003

EFFECT OF ABDOMINAL PERFUSION PRESSURE ON OUTCOME MECHANICALLY VENTILATED PATIENTS

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INTRODUCTION. Intrahalosal hypertension (IAH) is an important outcome-predictor in critically ill patients (1-2). Abdominal perfusion pressure (APP=MAP-IAH) is a better resuscitation endpoint (3) until now no prospective data is available looking at the effect of IAP and APP on outcome in patients with Acute Respiratory Failure (ARF) that are mechanically ventilated (MV).

METHODS. Over a 2 month period patients admitted with ARF were studied prospectively. Patients were screened for IAH (defined as IAP>12 mmHg) with the Foley Manometer method (Holtech, Copenhagen, Denmark). The IAP was recorded four times daily together with the highest and lowest APP, fluid balance, and SOFA score. Until now data are collected on 36 patients (28 medical and 8 surgical). The major endpoint was ICU mortality. Values are mean±SD. Unpaired student’s t test was used.

RESULTS. BMI was 25±6.2, M/F ratio 1/1, age 60±5.16, APACHE-II 28.6±13.3, SAPS-II 53.7±17.5. SOFA score on day 1 was 9±1.6±2 with 8±1±1 organ failures. IAP on day 1 was 10.2±3.7 mmHg, while APP was 54.9±13.1. Intrahalosal hypertension was present in 41.7%. Mortality was 50%. Outcome didn’t differ between patients with or without IAH although non-survivors had a significantly (p=0.05) higher IAP and lower APP by day 3. There was a more positive daily and total fluid balance in non-survivors.

CONCLUSION. The preliminary results of ongoing prospective trial, and the first looking at APP in ARF show that the incidence of IAH is extremely high in ARF. Mortality is high and in correlation with severity scores. The persistence of IAH and low APP by day 3 was able to discriminate between survivors and non-survivors. Close monitoring of IAP and APP seems warranted in patients with ARF.

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Grant acknowledgement. ESIICM Chris Stoutenbeek Award 2003
005 Ventilation Practices Across the World. A SAPS 3 Substudy

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INTRODUCTION. Ventilation may reduce mortality in acute respiratory failure, however, the evolution of ventilator modes and settings is crucial. This study aimed to characterize the use of ventilator modes and settings at admission in a large multinational database and their relation to outcome.

METHODS. Data were collected prospectively from October to December 2002 on 19,577 patients in 307 ICU’s around the world, at ICU admission, in days 1, 2, and 3. Included were sex, age, SAPS II, use of ventilatory support, ventilator data (mode of ventilation, tidal volume, PEEP) and survival status at ICU and hospital discharge. Data are expressed as mean ± SD or proportions. Variables were censored after ANOVA, t test or with the <0.05 was considered significant.

RESULTS. The cohort comprised 16,784 patients admitted to 303 ICU’s. 61% were male. Age was 63.4±17.7. SAPS II was 33.5±17.3. Ventilation was used in 53.2% of the patients, the proportion varied by region. Ventilated patients had higher mortality than non-ventilated (RR 2.03 [1.908-2.163]).

007 Tissue Factor Pathway Inhibitor in Severe CAP

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INTRODUCTION. Alveolar fibrin deposition and altered fibrinolysis is a hallmark of pneumonia and all tissue factor pathway inhibitor (TFPI) has been demonstrated to prevent or reduce lung damage in animals.

METHODS. Recombinant human TFPI (tifacogin) has been investigated in severe sepsis (phase III RCT; TFP007). JAMA 2003;290:238). The study failed to demonstrate a significant reduction in 28-day all-cause mortality. A post-hoc analysis was performed in patients with severe sepsis due to CAP to evaluate the potential benefit of tifacogin, heparin interaction and importance of microbiological evidence.

RESULTS. In TFP007, 435 pts had CAP (TFP 217, placebo 218). Baseline characteristics (age 60.4 vs 60.3; APACHE II 26.2 vs 26.3; OD 3 vs 3) in TFP and Placebo respectively (NS) 28-day all-cause mortality data for the CAP subpopulation are provided in table 1. (Hep): Heparin; ME: microbiological evidence. Serious bleeding events occurred in 12 treated pts (5.5%) vs 5 pts (2.2%) in placebo (NS). CNS bleeding was observed in 6 tifacogin treated pts (2.7%) vs 2 pts (1%) in placebo (NS) for the 28-day follow-up period.

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Oral Presentations

Treatment of sepsis: A never-ending challenge (I) 006-010

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INTRODUCTION. Activated protein C(APC) has been shown to improve outcome in patients with severe sepsis but its precise mechanism of action remains unclear. We investigated whether APC can improve microcirculatory alterations.

METHODS. We used an OPS imaging device (CytoScan A/R) to study the sublingual microcirculation in 40 adult patients meeting EU criteria for APC administration. Twenty patients received APC and 20 had contraindications (control). Measurements were obtained at baseline, 4h, and 24h for up to 7 days. Five sequences of 20 sec were stored and analyzed off-line semi-quantitatively. Data from the 5 areas were averaged. Data are presented as median [percentiles 25-75] and ANOVA was used for data analysis.

RESULTS. Contraindications to APC were mandatory heparin therapy in 8 patients, recent or high risk of bleeding in 7, and intracranial bleeding or tumor in 5. The 2 groups were well matched for severity of disease, number of failing organs (3 [2-4] in control vs 3 [2-3] in APC, p<ns), and organ support. There were no significant differences in hemodynamic variables, blood gas values, or degree of microvascular alterations in the two groups at baseline. The evolution of the principal variables during the first 24 hours is shown in the table.

| VARIABLE | BASAL | + 4 HOURS | + 24 HOURS |
|----------|--------|-----------|------------|
| Mean arterial pressure | 73 [67-76] | 70 [64-77] | 80 [76-86] |
| (mmHg) | | | |
| SOFA | 73 [61-84] | 79 [74-85] | 76 [74-84] |
| score | 10 [9-11] | 10 [9-10] | 8 [5-10] |
| Lactate | 2.5 [0.9-4.0] | 3.0 [1.7-5.2] | 2.3 [1.1-4.4] |
| (mEq/L) | | | |
| Proportion of perfused capillaries | 67 [59-76] | 68 [61-71] | 75 [62-82] |

+ p<0.05 and ++ p<0.01 vs baseline and * p<0.01 APC vs CTRL

CONCLUSION. APC rapidly improves microvascular alterations in patients with severe sepsis.

