driving a luciferase reporter gene were transiently transfected into HepG2 cells. Basal luciferase activity was lost after the deletion of the -186/+68 bp hPMD-2 region, suggesting that basal regulatory sites are present in this region. Cross-matched bioinformatic analysis allowed identifying two consensus sequences for PU.1 binding sites. IL-6 induction of the promoter constructs was lost after deletion of the -542/ -399 regions, where a CAAT/enhancer binding protein (C/EBP) β; consensus sequence or NF-IL6 binding site (-506/-512) was identified. Site directed mutagenesis of both PU.1 and NF-IL6 binding sites confirmed that these sites were required for basal and IL-6-induced md-2 expression. Chromatin immunoprecipitation (ChIP) experiments coupled with quantitative PCR (qPCR) confirmed that both PU.1 and C/EBP ; bound in vivo their putative regions. Interestingly, PU.1 binding was increased upon IL-6 stimulation in HepG2 cells. Using qPCR, pu.1 expression was not induced in HepG2 cells stimulated by IL-6. C/EBP ; was shown to bind in the vicinity of PU. 1 binding sites following IL-6 stimulation, suggesting that C/EBPβ; may cooperate with PU.1. To determine whether C/EBPβ; co-activate PU.1 through a cis- or and trans-activation mechanism, ChIP experiments were performed in HepG2 cells transiently transfected with mutated NF-IL6 hPMD-2. NF-IL6 binding site was shown to be required for C/EBPβ binding to PU.1 binding sites, strongly suggesting a PU.1 and C/EBPβ cooperative cis-activation of the human md-2 gene.
Conclusion: In this work, we have identified PU.1 as a critical regulator of basal human md-2 expression. C/EBPβ binding to the promoter is required for MD-2 up-regulation by the acute phase inducer IL-6 cytokine, via a cis-activation implicating transcription factors cooperating at the level of PU.1 and NF-IL6 sequences of the proximal md-2 promoter region. These studies unravel a unique mechanism by which the acute phase reactant and opsonin MD-2 is regulated in hepatocytes.

P16

Prospective Study of the barriers to nutritional support in a paediatric intensive care unit

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Introduction and aim: Children hospitalised in a paediatric intensive care unit (PICU) are mainly fed by nutritional support (NS) which may often be interrupted. The aims of the study were to verify the relationship between prescribed (PEI) and actual energy intake (AEI) and to identify the reasons for NS interruption.
Methods: Prospective study in a PICU. PEI and AEI from day 1 to 15, type of NS (enteral, parenteral, mixed), position of the feeding tube, interruptions in NS and reasons for these were noted. Interruptions were classified in categories of barriers and their frequency and duration were analysed.
Results: Fifteen children (24 ± 25.2 months) were studied for 84 days. The NS was exclusively enteral (69%) or mixed (31%). PEI were significantly higher than AEI (54.7 ± 32.9 vs 49.2 ± 33.6 kcal/kg, p = 0.0011). AEI represented 93% of the PEI. Ninety-eight interruptions were noted and lasted 189 h, i.e. 9.4% of the evaluated time. The most frequent barriers were nursing procedures, respiratory physiotherapy and unavailability of intravenous access. The longest were caused by the necessity to stop NS for surgery or diagnostic studies, to treat burns or to carry out medical procedures.
Conclusion: AEI in PICU were inferior by 7% to PEI, considerably lower than in adult studies. Making these results available to medical staff for greater anticipation and compensation could reduce NS interruptions. Starving protocols should be reconsidered.

P17

Rotation-thromboelastometry (Rotem), compared to standard coagulation parameters, did not add further information on coagulopathy of medical ICU patients

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Aim: To investigate the value of Rotem compared to standard coagulation parameters in medical ICU patients.
Method: We measured clotting time (CT), clot formation time (CFT) and maximal clot formation (MCF) and compared them with INR, aPTT, fibrinogen and platelet count in 19 patients. Rotem normal values were defined by the manufacturer. Cut-off values for the detection of a clinically relevant coagulation disorder were set for INR, aPTT, platelets and fibrinogen at 1.5, 40 sec, 50'000/µl and 1.5 g/l, respectively.
Results: The best correlation was found between fibrinogen and MCF-fib-TEM (r = 0.87, p <0.01). A MCF-fib-TEM <8 mm was detected in 3 patients with fibrinogen <1.5 g/l. An abnormal MCF-fib-TEM with a fibrinogen >1.5 g/l was associated with INR >1.5 in 3 and aPTT >40 sec in 2 patients. MCF-ex-TEM correlated with platelet count (r = 0.79, p <0.01). A MCF-ex-TEM <55 mm was found in 4 of 5 with platelets <50'000/µl, in the other MCF-ex-TEM was 55mm. In 5 patients MCF-ex-TEM was <55 mm while platelets were >50'000/µl (platelet count 59'000/µl and 61'000/µl, 2x INR > 1.5 and aPTT >40 sec, and 1x INR = 1.3). Compared to MCF, CT and CFT measurement did not reveal additional information. INR and aPTT did not correlate with any Rotem parameters. No patient showed evidence of hyperfibrinolysis.
Conclusion: In our limited number of patients MCF-fib- and ext-TEM detected relevant clotting disturbances, but did not add further information in comparison to standard clotting parameters.

P18

Impact after major burns of a pain protocol including hypnosis on pain perception, opioid requirements clinical evolution and hospital costs

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Inefficient pain control is a major issue after burns. Side effects of opioids are frequent. The present study aimed at measuring the impact in burns of a protocol driven prescription of opioids including hypnosis on pain intensity, patients' anticipation of painful treatments, and hospital costs. The study also aimed at quantifying the various parts of the process through standardization of pain assessment, and opioid prescription
Methods: Before and after study, with paired cases, matched for sex, age, burned %BSA and inhalation. Inclusion criteria: age >18 years, ICU stay >24 hours, and to accept hypnosis. Standardized opioid prescription with pain control objective (visual analog scale (VAS) score <4). Opioids converted to morphine equivalents. Economical data were recorded.
Results: 46 patients aged 36 ± 14 yrs and burned 27 ± 15% BSA were included – good matching. The 1st hypnosis session was carried out after 9 days (median). Protocol resulted in higher opioid doses during the first 10 days and latter reduction, with a significant reduction of pain (trends to shorter ICU and hospital stay). Hypnosis resulted in significant reduction of anaesthesia requirements and of procedural related anxiety. Total grafting requirements were significantly reduced (p = 0.014), as were hospital costs.
Conclusion: The pain protocol improved pain treatment in burns, reduced anxiety. It was associated with better wound healing, improved patient care without side effects, and reduced costs.