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008 Arginine Vasopressin in 316 Patients with Advanced Vasodilatory Shock

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INTRODUCTION. Advanced vasodilatory shock (AVS) is a life-threatening condition in critically ill patients. Arginine vasopressin (AVP) has been introduced in addition to catecholamines in AVS, but concern has been raised because of possible side effects.

METHODS. In this retrospective study, 316 patients with AVS treated with an additional AVP infusion (4 µU/kg/min) were analysed in order to evaluate the hemodynamic and laboratory response to AVP, the norepinephrine dose to initiate AVP infusion, the incidence of and risk factors for possible side effects during AVP, and causes of and risk factors for death from AVS treated with AVP. Cardiocirculatory, laboratory, and clinical parameters were evaluated before, 0.5, 1, 4, 12, 24, 48, and 72 hours after start of AVP. A mixed effects model and correlation models were used for statistical analysis.

RESULTS. AVP increased mean arterial pressure, systemic vascular resistance, and stroke volume index. Heart rate, central venous pressure, mean pulmonary arterial pressure, norepinephrine, milrinone, and epinephrine requirements decreased. There was no difference in the hemodynamic response between patients with septic shock, postcardiomyopathy shock, or SBP. Cardiac index decreased in 41.1% of patients. In patients with hypodynamic circulation before AVP, cardiac index decreased, whereas it remained unchanged or tended to increase in patients with normo- or hypodynamic circulation. Liver enzymes (28.5% of patients) and bilirubin levels (69.3% of patients) increased, whereas platelet count decreased (73.4% of patients). Hemofiltration significantly contributed to the decrease in platelet count (p<0.001) and increase in bilirubin (p<0.001). SBIs as admission diagnosis, a high degree of multiple organ dysfunction, and norepinephrine requirements >0.5 µg/kg/min before AVP were independent risk factors for death from AVS treated with AVP. If norepinephrine dosages exceeded 0.6 µg/kg/min before AVP, a substantial increase in mortality occurred.

CONCLUSION. Supplementary AVP infusion improved cardiocirculatory function in AVS, but was associated with an increase in liver enzymes and bilirubin, and a decrease in platelet count, particularly during simultaneous hemofiltration. Initiation of AVP before norepinephrine requirements exceeded 0.6 µg/kg/min may improve outcome.
009

EFFECTS OF VASOPRESSIN ARE RELATED TO ITS PLASMA CONCENTRATION IN SEPTIC SHOCK PATIENTS

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INTRODUCTION. Septic shock is thought to be associated with vasopressin (VP) deficiency and is often refractory to catecholamine therapy. We determined plasma concentrations of VP before and after infusion of VP and investigated the effects of VP on hemodynamic state during septic shock.

METHODS. Twelve patients with septic shock refractory to high-dose catecholamine therapy were given continuous intravenous infusion of VP. Plasma concentrations of VP were measured at 0, 12, and 24 hours after commencement of VP infusion. VP concentrations before VP infusion were determined in all patients. Blood was drawn from 22000 until 12/2004. One hundred ICU patients added data. The criteria to include patients were: AMI diagnosis with Killip IV in the first 24 hours. Variables: Age, sex, ICU stay and mortality, pulmonary catehylamine, support manipures (nitrergic), basal ventilation (MV), and revascularization manipures (trombolysis[T] and Percutaneus Caththerter Interventions[PCI]). Statistical analysis: Chi-square.

RESULTS. VP infusion improved hemodynamics significantly as shown in Table 1. Initial plasma concentrations of VP tended to decline as VP infusion interval became longer. We could reduce catecholamine dose within 12 hours after commencement of VP infusion in 6 patients. As low as 0.017-0.0260IU/kg/h of VP increased blood pressure and u/o in 3 patients. Two patients with high initial concentrations did not respond to VP infusion.

CONCLUSION. Plasma concentrations of VP increased well above normal level in all patients with septic shock even with low dose of VP. VP significantly increased SBP and u/o.

We speculate that infusion of VP in septic shock patients is effective mainly when plasma concentration of VP before infusion is low.

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010

ASSOCIATION OF STATIN THERAPY AND INCREASED SURVIVAL IN PATIENTS WITH MODS

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INTRODUCTION. Multiple organ dysfunction syndrome (MODS) is the sequential failure of several organ systems after a trigger event, like sepsis or cardiogenic shock. Mortality is even today very high. Statin therapy is associated with a reduced rate of severe sepsis and ICU admission of patients admitted with presumed or documented acute bacterial infection. Our study aimed to characterize a potential survival benefit by statin therapy.

METHODS. We retrospectively analysed the mortality data of 39 MODS patients (inclusion criterion: APACHE II score of more or equal 20 at admission to a twelve-bed medical intensive care unit in a university center) with statin therapy and of 39 age- and sex-matched MODS patients without statin therapy. The data were obtained from a database of a trial focusing on autonomic unit in a university center with statin therapy and of 39 age- and sex-matched MODS patients. The inclusion criterion: APACHE II score of more or equal 20 at admission to a twelve-bed medical intensive care unit in a university center. All patients were followed up for 28-day mortality.

RESULTS. The patients were treated with the following HMG-CoA-reductase-inhibitors ("statins"): 21 – atorvastatin (meanresd., 17.1±4.6 mg/d), 17 – simvastatin (24.7±8.5 mg/d), 1 – pravastatin (20 mg). There were no differences in age, height, weight or distribution of the sexes between statin and non-statin groups. The MODS severity at admission was equally pronounced in both groups. There were 2739 deaths after 28 days of ICU stay in the group without statin therapy and 1239 events in the statin group (28-day mortality 69% vs. 31%: Kaplan-Meier Analysis, Log Rank = 11.6, p=0.007). Cox-proportional hazard analysis revealed a hazard ratio of 0.33 (95% CI, 0.17 to 0.65).

CONCLUSION. These results are suggestive that patients under statin therapy suffering MODS may have a lower 28-day-mortality compared with MODS patients of equally pronounced severity. Hence, a statin therapy might potentially influence short-term mortality in MODS patients by reducing inflammatory response in MODS.

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CORRELATION BETWEEN NT-PROBNP AND MORTALITY IN CARDIOGENIC SHOCK

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INTRODUCTION: Many claims have been made in recent years regarding the utility of plasma B-type natriuretic peptide (BNP) concentration measurements in the diagnosis, risk stratification and monitoring of patients with heart failure. Recent Studies have even shown a relationship between high BNP, plasmaconcentration and prognosis of acute coronary syndrome as well as critically ill Patients. We explored the association between high NT-proBNP concentration and its prognostic relevance in Patients with cardiogenic shock.

METHODS: The study population consisted of 48 patients with CS. A retrospective analysis of NT-proBNP-concentration at admission on the CCU/ICU. Correlation with mortality and multiple organ failure.

RESULTS: The causes of cardiogenic shock were 1) acute coronary ischemic disease +/- mechanical complications (n=36); 2) diatatic cardiomyopathy (n=5); and 3) shock as a result of vascular heart disease (n=7). The median duration of shock before blood sampling in patients with CS was 16 hours. The average combined vasopressor dose (epinephrine dose plus norepinephrine dose) at this time was 0.39 ± 0.06 mg/kg/min. The median [25, 75 percentile] NT-proBNP concentration averages at admission was 12,580 [5634-23,449] pg/ml. Patients presenting a NT-proBNP concentration at admission >33,000 pg/ml. Patients with CS exhibited no significant increase in their initial NT-proBNP Values whereas of their primary cardiac cause and initial left ventricular systolic function (LVFP). There was no correlation between the average combined vasopressor dose and the level of the NT-proBNP concentration (r=0.02, p=0.08). Patients with multiple organ failure (n=17, defined nach SOFA-score) exhibited almost comparable high initial NT-proBNP-levels with respect to patients with 1-organ failure (n=20) or those without any organ failure (n=11, p=99 mittels ANOVA). Even patients with an acute renal failure (n=22) had similar NT-proBNP-levels to those with normal or slightly limited kidney function, (n=26)17026±18123 vs. 14522±10970, (p=0.45). Patients, who died within the first 30 days showed a significant high NT-proBNP level comparing to those who survived. (19116 vs. 11684, vs. 9771 ±7424, (p=0.002). The ROC-analyse (p=0.01) presented as a cut off level a NT-proBNP concentration of ≥2,7000 pg/ml with a 100% 30-days mortality (however a sensitivity of 50%). A NT-proBNP-Level of ≤1,3000 pg/ml was associated with a 30-day mortality of 82% (sensitivity of 62%).

CONCLUSION: The initial NT-proBNP concentration in patients with cardiogenic shock is a strong predictor of mortality. It also correlates with the 30 days mortality, regardless of the primary cardiac cause of shock, initial LVEF, average combined vasopressor dose and the severity of the shock status.
CRITICAL INCIDENTS IN A MULTIDISCIPLINARY INTENSIVE CARE UNIT

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INTRODUCTION. Intensive Care Units (ICUs) are complex patient care environments with little margin for error. Significant morbidity and even mortality can occur in spite of trained staff and sophisticated monitoring. Although critical incident reporting is well established in anaesthesia there are fewer reports from ICU practice.

METHODS. Systematic reporting of critical incidents began in our 18 bedded, multidisciplinary ICU from January 2002. A critical incident was defined as any incident that caused actual harm or had the potential to harm the patient. We analysed all critical incidents reported between January 2002 and September 2004 with a view to identify the type, frequency and outcomes of these incidents.

RESULTS. There were 1918 patients admitted to the unit during this period, constituting 8346 patient days. Out of 588 reports, 280 were considered “critical”, yielding 3.4 incidents per 100 patient days. The majority of incidents were related to airborne problems, invasive lines or drug errors. Eighteen (11.1%) incidents resulted in adverse patient outcomes. There were 4 (1.4%) deaths, directly caused or contributed to by the incident. All of these resulted from airborne related incidents. Ten (3.6%) incidents caused a major physiological change while 18 (6.4%) resulted in a minor physiological change.

TABLE 1. Type and frequency of incidents

Incidents (total=280) Number (%)  
Airway related 92 (32.5) 
Line Related 61 (21.8) 
Drug errors 42 (15) 
Dislocations 31 (11.1) 
Wiring up of equipment 17 (6.1) 
Equipment fault 8 (2.9) 
Miscellaneous 29 (10.4)

CONCLUSION. Critical incidents were common in our ICU. Though majority of these incidents did not result in adverse outcomes, there was significant morbidity. Mortality occurred only in relation to airborne related incidents. A system based corrective strategy could reduce such incidents and improve patient safety.

IS EARLY DEATH FOLLOWING ICU ADMISSION PREVENTABLE?

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INTRODUCTION. A significant number of deaths occur early in the course of ICU admission. It is unknown if pre-emptive intervention by critical care outreach teams based on pre-defined clinical criteria could modify this outcome.

METHODS. We used an administrative database to examine all admissions to our two medical-surgical ICUs from 1999-2004 for the prevalence of early death (on the same or next calendar day as ICU admission). To assess the potential impact of an outreach team, we reviewed the charts of all patients admitted from a hospital ward during 6 months in 2004. Charts were evaluated for the presence of 7 criteria used to activate the outreach team (abnormalities in respiratory rate (RR), oxygen saturation (Sat), blood pressure (BP), heart rate (HR), level of consciousness (LOC), urine output (U/O), and airway (A/W)).