P19

Therapeutic hypothermia after cardiac arrest doubles both ventilator days and length of ICU stay

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Background: In spite of substantial progress in medicine, patients suffering from sudden cardiac arrest still have an unfavourable prognosis. One of the small steps towards a better outcome was made with the data from two studies published in the year 2002 showing that mild therapeutic hypothermia improves the outcome after cardiac arrest. Mild hypothermia is recommended in the 2005 guidelines of cardiopulmonary resuscitation. In our institution mild therapeutic hypothermia is standard therapy for survivors of cardiac arrest with ventricular fibrillation being the first recorded rhythm since the middle of 2005. The aim of the present study was to assess the impact of this new therapy concept on resources in intensive care.
Methods: The study was conducted in a medical intensive care unit of an university hospital. We compared prospectively sampled data of a cohort of cooled patients with retrospectively sampled data of a cohort of patients of the precooling era. Indication for hypothermia was survival of cardiac arrest with ventricular fibrillation being the first recorded rhythm. The primary outcomes were ventilator days and length of ICU stay.
Results: We analysed the data of 62 patients treated with therapeutic hypothermia and of 32 patients of the precooling age. Patients of the precooling era had 2.0 ± 1.2 ventilator days while the hypothermia-treated patients had 4.7 ± 1.8 ventilator days (P <0.0001). The length of ICU stay was 4.8 ± 3.3 days in the precooling era and 8.6 ± 4.1 days in hypothermia-treated patients (P <0.0001).
Conclusion: Our data demonstrate that therapeutic hypothermia after cardiac arrest not only has an impact on mortality and neurologic outcome but also on ICU resources. Compared with historical controls without this therapy treatment with hypothermia results in doubling of both ventilator days and length of ICU stay. As such the novel approach of treating survivors of cardiac arrest with hypothermia has a substantial effect on ICU resources and costs. However, a better neurological outcome with no or few neurologic sequelae can save costs and suffering in longterm care.

P20

Advances in Vacuum assisted closure therapy for the treatment of poststernotomy mediastinitis: VAC-Instill System

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Background: Poststernotomy mediastinitis, also called deep sternal wound infection, is one of the most feared complications in patients undergoing cardiovascular surgery. The incidence of poststernotomy mediatinitis is fortunately very rare, between 1–3%, but shows a significant mortality, between 10–25%. The conventional forms of treatment involve surgical revision, open dressing and daily sternal lavage. Vacuum-assisted closure therapy for treatment of sternal wound infection is a common therapy since 1996. This wound-healing technique is based on a local negative pressure which increases the microcirculation in the wound. The Vacuum-assisted closure (VAC) system has recently been modified, allowing intermittent instillation of antiseptic or antibacterial fluids into the wound. This VAC-Instill therapy system is an innovative method that combines the benefits of VAC and instillation therapy to help promote wound healing in cases of mediastinitis.
Methods: Of 4 male patients (mean age 66 years), 3 underwent cardiac surgery and 1 was operated for a dissected ascending aortic aneurysm. Acute purulent sternal infection occurred in all patients. Sternal wound infection became evident on average at 9 days after surgery, associated with dehiscence, sternal instability and mediastinitis in all cases. The cultures most commonly identified were staphylococus aureus in two cases, mycoplasm in one and one patient showed infection with E.coli. Opening of the sternum, prompt irrigation and debridement were performed on all cases. The new VAC-instill system therapy, with intermittent instillation and lavage with antiseptic fluids, was applied immediately after diagnosis.
The antiseptic (Lavasept®) fluid instillation was 250cc every 8 hours regulated by the VAC-Instill system and VAC was changed was every 4–5 days.
Result: The VAC-Instill therapy lasted on average 18 ± 2 days, a median of 5–6 changes were necessary until the definitive closure of sternum. There were no deaths, and all patients could leave the hospital immediately after the closure of the sternum after 25 ± 2 days.
Conclusion: The new VAC–Instill system is useful in the treatment of mediastinitis for the following reasons: (1) it is a temporary wound care technique before reclosure of the sternum; (2) intermittent instillation of antiseptic fluid supports the cleaning and drainage of the wound bed and the removal of infectious material; (3) it reduces the number of dressing changes, and the need to perform daily open surgical wound cleaning in the operating room under general anaesthesia; (4) prevents shear stress of an open sternum. In the 4 cases we treated with the VAC-Instill system, we saw rapid clinical improvements and good end results in all patients. Thus, this method could open a new generation of treatment for poststernotomy mediastinitis.

P21

Vacuum-Assisted Closure (VAC) used for fasciotomy closure in ischemia-reperfusion syndrome

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Backround: Traumatic compartment syndrome and ischemia-reperfusion syndrome after surgical revascularisation in case of long acute vascular ischemia syndrome may require early fasciotomy. In the past those fasciotomies needed prolonged hospitalisation and decreased number of dressing changes. In case of fasciotomy closure by skin graft, many complications have presented because of the large wounds and infections. Theses cases often required several surgical interventions until closure.
This VAC therapy system is an innovative method which promotes excellent wound healing used in cases of fasciotomie.
Methodes and results: In our study four patients were operated for acute ischemic vascular disease. A fasciotomy has been performed in these patients after presenting with an ischemic-reperfusion syndrome in the upper extremities during the first 12 hours post operatively. The VAC has been instaured as a treatment (median 5 days after surgery) in all cases .The difficulty of closure lyes on either tissue defect or important wound oedema or both. The patients had closure of the fasciotomy wound in 7 to 15 days after surgery.
In two cases the fasciotomy closure was performed with adjacent skin. The other two patients needed small skin graft for closing the fasciotomy wound.
Conclusion: The use of the VAC system for after fasciotomy reduced significativly the wound edema, stimulated the granulation of tissue, reduced the size of the wound, showed an important wound protection for infection and reduced the dressing changes. The VAC system permitted in our hands early closure of the fasciotomy wounds with adjacent skin or skin graft.

P22

Septischer Schock bei Pneumonie, Hirnabszess und Hautinfektion nach Aufenthalt in Indonesien

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Aus den Tropen importierte Ursachen einer Sepsis sind selten. Bei ihrem Auftreten sind Kenntnisse der geographischen Epidemiologie als Grundlage der Differentialdiagnose wichtig. Wir berichten über einen Patienten mit septischem Schock bei Pneumonie und Hautulzerationen nach einem Indonesienaufenthalt. In diversen Kulturen war Burkholderia pseudomallei (Bp) nachweisbar, weshalb mit Ceftazidim behandelt wurde. Im Verlauf präsentierte sich ein Hirnabszess, in dessen Punktat wiederum Bp kultiviert werden konnte. Die Melioidose ist eine äusserst facettenreiche Infektion mit dem intrazellulären, gram-negativen und fakultativ pathogenen Bakterium Bp, welches vor allem in Südostasien und Nordaustralien in feuchter Erde vorkommt. Bp stellt einen der häufigsten Sepsiserreger in diesen Ländern dar. Die klinische Präsentation der Melioidose reicht von asymptomatischen bis zu perakuten und letalen Verläufen infolge eines septischen Schocks (Mortalität 18–86%). Nach einer Inkubationszeit von 1–21 Tagen kommt es nach Hautinokulation oder Inhalation von kontaminierter Erde zur klinischen Präsentation, wobei Hautabszesse sowie Pneumonien am häufigsten sind. Bp ist gegen viele Antibiotika unempfindlich, zur Behandlung wird eine mindestens zweiwöchige Induktionstherapie mit Ceftazidim oder einem Carbapenem empfohlen. Unser Patient stellt eine klassische Präsentation einer Melioidose dar. Typisch ist auch das langsame Ansprechen der Antibiotika mit Spätmanifestationen unter adäquater Therapie.

P23

Disseminated Herpes simplex virus-1 infection in a patient with Good syndrome

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Introduction: Thymoma is associated with hypogammaglobulinemia in 3%, 6 and is referred to as Good syndrome (GS). Infections with encapsulated bacteria and opportunistic infections associated with disorders of humoral and cell mediated immunity occur in this rare disease. We report the case of GS with S. pneumoniae pneumoniae complicated by a fatal disseminated herpes simplex virus-1(HSV-1) infection.
Case report: A 61 yr woman was treated in 2005 for a thymoma by thymectomy. In 2008, she was hospitalized for a S. pneumoniae community-acquired pneumonia, complicated by atrial fibrillation, tamponnade and right cardiac failure. Thoracic CT and echocardiography showed pleural and pericardic effusions. A surgical drainage confirmed purulent pericarditis (specific S. pneumoniae PCR:18'500'000 copies/ml). The patient developed ARDS requiring mechanical ventilation and fulminant hepatitis. She was severely hypogammaglobulinemic, with low levels of IgG, IgA, and IgM. Intravenous immune globulin (IVIG) replacement was started (1 g/kg/d). HSV-1 was recovered in hepatic biopsy and in blood (HSV-1 specific PCR: 14'300'000 and 324'000'000 copies/ml respectively). Acyclovir was started for disseminated HSV-1 infection. Despite antiviral therapy, MOF progressed and was fatal.
Conclusion: This is the first case of GS and disseminated HSV infection. A high index of suspicion and appropriate microbiological investigations are required to diagnose and treat opportunistic infections in GS.

P24

Circuit lifetime could be a quality indicator in continuous renal replacement therapy

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Introduction: Continuous renal replacement is frequently used in patients with acute renal failure and sepsis. Frequent changes of clotted circuits increase the workload and costs. Circuit down time is the most important factor, compromising the cumulative filtration goal (35 ml/kg/h). Cumulative filtration rate is difficult to measure. Alternatively, circuit lifetime might serve as an easy to measure indicator to assess quality.
Method: In our 12 bed medical ICU, we used CVVHDF (Prismaflex Hospal®). Circuit lifetimes were prospectively collected during 12 month. Unfractionated heparin (UFN) was first choice. No anticoagulation was used in patients with severe coagulation disorders or hepatic failure, regional citrate anticoagulation (CBA) was used in patients with recurrent circuit clotting or bleeding disorders. We performed survival analysis.
Results: 38 consecutive patients and 167 circuits were observed. No bleeding or major metabolic complications were seen. There were no differences concerning vascular access site, the proportion of sepsis and vasopressor dependency between the anticoagulation groups. Circuit lifetime was longer and circuit patency rate higher in CBA. Our circuit lifetimes are higher than generally reported.
Conclusion: CBA is safe and has superior circuit lifetime and patency, compared to UFA. Beneath monitoring of the complication rate, measuring of circuit lifetime, processed by survival analysis tools is easy an feasible to assess quality

P25

Evaluation d'une formation de la ventilation manuelle chez des patients intubes

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But: Lors d'une 1ère étude, nous avons objectivé notre pratique de la ventilation manuelle (VM) chez des patients intubés, sous ventilation mécanique aux soins intensifs. Les résultats différant de la littérature pour les paramètres de pression de crête, de volume insufflé et de Peep, nous avons mis sur pied une formation théorique et pratique et l'avons testée.
Methode: Nous avons aléatoirement divisé les soignants en deux groupes. Le 1er groupe a été réévalué en pratiquant 4 VM selon un protocole de mesure standardisé. La pression d'insufflation, la Peep et la fréquence de VM sont saisis par un convertisseur pression-tension informatisé et le volume insufflé par un moniteur de volume Ohmeda® 5420. Les résultats sont analysés, puis comparés à la littérature. Une statistique descriptive est faite pour les présenter.
Le 2ème groupe a reçu une formation constituée de 1h de théorie, 2h30 de pratique sur poumons artificiels et 2 VM par thérapeute avec feed-back scopique des paramètres précités, puis a été réévalué en pratiquant aussi 4 VM.
Résultats: La fréquence de VM est de 13.53 insufflations/minutes pour le 1er groupe et de 12.11 pour le 2ème. Le rapport volume insufflé/volume du respirateur est de 1.38 pour le 1er groupe et de 1.26 pour le 2ème; la moyenne des pressions de crête est de 35.44 pour le 1er groupe et de 39.3 pour le 2ème; le rapport Peep/Peep du respirateur est de 0.4 pour le 1er groupe et de 1.08 pour le 2ème. La valeur de la littérature pour la fréquence de VM est de 15 insufflations/minute(1), celle du rapport volume insufflé/volume du respirateur de 1.5 (2). La moyenne des pressions de crête doit se situer entre 20 et 40 cmH2O (3) et le rapport Peep/Peep du respirateur doit être égal à 1(3).
Conclusion: Les résultats montrent que le 2ème groupe maintient mieux la Peep. Pour les autres paramètres, il est plus éloigné des standards de la littérature que le 1er groupe. Suite à ces résultats inattendus, un questionnaire a été créé et nous a ouvert de nouvelles pistes de contrôle des paramètres.