RESULTS. Of 7680 patients, 1784 died (23.2%), 707 (39.6%) of these were early deaths. Compared with patients who died later, early death patients were of similar age [median (IQR)] 66 (52.77) vs. 66 (53.75); p=0.88] but had higher APACHE II scores [16 (32.38) vs. 29 (23.34); p<0.001]. The most common source of admission of early death patients was the hospital ward [n=283 (40.9%)]. During the chart review period 136 patients were admitted directly from the ward; 120 (88.2%) charts were available for review. In the 6 hours prior to admission, data to judge the individual outreach criteria were missing in a significant number of patients (RR 50%, Sat 24%, BP 25%, HR 27%, LOC 76%, U/O 90%, A/W 105%). The outreach criteria performed poorly in predicting early death, using at least 1 positive criterion [sensitivity 0.57 (0.36-0.78); specificity 0.28 (0.19-0.37)] or requiring at least 2 criteria (sensitivity 0.29 (0.09-0.48); specificity 0.75 (0.46-0.83)). Early death patients were more likely to be admitted following a “code-blue” [60.0% vs. 35.4%; p=0.04], and were less likely to have been assessed by the ICU team in the 6 hours prior to admission [23.8% vs. 47.5%; p=0.047].

CONCLUSION. Early death following ICU admission from the ward is common. Our work suggests that these patients are frequently not assessed for the outreach activation criteria in the hours before ICU admission. Work is needed to determine the extent to which outreach teams and/or improved recognition of these criteria may improve outcome.

EPIDEMIOLOGY OF SHARPS INJURIES IN THE ICU OF A DUTCH TEACHING HOSPITAL.

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INTRODUCTION. Exposure to blood born pathogens through sharps injuries (SI) remains a significant risk for healthcare workers. However limited data is available on the epidemiology of SI in the ICU. The aim of this study was to investigate whether ICU personnel are particularly at risk from sustaining SI, and to identify injury and patient related risk factors.

METHODS. Data were collected from an 18 bed, mixed surgical-medical ICU in a 530 bed teaching hospital, serving the centre of Amsterdam. We analysed data on all reported SI and all percutaneous procedures performed in the ICU between January 1997 and December 2004. Sharps injury reports from other hospital wards were used for comparison.

RESULTS. In the ICU 13.62 invasive procedures were registered (insertion of 5.32 arterial catheters, 4.67 central venous catheters, 1.49 hemofiltration catheters, 297 pulmonary artery catheters, 251 intra-astral balloon pumps, 663 chest tubes, 288 percutaneous trachoesotomies, 588 mini-trachoesotomies, 47 pleural punctures, 35 ascites punctures, and 22 lumbar punctures). Physicians sustained 28 injuries, nurses 25, and others 1. SI from various wards are presented in the table. Source patients tested positive for hepatitis C virus (HCV) or human immunodeficiency virus (HIV), and the number of personnel that required Post Exposure Prophylaxis (PEP) are also noted. There was no transmission of HCV or HIV.

| Number of SI | Hospital ICU Emergency Room Operating Room |
|--------------|------------------------------------------|
| 1184 | 54 | 65 | 500 |
| Source HCV + | 3.8% | 5.6% | 6.2% | 2.4% |
| Source HIV + | 6.2% | 11.1% | 13.6% | 3.2% |
| Number of PEP | 67 | 4 | 6 | 20 |

CONCLUSION. SI remain an issue in the ICU. The incidence of reported SI in the ICU is 0.4%. Two thirds of SI are needle-related. The high prevalence of HCV and HIV infection among source patients still represents a significant risk.

MONITORING ADVERSE EVENTS: INTERMEDIATE RESULTS FROM 4 ICUS IN SOUTHERN SWITZERLAND

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INTRODUCTION. Data from the USA demonstrate that many deaths are annually reported from medical errors and that about 17% of Intensive Care Unit (ICU) patients suffer serious adverse events. To improve safety, identify threats and hold hospitals accountable for safe practices, new methods such as internal reporting systems recognizing and preventing hazards are needed. However, few institutions, departments or units are currently developing plans for reporting errors.

METHODS. We therefore developed and implemented a non-punitive, spontaneous and patient- confidential incident reporting system (IRS) in our multi-site hospital ICUs (33 beds; 3268 admitted patients; 9318 patient days/yr during 2004; all located in Southern Switzerland) of the confidential incident reporting system (IRS) in our multi-site hospital ICUs (33 beds; 3268 admitted patients; 9318 patient days/yr during 2004; all located in Southern Switzerland) of the

RESULTS. After the first 10 months, 870 reports (nurse: 80%; doctor: 19.5%; others: 0.5%) have been irregularly submitted, mostly in very severe (61%) or severe (29%) patients. 7% of the incidents occurred during transport outside the ICU. Most incidents occurred during the first diurnal work-shift (48.6%), while the night-shift accounted for only 19.36% of recordings (p < 0.0002). The respiratory and cardiovascular systems accounted for 54% of submitted events and for the most reported errors during invasive procedures, while among the noninvasive procedures, medication and communication errors were the most reported events (37% respectively 24%). Concerning the Reporter characteristics, 38% of the events were eyewitnessed.

CONCLUSION. The IRS works, with the nurses completing most of the reports in spite of intermittent motivation barriers. Common types of errors are slips and lapses, guidelines not being followed and an high incidence of communication and medication errors. Future directions should focus on understanding barriers to reporting, developing and implementing data-managing systems and evidence-based initiatives to improve patient safety.

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Oral Presentations
Community-acquired lung infection 021-025

021
THE TIMING OF ANTIBIOTIC THERAPY IN PATIENTS WITH SEVERE COMMUNITY-ACQUIRED PNEUMONIA (SCAP)
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INTRODUCTION. The time to antibiotic therapy (Rx) is suggested as an important determinant of outcome of elderly patients (pts) with CAP.