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P26

Fachangestellte Gesundheit auf der Intensivstation

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Auf der Intensivstation des Stadtspitals Triemli in Zürich arbeiten neun Fachangestellte Gesundheit (FAGE). Das Ziel ist, diese neue Berufsgruppe in die Pflege von Intensivpatienten zu integrieren.
Im Rahmen des Projektes wurden die FAGE in die Pflege von Intensivpatienten gemäss ihrer Kompetenzen eingeführt. Seither unterstützen sie die diplomierten Pflegefachfrau / den diplomierten Pflegefachmann mit Fähigkeitsausweis in Intensivpflege (FAIP) bei der täglichen Arbeit. Nach einem Jahr findet im Juli 2008 die Auswertung des Projektes statt.
Fragestellung: Kann durch den Einsatz der Berufsgruppe FAGE auf der Intensivstation ein zusätzlicher Nutzen erreicht werden? Wie wirkt sich der Einsatz auf die Personalkosten und die Pflegequaltiät aus? Wird die Berufsgruppe FAGE in Zukunft ein fester Bestandteil im Intensivpflegeteam?
Methode: Für das Projekt wurden neun FAGE rekrutiert und für ein Jahr befristet eingestellt. Die Einführung erfolgte in Form von speziell für sie gestalteten Theorietagen, in welchen ihre fachspezifischen Kompetenzen geschult wurden.
Die Einführung in die Praxis erfolgte durch Bezugspersonen, bestehend aus diplomierten Pflegefachfrauen und Pflegefachmännern mit FAIP und einer abgeschlossenen Basisausbildung für Ausbilden in der Praxis.
Nach drei Monaten wurde die Einführung evaluiert und nach einem Jahr wird die Gesamtauswertung des Projektes durchgeführt. Dazu werden die diplomierten Pflegefachfrauen und Pflegefachmänner der Intensivstation am Stadtspital Triemli, sowie die eingesetzten FAGE in Form eines Fragebogens befragt. Der Fragebogen besteht aus qualitativen, sowie quantitativen Fragen.
Zwischenergebnisse nach drei Monaten: Die FAGE sind sehr interessiert und motiviert, Neues zu lernen, und bezeichnen ihren Einsatz als spannend und lehrreich.
Die diplomierten Pflegefachfrauen und Pflegefachmänner mit FAIP können die FAGE im pflegerischen Bereich, wie auch im administrativen zur Unterstützung effizient einsetzten.
Schlussfolgerung: Das während einem Jahr durchgeführte Projekt wird im Juli 2008 evaluiert und abgeschlossen. Anhand der Zwischenergebnisse können wir uns gut vorstellen, die FAGE auch in Zukunft in die Pflege von Intensivpatienten sinnvoll zu integrieren.
Die Ergebnisse der Gesamtauswertung werden wir am Kongress anhand eines Posters aufzeigen.

P27

Analyse eines Fehlermeldesystems

Die Studienarbeit beschäftigt sich mit dem Thema «Fehlermeldesysteme am ausgewählten Beispiel des Q-Formulars im Zusammenhang mit Qualitätssicherung».
Die Begriffe Qualitätsmanagement, Risikomanagement und Fehlermeldesysteme, CIRS und Q-Formulare wurden definiert.
Anschliessend wurden die speziellen Fehlermeldesysteme, wie CIRS und Q-Formulare, näher erläutert, gegenübergestellt und voneinander abgegrenzt.
Anhand eines ausgewählten praktischen Beispiels wurde das Fehlermeldesystem mit Hilfe des Q-Formulars, deren Entwicklung und Implementierung beschrieben.
Die Analyse erfolgte mit dem Ziel, das Q-Formular messbar zu machen. Fragen über den Gebrauch sollten beantwortet und sich abzeichnende Trends aufgezeigt werden.
Von 2001–2007 wurden 340 Q-Formulare im SPSS erfasst. Nach Auswahl von Variablen, z.B. über Hauptverantwortliche der Fehler, die Ursachen der Fehler sowie die Zeit der Ereignisse, wurden die Q-Formulare von 2006 mit 109 und von 2007 mit 88 Meldungen einzeln analysiert.
In Diagrammen wurde graphisch dargestellt, dass von allen erfassten Situationen, die sich in irgendeiner Art und Weise negativ auf den Stationsablauf und/oder deren Leistung auswirkten in beiden Jahren rund 80% als «Critical Incident» identifiziert wurden. Bei ungefähr der Hälfte aller «Critical Incident» Meldungen wurde ein Vermeidungs- bzw. ein Verbesserungsvorschlag angefügt. Die Hälfte aller Meldungen erfolgte anonym. Nach Erstanalyse der Formulare wurden 2006 40,37% und 2007 54,55% der Fälle intern weitergeleitet und führten somit teilweise zu Verbesserungen. 2006 und 2007 wurden über 98% der gemeldeten Ereignisse von der Pflege erfasst. Damit lag die Beteiligung der Ärzte in beiden Jahren unter 2%. Es wurde dargestellt, dass sich in beiden Jahren die meisten Vorkommnisse im Frühdienst ereigneten, ca. 30% 2006 und ca. 40% 2007.
Die im Rahmen dieser Arbeit durchgeführte Analyse verdeutlicht, dass die Inhalte des Q-Formulars bedingt messbar gemacht werden können. Das Q-Formular spielt eine wichtige Rolle für die Qualitätssicherung und -verbesserung.
In der Erfassungs- und Auswertungsmethode sind noch vorhandene Potentiale auszuschöpfen, um weitere Qualitätsverbesserungen zu erreichen.
Im Hinblick auf zukünftige Projekte muss das Thema der systemorientierten Fehleranalyse vertieft werden. Das Ziel ist eine verbesserte Fehleranalyse und Ergebnispräsentation. Weiterhin soll das Meldeverhalten der Mitarbeiter analysiert werden, um das Fehlermeldesystem «Q-Formular» zu optimieren.