METHODS. Patients with SCAP admitted to 20 ICUs in a 1-yr period were prospectively followed-up. Clinical features, comorbidities, severity scores (PSI on hospital admission, SAPS II and LOD on ICU admission), etiologies, and time to and selection of Rx were recorded, and variables associated with mortality identified.

RESULTS. We included 235 pts aged 58 ± 16 yrs. The mean PSI score was 103±35 (50 class I/II, 44 class III, 87 class IV and 54 class V), 47 (20%) had (ultimately/gadually) fatal underlying disease. Their median SAPS II and LOD were 39 (14-78) and 5 (0-14), 97 (41.3%) had hypotension and 81 (34.5%) required vasopressors on admission; 40 (17%) and 164 (69.9%) received mechanical ventilation (MV) and on ICU admission. There were 190 (80.9%) and 186 (79.1%) survivors to ICU and hospital discharge, respectively. Thirty-nine (17.3%) received Rx for ≥24h before admission. In others, the median lag between hospital admission and antibiotic Rx was 4 (0-28) h. Rx was delayed for more than 4h and 8h after hospital admission in 50 and 45 pts, respectively.

Ps were started on Rx in the ICU (n=100) within 1 h (0-14h), therapy was delayed for more than 4h and 8h after ICU admission in 21 and 13 pts. Factors associated with death were the PSI score and other general severity scores, bacteria, and GNB infection, but not first Rx within 4 or 8h of hospital admission (Table: Time to antibiotic and Rx outcome).

TABLE 1.
PSS II SAPS II Shock* M.V Bacteremia ICU Death
Before adm. 103 ± 40 39.7 ± 23 12 (31%) 7 (18%) 4 (10%) 1 (28%)
0-4h (n=101) 105 ± 37 41.5 ± 21 40 (40%) 20 (20%) 27 (27%) 19 (19%)
> 4h (n=55) 101 ± 32 41.5 ± 29 29 (31%) 13 (24%) 26 (27%) 15 (16%)

CONCLUSION. Antibiotic Rx in the hospital and ICU was delayed by ≥8h in 20% and 13% of pts, respectively. However, patients with SCAP receiving Rx before admission or very early had no better outcome than others. Although early antibiotic Rx is desirable in pts with severe infection, using this criteria as a quality indicator in CAP seems premature.

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022
SEVERE COMMUNITY ACQUIRED PNEUMONIA OF YOUNG ADULTS IN INTENSIVE CARE UNIT
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INTRODUCTION. The aim of this study was to describe the frequency, causal pathogens, management, and outcome of a population of young adults who were admitted to intensive care unit (ICU) due to community acquired pneumonia (CAP).

METHODS. Severe community acquired pneumonia in adults aged 15-49 were identified between January 2001 and December 2002 in China Medical University Hospital. Patients with underlying chronic illness including HIV infection were excluded. Clinical details for each case were collected. American Thoracic Society(ATS) guideline, British Thoracic Society (BTS) guideline and Pneumonia Severity Index(PSI) , were used to predict the severity of pneumonia and the outcome of the patients.

RESULTS. Total 30 patients were enrolled in this study. Death from severe CAP was identified in 30% (9/30) previously well young adults . Causative pathogens included Klebsiella pneumoniae, Pseudomonas aeruginosa and Streptococcus pneumoniae. Bacteremia was found with Klebsiella pneumoniae and Streptococcus pneumoniae. All patients who reached a hospital ward received antibiotics (47%within two hours of admission) Further analysis of severe CAP guidelines, 20 patients (67%met ATS criteria, but only 8 patients (27%) met BTS criteria and 6 patients (20%) met PSI group V criteria. Therefore, The sensitivity, specificity, positive predictive value and negative predictive value for severity of pneumonia with each guidelines were 0.40, 0.90, 0.70, 0.49 for ATS, 0.38, 0.96, 0.73, 0.63, 0.64 for BTS and 0.33, 0.71, 0.22, 0.81 for PSI group V.

CONCLUSION. The causative pathogens Streptococcus pneumoniae, Pseudomonas aeruginosa and Klebsiella pneumoniae known to cause severe CAP in this group ; Empirc antibiotech should be included in these pathogens.The low sensitivity and weak positive predictive value in all three guidelines emphasizes the importance of combining clinical judgment and objective criteria in the young adult of severe CAP.

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024
VALUE OF C-REACTIVE PROTEIN IN THE FOLLOW-UP OF SEVERE COMMUNITY-ACQUIRED PNEUMONIA
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INTRODUCTION. Severe community-acquired pneumonia (CAP) remains a common and serious illness and a leading cause of death in spite of an aggressive therapeutic approach. The aim of our study was to assess the value of C-reactive protein (CRP), temperature and white cell count (WCC) in the follow-up of severe CAP.

METHODS. All patients with severe CAP admitted to the Intensive Care Unit were prospectively included for a period of 14 months. C-reactive protein, temperature and WCC were sampled daily from the day of antibiotic prescription to discharge or death. Comparison between survivors and non-survivors was performed.

RESULTS. Fifty-three consecutive patients (mean age 61 years, 39 men, 91 % mechanically ventilated, mortality 24 %) were studied. On day 3 of antibiotic therapy, CRP of survivors was 0.49 of the initial value (p<0.001) while in non-survivors it was 0.71 (p=0.002). Temperature and WCC count remained almost unchanged. The area under the receiver operating characteristic (ROC) curve for the relative variations of CRP on the day 3 day of antibiotic therapy was 0.76 (95% confidence interval, 0.61 – 0.86) and was larger then the area of the ROC curves of temperature and WCC (p=0.005 and p=0.05, respectively). On the day of antibiotic therapy a CRP above 0.5 of the initial concentration is a marker of poor prognosis (sensitivity 0.55, specificity 0.91, positive likelihood ratio 6.05, negative likelihood ratio 0.49). The area under the ROC curve for maximal relative CRP variation from the previous day’s concentration was 0.76 (95% confidence interval, 0.61 – 0.86). A decrease in CRP levels by 0.31 or more from the previous day’s level is a marker of good prognosis (sensitivity 0.75, specificity 0.85, positive likelihood ratio 4.87, negative likelihood ratio 0.30).