P28

Swiss Foundation for Organ Donation (FSOD)

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The “effective communication” module of the Swiss Donation Pathway: Results of a questionnaire about perception and emotional needs of healthcare professionals directly involved in organ donation of heart beating donors.
Introduction: A critical donation pathway is under development by the FSOD to specifically address healthcare professional (HP) difficulties and emotional needs during the care of patients evolving towards cerebral death, organ maintenance and retrieval, as well as care of the next of kin. We aimed to evaluate the perception and self-perceived needs of various HP directly involved in this process.
Method: In 2007, we added a few specific questions to the original questionnaire “Hospital Attitude Survey” of the Donor Action programme and sent it to 5 hospitals of Western Switzerland.
Results: Questionnaires were collected from 783 HP, the results of 657 with direct experience of at least one brain death are presented.
Q: Is taking care of a brain dead patient and relatives emotionally more difficult than other end-of-life patients? A: Yes 57%, no 36%, don’t know 8%
Q: Need for specific tools?
A: Yes 50%, no 31%, don’t know 18%
Q: Preferred tools?
Defusing: Yes 55%, no 6%, don’t know 39%
Psychiatrist: Yes 42%, no 14%, don’t know 45%
Periodic Supervision: Yes 40%, no 10%, don’t know 50%
Q: Tools exist in your unit?
Defusing: Yes 34%, no 34%, don’t know 32%
Meeting after: Yes 29%, no 39%, don’t know 32%
Periodic Supervision: Yes 13%, no 48%, don’t know 39%
Q: Would you prefer (Q1) to manage the entire process of organ donation, (Q2) To hand over to a different team after the diagnosis of brain death?
A1 (continue) Yes 57%, no 13%, don’t know 30%; A2 (change) Yes 13%, no 56%, don’t know 30%
Conclusion: For the majority of HP, it is emotionally more difficult to take care of a brain dead patient and his relatives than another dying patient. To manage the emotional strain of brain dead patients, HP wish specific tools including a defusing / debriefing meeting, organised by one the team members. In most units, such tools are not available.

P29

Impact of merging a medical and a surgical ICU on clinical activity in a tertiary referral centre

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Introduction: Merging of a medical and a surgical ICU is a time of profound change, and constitutes a risk of mishaps. In the context of the implementation of a continuous process of quality control, we analysed the impact of merging on the activity and performance of the new unit (32 beds).
Methods: Specific indicators were defined before merging. They are extracted from the clinical information system (Metavision®) and combined with a database on case-mix. It includes data for all patient admitted (reason for admission, clinical pathway, co-morbidities, surgical and ICU procedures). Following discharge, they are prospectively validated by the attending physician and further imported in the institution datawarehouse (Teleform®) after final crosschecking. We report data one year before (2005), during (2006) and after (2007) merging (Jan 2006).
Results: The number of patients treated increased (2005: 2183; 2006: 2276; 2007: 2317), as well as the ICU-days (2005: 9417; 2006: 9412; 2007: 10060); hence mean length of stay did not change. ICU mortality (2005: 8.1%; 2006: 7.7%; 2007: 9.2%), and hospital mortality (2005: 12.8%; 2006: 12.4%; 2007: 14.9%) slightly increased, while remaining below SAPS II predicted mortality in all deciles. Readmission within 48h remained stable (2005: 1.5%; 2006: 1.5%; 2007: 1.8%). Admission of patients with reduced life expectancy, (McCabe <5 years: 2005: 18.0%; 2006: 21.8%; 2007: 22.4%; and McCabe <1year 2005: 4.1%; 2006: 6.8%; 2007: 7.5%) increased.
Conclusion: Merging of a medical and a surgical ICU resulted in an increased in clinical activity. Improved work organization allow to admit more patients. We speculate that more patients with marked reduced life expectancy were admitted for a therapeutic challenge.

P30

Valeurs des cades médico-infirmiers et soignants d’un service de médecine intensive: des valeurs personnelles aux valeurs communes

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Introduction: Malgré une longue collaboration, la fusion des services de soins intensifs médicaux et chirurgicaux d’un hôpital universitaire a nécessité la mise en commun de concepts et de pratiques de soins parfois différents. L’uniformisation des pratiques, dans une démarche visant à améliorer la qualité des soins, a généré de nombreuses synergies; elle est considérée comme un succès. Sa rapidité à toutefois engendré un sentiment de perte des repères. Le besoin de redéfinir des valeurs communes s’est imposé.
Méthode: Utilisant la méthode Métaplan, l’ensemble des cadres ont redéfini et hiérarchisé les valeurs communes, au cours d’une journée de réflexion conduite par un animateur externe. Métaplan est destiné à explorer en groupe un maximum d’idées, de les grouper et hiérarchiser par thème pour aboutir à des actions concrètes.
Résultats: Après une introduction théorique, les 25 participants ont choisi chacun 3 valeurs dans la perspective de la mission du service. Discutées en petits groupes, elles ont été analysée en plénière. Chaque groupe a exposé ses valeurs. Chaque participant a ensuite

réparti 8 points parmi 36 valeurs en fonction de sa hiérarchie personnelle. Après analyse, celles-ci ont été classées comme suit: respect/tolérance/ouverture: 69 points; humour/convivialité/plaisir: 55; réalisation/développement/construction: 49; performance/expertise: 44; professionnalisme: 25; soins: 17. La charte des valeurs du service a été élaborée. Elle est affichée dans le service et est remise à chaque soignant nouvellement introduit.
Conclusion: Parmi les valeurs communes aux cadres d'un service de médecine intensive, ce sont le respect et la tolérance d'autrui qui sont apparues le plus importantes, avant celles du professionnalisme et des soins.