CONCLUSION. Daily measurement of CRP is useful in monitoring the clinical course of severe CAP and is a good early marker of favorable outcome.

023
USING CURB-65 AS A PREDICTIVE TOOL FOR ICU ADMISSION FOR PATIENTS WITH COMMUNITY ACQUIRED PNEUMONIA
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INTRODUCTION. Community Acquired Pneumonia(CAP) is a significant cause of death in Intensive Care patients 1. In the United Kingdom the CURB-65 is 2 commonly used to assess severity and need for Hospital Admission. The CURB-65 is a simple scoring system based on the presence of confusion, age >70years, respiratory rate >30 breaths/min-1, systolic blood pressure 65 years. The score ranges from 0 to 5. A Score of >3 in the non critical care setting is deemed to signify intermediate risk and the need for Hospital Admission. The aim of this study was to determine whether a CURB-65 score is able to predict the need for critical care admission.

METHODS. In an ongoing prospective observational study we scored 20 consecutive pts admitted with CAP to our Critical Care Unit. All patients subsequently required tracheal intubation and invasive ventilatory support due to respiratory failure. All were treated with a standard empirical antibiotic regimen including cover for atypical organisms.

RESULTS. The results are shown below in table 1

ABLE 1.

| CURB-65 Score | 1 | 2 | 3 | 4 | 5 |
|---------------|---|---|---|---|---|
| APACHE II     |   |   |   |   |   |
| Score(mean)   | 18| 19.5| 19| 19.2| 20|
| P:F ratio KPa | 8.75| 11.25| 11.8| 12.7| 8.71|
| No. of Patients(%) | 1(3.3)| 5(20)| 8(26.6)| 8(26.6)| 7(23.3)|

CONCLUSION. The CURB-65 score was >3 in only 50% of patients with Community Acquired Pneumonia admitted to our Intensive Care Unit. The CURB-65 appears to be an unreliable predictor of the need for critical care admission in patients with CAP.

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**025 MULTIDRUG-RESISTANT BACTERIA IN PATIENTS WITH SEVERE ACUTE EXACERBATION OF COPD**

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**INTRODUCTION.** Multidrug-resistant bacteria (MRB) are frequently associated with inadequate antimicrobial treatment. The aim of this study was to determine incidence, risk factors, and impact on outcome of MRB in patients with severe acute exacerbation of COPD.

**METHODS.** This prospective observational cohort study was conducted in a 30-bed ICU during a 4-yr period. All COPD patients with acute exacerbation who required intubation and mechanical ventilation for >48h were eligible. Patients intubated for >24h before ICU admission were not eligible, as well as patients with pneumonia or other causes for acute respiratory failure. In all patients, quantitative tracheal aspirate was performed at ICU admission (positive at 10^6 cfu/ml). All patients received empirical antibiotic treatment at ICU admission. Univariate and multivariate analyses were used to determine variables associated with MRB and with mortality in these patients.

**RESULTS.** 857 patients were eligible. 304 bacteria were isolated (at 10^6 cfu/ml) in 260 (30%) patients, including 75 (24%) MRB in 69 (8%) patients. S. pneumoniae (20%), H. influenzae (16%) and P. aeruginosa (10%) were the most frequently isolated bacteria. Previous antimicrobial treatment (68% vs. 49%), and intubation antecedent during the last 6 months (52% vs. 8%) were independently associated with MRB (OR [95% CI] = 2.2 [1.1-4.1], p = 0.02, [11.2-82, p < 0.001; respectively). Inadequate initial antibiotic treatment (88% vs. 1%, p <0.001), ventilator-associated pneumonia (23% vs. 8%, p <0.001) and ICU-mortality (44% vs. 25%, p = 0.001) rates were higher in patients with MRB than in patients without MRB. Renal failure (OR [95% CI] = 6.1 [3.5-10.9], p <0.001), neurologic failure (5.1 [2.8-9.4], p <0.001), ventilator-associated pneumonia (2.9 [1.7-4.8], p = 0.005), and inadequate initial antibiotic treatment (2.8 [1.6-4.9], p <0.0001) were independently associated with mortality.

**CONCLUSION.** Intubation antecedent and previous antimicrobial treatment are associated with MRB in patients with severe acute exacerbation of COPD. Renal failure, neurologic failure, ventilator-associated pneumonia, and inadequate initial antibiotic treatment are associated with mortality in these patients.

**027 MITOCHLONDRIAL KATP CHANNEL, REACTIVE OXYGEN SPECIES AND CORPSE PRECONDITIONING**

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**INTRODUCTION.** Preconditioning (PC) confers protection against ischemia/reperfusion injuries in the brain. In a PC cardiomyocyte model, a relationship has been demonstrated between the mitochondrial KATP channel (mitoKATP) and reactive oxygen species (ROS) (1). The aim of the study was to examine the role of mitoKATP and ROS during the induction of ischemic PC in a rat model of transient focal cerebral ischemia.

**METHODS.** Male Wistar rats were subjected to 60 min occlusion of the middle cerebral artery (MCA) following by 24h of reperfusion before sacrifice (group IPR). Ischemic PC (IPC) was triggered by 3 min occlusion of the MCA followed by 72h of reperfusion, prior to prolonged ischemia/reperfusion. Alternatively, pharmacologic PC was performed by agent administration instead of the short triggered ischemia. Infarct volume was determined by cresyl violet staining and expressed in cubic millimeters after numerical integration of the stained and unstained areas. Results were expressed as median and interquartile interval. Mann Whitney test was used for comparison between groups. Significance for p<0.05.