P31

"Nine equivalents of nursing manpower use score" (NEMS) underestimates subjective nurse workload

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Objective: To compare the "nine equivalents of nursing manpower use score" (NEMS) with the "nurse activity input time scale" (LEP) evaluating workload in our medical intensive care unit (MICU).
Method: During 3 consecutive months we assessed the shift (8 hours) workload using LEP, NEMS and a self-created workload score (MICU), which evaluates both medical and nursing activities. Patients were classified into 4 workload-categories as defined by the Swiss Society of Intensive Care Medicine (SSIM cat 1a, 1b, 2 and 3). At the end of the shift caregivers scored shift workload using an analogue scale between 1 (low workload) and 7 (high workload) points.
Results: The workload was evaluated during 276 shifts. The percentages of patients within SSIM cats using the LEP, NEMS or MICU scale are shown in the first 3 columns of the table. The last 3 columns (*) indicate median (interquartile range) LEP time, NEMS and MICU score of patients within SSIM cat. (§ p <0.008 vs. 1a, §§ p <0.008 vs. 1b).
On average using LEP time to classify patient's workload, this is estimated at a level that is 16% higher then using NEMS or MIC. Caregivers estimated shift workload is best correlated with LEP min/h (r = 0.60; p <0.001), followed by MIC (r = 0.41; p <0.001) and NEMS (r = 0.27; p <0.001).
Conclusion: Using NEMS to estimate caregiver's workload in the ICU underestimates nursing activities at the bedside. Moreover, NEMS was poorly correlated with global subjective shift workload.

	LEP (%)	NEMS (%)	MIC (%)	LEP* (min/h)	NEMS* (points)	MIC* (points)
Nr of shifts	246	246	189	57	256	189
SSIM cat 1a	0.72	0.35	0.44	46 (35-55)	27 (18-34)	3.5 (3-4)
SSIM cat 1b	0.18	0.34	0.25	30 (26-37)§	18 (15-25)§	2 (2-2.5)§
SSIM cat 2	0.08	0.22	0.19	26 (23-28)	15 (12-18)§	1 (1-1.5)§§
SSIM cat 3	0.02	0.09	0.12	–	13 (9-18)	1 (1-1)§§
				p = 0.002	p <0.001	p <0.001

P32

Nursing activity scores help assessing intensive care unit manpower requirements and workload

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Objective: To evaluate whether the use of nursing activity scores would be useful to optimize intensive care unit caregivers working capacity facing the increasing demand of ICU admissions.
Method: During 3 consecutive months we assessed the shift (8 hours) workload in our ICU using the nurse activity input time scale LEP, NEMS and a own score (MICU), which takes into account both medical and nursing activities. According to our nurse staffing the maximum amount of workload, which we can afford was calculated. The ICU workload reserve or deficit (ICU-WLR/D) and the employment percentage necessary to face shift workload was calculated. Caregivers were asked to score global shift workload intensity using an analogue scale between 1 (low workload) and 7 (high workload) points.
Results: The results we obtained are shown in the table. Values are given as median with its interquartile range (IQR); * Employment percentage necessary to cope with ICU-WLR/D; (§ p <0.001 vs. LEP, §§ p <0.001 vs. NEMS).
The median (IQR) subjective caregivers workload was 5 (4–6) and the average (SD) utilization of the ICU 92% (13%). Caregivers estimated workload is best correlated with the MICU (r = 0.75; p <0.001), followed by the NEMS (r = 0.64; p < 0.001) and the LEP (r = 0.52; p <0.001) score.

	LEP-score	**NEMS-score**	**MICU-score**
Nr. of shifts	276	276	186
Total score/shift	34.5 (30.5–37.5)	284 (253–316)	35 (29–40)
ICU-WLR/D	–3.5 (–6.5–0.5)	52 (19–83)	0 (–5–6)
Employment percentage* (%)	–120 (-220–20)	160 (60–250) §	0 (–170–200) §§

Conclusion: Our results indicate that nurse activity scores can be utilized to assess work capacity in the ICU, however there are significant differences regarding employment percentage needed to cope with requirements.

P33

Should cardiac surgery be performed in octogenarian patients? A single center experience

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Introduction: Cardiovascular disease is one of the leading causes of mortality in older people. The aging of CH population has led to an increased number of elderly patients with symptomatic cardiac diseases. The aim of this study was to compare the observed versus predicted in-hospital mortality and to estimate one-year survival of octogenarian cardio-surgical patient.
Method: We evaluated prospectively all patients older than eighty undergoing cardiac surgery during one year in the period 2006–2007. We recorded type of intervention and in-hospital mortality. We calculated predicted EuroSCORE mortality risk. Follow-up was obtained by phone contact with patients or their family.
Result: A total of 345 patients were operated, 38 (incidence 11%) had a mean age of 82,3 ± 2 years. A follow-up after one year showed that twenty-eight (84.8%) out of 33 surviving patients live independently at home.
Conclusion: Patients older than 80 years who undergo cardiac surgery have elevated in-hospital mortality, especially during either valve or combined surgery. One year survival and functional status are acceptable. Age contributes to patient outcome but the clinicians should answer the question on an individual basis.

Type of surgery	Nb	In-hospital mortality	Observed Mortality %	Predicted Mortality %	One year Mortality	%
Overall	38	5	13.2	10 [5.3-21.4]	2	18.4
CABG	19	1	5.3	5.4 [4-14]	0	5.3
Valvular	8	2	25.0	16 [6.7-26.3]	0	25.0
CABG+Valves	11	2	18.2	14 [10.7-21.1]	2	36.4

CABG: Coronary Artery-Bypass Graft

P34

Retrospective evaluation of a clinical prediction rule (CPR) to identify critically-ill patients at risk of invasive candidiasis (IC)

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Background: Delays in initiating empirical therapy for IC are associated with increased mortality. We evaluated a CPR that identifies critically-ill patients at risk of IC (Ostrosky-Zeichner L et al. Eur J Clin Microbiol Infect Dis. 2007;26:271–6).
Methods: Review of patients consecutively admitted in a mixed ICU meeting the following criteria: age ≥18 years, ICU stay ≥4 days, no neutropenia and/or immunosuppression, no fungal infection, no antifungals from day –7 to day +3. The CPR consisted of: a) any of: fever, hypothermia, hypotension, or leukocytosis, b) other infections excluded or treated, c) central line, ventilation and antibiotics on days 1–3 of ICU, and d) any of: parenteral nutrition on days 1–3, Dialysis on days 1–3, major surgery on days –7 to 0, pancreatitis on days –7 to 0.
Results: Of 868 patients admitted (June to Oct. 2007), 237 (27%) stayed >4 days; 24 (10%) receiving antifungals, and 30 neutropenic or immunocompromized (13%) were excluded from analysis. Of the183 remaining, mean APACHE II score was 16.4 ± 6.8 with a mortality of 15.8 %. Antifungal were used in 5 patients (2.7%), including 2 with proven IC (0.5%). 54 (30%) were found to be colonized by Candida (at least one positive culture at any site). 76 (41.5%) meet the CPR and 25 (13.5%) the CPR + colonization. The performance of CPR and CPR+ are displayed in the Table.
Conclusion: The use of the proposed CPR + colonization may identifies a subset of critically ill patients at risk for IC that may benefit from empirical antifungal therapy.

	CPR	CPR + colonization
Sensitivity	1.0	1.0
Specificity	0.59	0.87
Number needed to treat	36	12
% of ICU patients that would be treated	41.5%	13.5%
% of unit IC cases that would be captured	100%	100%

P35

Impact of the implementation of the translated Richmond Agitation-Sedation Scale (RASS) in a Swiss Medical Intensive Care Unit (MICU)

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Background: The Richmond Agitation-Sedation Scale (RASS) is validated to assess sedation levels of critically ill patients. The aim of the study was to test the hypothesis that the implementation of RASS in an intensive care unit results in a reduction of inappropriate sedation levels. A further aim of the study was to test the hypothesis that there is a circadian variation in sedation levels in intensive care.
Methods: The study was conducted in the medical ICU of the University of Basel. RASS was implemented by an institutional policy that declared the assessment of RASS twice a shift mandatory and nurses were trained in the use of the scale. An interdisciplinary team of trained and calibrated personnel scored patients prior to (baseline) and after the implementation of RASS at predefined times during all three shifts.
Results: During the baseline-measurement, 386 RASS scores were obtained in 81 patients. After the implementation of RASS, 313 RASS scores were obtained in 74 patients. The compliance of the nurses at bedside with the mandatory assessment of RASS was 88%. The mean RASS scores at baseline and after implementation were, 2.1 ± 2.3 and , 3.2 ± 2.0 (P = 0.005) during the day shift; , 2.9 ± 2.0 and , 3.1 ± 2.2 (P = 0.36) during the late shift; and, 2.9 ± 2.4 and , 3.1 ± 2.0 (P = 0.35) during the night shift. No statistically significant difference was observed between the sedation levels of the three different shifts. Inappropriate sedation levels, defined as a RASS score < -4 were present in 136/387 (35%) scores at baseline and in 120/313 (38%) scores after the implementation of RASS (P = n.s.)
Conclusion: We identified a high proportion of inappropriate sedation levels that were not influenced by the implementation of RASS. Thus, the mere introduction of an assessment tool proved to be insufficient to modify clinical practice. No circadian variation in sedation levels was observed.

P36

In-hospital post-resuscitation care: The Utstein style preliminary data

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Introduction: In-hospital statistics about early post-resuscitation care report large differences. Several factors could influence the outcome after the pre-hospital rescue phase. Therapeutic hypothermia and tight control of blood glucose improve outcome in critically ill patients. We report our preliminary data after implementation of the Utstein style in-hospital register.
Method: Between Feb. 2007 and Jan. 2008 every post resuscitated patient admitted in our ICU was included in our in-hospital Utstein style register. Resuscitation 66 (2005) pages 271–283.
Initial cause of cardiovascular arrest, ventricular fibrillation or pulseless electrical activity (PEA) was assessed. Primary outcomes were in-hospitality mortality and Cerebral Performance Categories Scale (CPC) at discharge. We defined CPC (1-2) as good and (3-4) as poor neurologic condition. We considered the application of therapeutic hypothermia and glycemic control. Pneumonia was also documented as complication.
Conclusion: Patients resuscitated because of ventricular fibrillation have at discharge a good survival and an acceptable neurologic outcome. In our small cohort neither therapeutic hypothermia nor glycemic control seem to influence outcome. Pneumonia is the most frequent in-hospital complication after resuscitation.

Result:

	N	%	Mean age	PEA	Ventricular fibrillation	Therapeutic hypothermia	Admission glycemia mmol/l	Glycemia after 24h mmo/l	Pneumonia
patients	27	100	63.2 ± 13.9	4	23	15	13.5 ± 4.2	5.5 ± 1.4	22 (81%)
death	11	40.7	61.1 ± 13.5	4	7	7	13.6 ± 4.0	6.0 ± 1.8	8 (72%)
survived	16	59.3	64.7 ± 14.3	0	16	8	13.4 ± 4.5	5.2 ± 1.0	14 (87%)
good neurologic	10	37.1	60.3 ± 15.5		10	5	13.1 ± 5.7	4.9 ± 1.0	8 (80%)
poor neurologic	6	22.2	72.0 ± 9.0		6	3	13.1 ± 2.3	5.7 ± 0.9	6 (100%)

P37

METAP, a guideline to facilitate ethically appropriate decision making

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Background and Goal: The project METAP (SNF Nr. 3200B0-113724/1) – modular ethical treatment allocation process – addresses the problem that vulnerable patient groups are facing particular risks of ethical relevance. It develops a medical ethical guideline focusing on problems of over-treatment (futility) and under-treatment. There is compelling evidence for these phenomena in the literature, including our own previous research. The goal of the project is to provide an ethically and empirically valid approach to structuring and facilitating difficult ethical decision making.
Method: No method exists for developing a medical ethical guideline. We describe a method derived from evidence-based medicine and clinical practice guideline development. Our approach includes literature reviews and providing recommendations resulting in a manual, a short version and procedural suggestions of ethical case discussion and consultation. METAP also provides checklists and other tools for practical use. All components of the manual are validated through a double review by an interdisciplinary group of ethical experts and a panel of clinical practitioners. The evaluation of the acceptance and practicability is carried out in a structured consensus-building process.
Outlook: METAP is ready for pilot implementation on an intensive care and a geriatric care unit. The experiences and findings of this pilot will be integrated into the final version.