**RESULTS.** IPC reduced significantly cerebral infarct from 303.6 [271.8-327.6] mm³ (n=13) in rats subjected to IPR to 228.4 [217.1-264.2] mm³ (n=6). Protection was abolished by mitoKATP channel blocker 5-hydroxydecanoate (40 mg/kg, intraperitoneal, 30 min prior IPC, 271.5 [228.12-321.7] mm³; n=6). The antioxidants ebselen abolished protection induced by IPC suggesting that ROS are also required for protection (10mg/kg, oral crumbing; 2h before and 12h after IPC; 278.8 [197.5-320.3] mm³; n=9). Implication of mitoKATP and ROS was confirmed by protective effects conferred by the mitoKATP channel activator diazoxide (10mg/kg, intraperitoneal; 219.9 [145.7-284.4] mm³; n=6) and by cortical stereotaxic administration of hydrogen peroxide (5nm, 4 µl; 122.7 [85.4-149.7] mm³; n=7). Conversely, cortical stereotaxic administration of saline solution (4 µl) did not confer protection (298.5mm³ [275.1-313.7]; n=6).

**CONCLUSION.** This study demonstrates that mitoKATP channel and ROS are both required for brain ischemic PC. The relationship between these two mediators during the triggering phase of ischemic PC needs to be clarified.

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**028 ELECTROPHYSIOLOGIC PROPERTIES OF INTEROSSIUS MUSCLES IN A RAT MODEL OF CRITICAL ILLNESS POLYNEUROPATHY**

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**INTRODUCTION.** Critical illness polyneuropathy (CIP) remains to be delineated since it includes several nervous and muscular entities occurring after a sepsis in critically ill patients. Few data are available on the cellular mechanism leading to this neuromuscular dysfunction. The aim of this study was to measure the electrophysiological properties of the interossi (IO) muscles on a model of CIP induced in the rat by a chronic peritonitis.

**METHODS.** Two groups of 20 Wistar rats were submitted to a chronic peritonitis (septic group), or no surgical procedure (control group). 30 muscles were harvested on the rear limb and submitted to enzymatic dissociation (collagenase type II). The cells were then patched using glass micropipette with a 3 µm bore. The following constants were computed : resting potential, maximal sodium current (INa), sodium conductance GNa, number of open channels inside the patch, ENa, intracellular sodium concentration, activation and inactivation constants (Tm and Th) and the half inactivation constant (V1/2).

**METHODS.** We prospectively recorded 1846 transfers that were performed between September 2001 and December 2004 into a database. We assessed the ventilatory modes before and during the patients' transfer and evaluated further characteristics of the interhospital-transfers. For the ventilation during the patient's transport the Raphael® silver ventilator (Hamilton Medical AG, Rihzins, Switzerland) was used with that pressure-support ventilation (PSV), airway pressure release ventilation (APAVR) and the combination of both could be used.

**RESULTS.** 605 (32.8%) of the transferred patients received ventilatory support, 712 patients (38.6%) breathed spontaneously with and 529 patients (28.7%) without oxygen insufflation. The majority of the mechanically ventilated patients received ventilatory modes supporting spontaneous breathing before (74.4%) and during the transfer (80.6%). The patients were transferred in 35 minutes (5 minutes - 11 hours) over a distance of 60 km (2-970 km) (median [range]). At least 2 motor syringe pumps were used during the transfer of 642 patients (34.8%). Monitoring during the transfer was similar or more extended compared to the monitoring in the hospital prior to transfer (ECG 93%, T wave, arterial pressure 83%, T0, oxygen saturation 97%). The following constants were computed : resting potential, maximal sodium current (INa), sodium conductance GNa, number of open channels inside the patch, ENa, intracellular sodium concentration, activation and inactivation constants (Tm and Th) and the half inactivation constant (V1/2).

**RESULTS.** Rest potential was higher in the septic than in the control group (p=0.004 vs -51.5V). INa was lower in the septic animals (1.84 ± 0.14 vs 4.89 ± 0.66, p<0.001). GNa was 16,6±0.04 ms/cm-2 and 0.0313 ± 0.004 (p<0.003) in septic rats. V1/2 was -36.6 mV vs -40.2 mV in the septic group.

**CONCLUSION.** As the inversion potential remained steady, the decrease in INa in septic rats is in keeping with the reduction in GNa and may be related to a decreased number of opened voltage-dependent channels or to a lowering of the opening probability for each channel or both mechanisms. The decrease in V1/2 may explain the lowering of INa by a quicker channel inactivation. As the time constant Tm and Th remained stable we may argue that characteristics of the channel were not modified by the sepsis and that the modification in INa and GNa may be related either to the modification of the voltage-dependency of the channels (V1/2) or to a reduction in the number of available channels. Since Hinf was increased, the partial closure of the gate induces a variation in the voltage-dependency.
**029**

**PROGNOSTIC FACTORS AND TOXICOINIMET - TOXICO-DYNAMNIC RELATIONSHIPS IN FLECAINIDE POISONINGS**

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**INTRODUCTION.** Flecainide is a cardiotoxic drug with a membrane stabilising effect, responsible of rare but severe acute poisonings. Prognostic factors were proposed but never validated.

**METHODS.** Prospective collection of clinical data, outcome, and plasma flecainide concentrations (determined using HPLC-REMEDDD00) in severe acute flecainide poisonings admitted in our ICU during 6 years; comparisons between the patients who survived and those who died (Chi-2 and Mann-Whitney tests); study of the toxicokinetics (kinetic software) and the toxicokinetic-toxidynamic (TK-TD) relationships.