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Clinical events during ICU stay are related to the QOL of patients 1 year after

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Introduction: Patient's future quality of life (QOL) is a central point in the decision-making process. However its prediction is clinically difficult. We investigated whether predefined clinical events (PCE) arisen before or during the ICU stay impact on the QOL after ICU.
Methods: Adults admitted to a surgical ICU, who stayed >36h were included after informed consent. 10 PCE occurring just before or during the ICU stay were collected prospectively and tested for association with QOL measured 1 year after discharge from ICU Euro QOL (EQ) and SF-36. The list of PCE included for example abnormal bowel movements (stomata or incontinence) or an impaired communication. The perceived weight of PCE in the balance of the global QOL perception was evaluated by a visual analogue scale (VAS:0-100).
Results: Of 762 included patients, 642 (84%) completed the1 year follow-up, 579 (76%) were alive and analyzed. In the univariate analysis the occurrence of 8 out of the 10 PCE were associated with a lower QOL in summary scores (SF-36-PCS and -MCS or EQ-VAS)
as well as in the different SF-36 or EQ domains. Interestingly the perceived weight of the different PCE ranging from 13 to 79 on the VAS did not always match the impact on the QOL measured.
Conclusion: The identified PCE are promising for QOL prediction. Their value has to be tested in multivariate models.
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Trauerbegleitung auf der Kinderintensivstation

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Bei unserer Arbeit auf der Kinderintensivstation werden wir immer wieder mit dem Tod und der Trauer der Angehörigen konfrontiert. In unserm Kurzvortrag möchten wir die KongressteilnehmerInnen für die Wichtigkeit der lebensfördernden Trauer sensibilisieren. Sie erhalten Ideen von Ausdrucksmöglichkeiten der Trauer bei Verlustsituationen. Der Trauerforscher Dr. Jorgos Canacakis beschreibt das Phänomen Tauer wie folgt: Grundsätzlich ist die Trauerreaktion eine Fähigkeit, die mit uns geboren wird. Unser Leben ist von Anfang an voller Abschiede, Trennungen und Verluste. Die erste Trennung ist der Verlust des paradiesischen Aufenthaltes im Bauch der Mutter und die letzte ist die Trennung vom Leben, wenn man stirbt".
Gefühle von Trauer haben in unserer Gesellschaft oft einen negativen Beigeschmack. Sie werden verwechselt mit Melancholie und Depression. Trauer ist jedoch eine gesunde Reaktion des Organismus, die uns fähig macht, mit Abschied und Verlust umzugehen. Trauergefühle brauchen Ausdruck und müssen gelebt werden. Werden sie zurückgehalten, erstarren wir in ihnen. Deshalb bieten wir Angehörigen in Sterbesituationen Möglichkeiten an, ihrer Trauer Ausdruck zu verleihen. Anhand von konkreten Beispielen und Bildmaterial bieten wir einen Einblick in die Trauerbegleitung der Kinderintensivstation, Inselspital Bern.

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Elterneinschätzung von stresserzeugenden Faktoren auf der Kinderintensivstation

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Hintergrund: Die Hospitalisation eines Kindes auf einer pädiatrischen Intensivstation wird für die Eltern als belastendes Ereignis beschrieben. Um die Eltern besser unterstützen zu können, entwickelten Carter & Miles in den 1980iger Jahren ein Elternstresseinschätzungsinstrument, Parental Stressor Scale: Pediatric Intensive Care Unit (PSS:PICU).
Fragestellung: Ziel dieser Studie war es das Elternstresseinschätzungsinstrument PSS:PICU zu übersetzen und zu validieren. Mit dem übersetzten Fragebogen wurde untersucht, welches die grössten Stressoren für die Eltern sind, wenn ihr Kind auf einer Intensivstation hospitalisiert werden muss.
Methode: Der Fragebogen wurde übersetzt und transkulturell adaptiert. Das Elternstresseinschätzungsinstrument PSS:PICU beinhaltet 7 Dimensionen mit 36 Items.
Für die statistische Analyse wurden die Mittelwerte und Standardabweichungen der Dimensionen berechnet.
Ergebnisse: Die Auswertung der Fragebogen ergab, dass die grössten elterlichen Stressoren die Dimensionen, das Verhalten und die emotionalen Reaktionen des Kindes" und, die veränderte Elternrolle" sind.
Schlussfolgerung: Aufgrund der Angabe, dass die Dimensionen, das Verhalten und die emotionalen Reaktionen des Kindes" und, die veränderte Elternrolle" die höchste Belastung ergibt, ist der Einbezug der Eltern in die Pflege und Betreuung ihres Kindes auf der Intensivstation wichtig.

Affolter B 12 S
Azzola A 9 S

Barandun Schäfer U 6 S
Barberini L 16 S
Berger MM 11 S
Bittel G 17 S
Bükki J 8 S

Cassina T 15 S, 16 S

Delodder FD 10 S

Egli D 11 S
Engelberger R 5 S
Eschenmoser Gw 14 S

Fässler EMI 13 S
Franzen D 12 S

Gasche Y 2 S
Gorrasi J 4 S, 10 S
Grädel B 17 S
Groebli FS 9 S

Iff S 7 S, 8 S

Jianhui L 2 S
Jotterand C 2 S

Karaca S 12 S
Klarer A 5 S

Longchamp C 8 S

Maggiorini M 15 S
Massarotto P 16 S
Méan M 13 S
Merlani P 6 S, 17 S
Meyer-Zehnder B 17 S

Notz S 13 S

Paratte G 2 S

Racine V 13 S
Revelly JP 6 S, 14 S
Rolli J 4 S, 10 S

Rudiger A 4 S
Rüfenacht UR 7 S

Schneider A 14 S
Shaikh K 11 S
Stettler C 6 S

Tempelmann V 15 S
Tissieres P 10 S
Tonetti G 3 S

Vignaux L 6 S

Wenger C 7 S