**RESULTS.** Fourteen patients (7M/7F, 40 yrs [31-56], median [10-90% percentiles]) were included. The ingested dose was 30.0 g [1.3-3.0] with a delay of 2.0 h [1.1-2.4] before admission. On presentation, the systolic blood pressure (SBP) was 80mmHg [0-107], the heart rate (HR) 61/min [0-95] and the QRS duration 180msec [140-230]. Patients were treated with 8.4% sodium bicarbonate (14/14), mechanical ventilation (11/14), epinephrine (10/14), defibrillation (7/14), pacing (3/14), hemodialysis (3/14) and ECLS (1/14). The mortality rate was 43%, related to a refractory asystole (3/14) or shock (3/14). Complications included: heart failure (10/14), multiorgan failure (5/14), renal failure (2/14), disseminated intravascular coagulation (2/14), and hospital-acquired pneumonia (3/14). Comparisons between survivors and non-survivors showed significant differences on admission regarding HR (25/min [0-60] versus 88/min [15-112], p<0.04), the ingested dose (3.0g [3.0-6.0] versus 1.5g [1.0-3.0], p<0.002) and the plasma flecainide concentration (5.6mg/l [4.1-7.1] versus 2.2mg/l [1.4-2.8], p<0.01). There was no significant differences regarding SBP, QRS duration, lactate concentration, and adrenaline infusion. Flecainide TK parameters were dose-dependent. TK-TD relationships were better following dobutamine (sigmoidal shape with C50 0.6mg/l) or epinephrine infusion rate (C50 2.1mg/l) and QT length (linear) than QRS duration. They showed the therapeutic contribution of sodium bicarbonate but also its limitations, regarding a reduction in the flecainide renal elimination.

**CONCLUSION.** Flecainide poisoning-related mortality remains elevated (43%). The prognostic value of the plasma flecainide concentration on admission may be helpful to improve the management.

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**030**

**HOSPITAL EMERGENCY MEDICAL TEAMS AND MASSIVE BASIC LIFE SUPPORT – IMPACT ON MORTALITY**

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**INTRODUCTION.** Widening of the criteria for hospital emergency calls have recently suggested that these interventions could decrease the number of adverse events and mortality on hospitalized patients. This study aims to evaluate whether the introduction of a medical emergency team (MET) responding to hospital-wide preset criteria of physiologic instability together with the massive training on basic life support (BLS) of all hospital staff would decrease mortality in patients at risk.

**METHODS.** Our emergency teams used to answer only to cardiac arrest calls. In 2002 we started an integrated programme that included widening of the emergency call criteria, where MET started to respond to hospital-wide preset criteria of physiologic instability and included the massive training on basic life support (BLS) to all physicians, nurses, auxiliary and administrative staff of our hospital. Training also included simulation scenarios with mannequins in the wards and information posters throughout the hospital. The all programme was completed by the end of 2003. We compared hospital mortality and the number of medical interventions started in patients at risk before the arrival of the MET. Results during are compared with those registered after completion of the all programme, i.e. results from years 2002/2003 are compared with those from year 2004.

**RESULTS.** Between 1 January 2002 and 31 December 2004 there were 396 emergency calls, for which 47% were for cardiac arrest, 17% for respiratory arrest and 36% for other pre-set criteria of physiologic instability. There were no statistical significant differences between the number of calls between both periods. Although not reaching statistical significance, there was a trend for an increase of emergency calls for non-cardiac arrest reasons. We found significant differences in the following variables: number of emergency procedures initiated before the ET arrival, which included basic airway management, peripheral venous access, intravenous drugs, and ECG monitoring. Nearly half of the emergency calls were from medicine wards and 20% from surgical wards, without significant differences between both periods. Hospital mortality was significantly lower in the period after completion of the programme.

**CONCLUSION.** Widening of the criteria for hospital emergency calls together with an integrated training programme may reduce hospital mortality of at risk patients.

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**032**

**A NATIONAL SURVEY OF ORAL CARE NURSING PRACTICES OF INTUBATED PATIENTS: ARE THEY EVIDENCE BASED?**

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**INTRODUCTION.** Ventilator Associated Pneumonia (VAP) has been described as a major critical care complication(1). Studies have shown that the incidence of VAP is associated with poor oral hygiene (review -2). The Evidence Based Practice Working Group of the Israeli Society for Cardiology and Critical Care Nursing embarked on a national survey to determine oral care practices of ICU nurses and how these practices compared to evidence based practice in the literature.

**METHODS.** Two questionnaires were distributed to all adult ICUs in Israel interested in participating in the study. The first to head nurses describing the characteristics of the ICU and of the nurses, and a description of protocols/unit practices related to oral care. The second questionnaire was distributed to staff nurses and asked demographic characteristics as well as how nurses practiced oral care and assessment. Results were tabulated and analyzed.

**RESULTS.** Ten units participated in the survey. All head nurses reported a unit wide practice however most staff nurses within the same unit differed widely as to actual performance. No written protocols were reported. Nurses reported a high level of priority of oral care. Oral care practices for the most part did not conform to the latest evidence. Most nurses did not report using a toothbrush or toothpaste and less than half reported using chlorhexidine. While the vast majority of nurses reported that they do an oral assessment, no nurse reported using a known instrument. The highest frequency of assessments were done before mouth care. These assessments were often not recorded. No relationship was found between characteristics of the nurse and oral care protocols used.

**CONCLUSION.** While the nurses surveyed considered oral care to be important, they did not base their care on the latest evidence. This lack of knowledge was present among head nurses as well as their staff and was not related to various demographic or unit based variables.

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**Grant acknowledgement.** This study was performed under the auspices of the Evidence Based Practice Committee of the Israeli Society for Cardiology and Critical Care Nursing
**INTRODUCTION.** Encounters between care-givers and patients in emergency departments (ED) have been analysed from different perspectives and research approaches. No studies have been found concerning the teams attitude during the whole process in the ED. The aim of this study was to explore trauma patients' conceptions of the encounter with the ED team using a qualitative approach.

**METHODS.** Twenty-three patients admitted to two EDs in Sweden were interviewed. Inclusion criteria were patients exposed to high energy violence, but without life-threatening injuries, fully conscious during the time of care, which should not exceed 24 hours. Furthermore, the patients had to be Swedish-speaking adults. Data were collected by using semi-structured interviews which were tape-recorded and transcribed verbatim. The analysis was carried out according to the principles of phenomenography with contextual analysis.

**RESULTS.** Three modes of being with the trauma patients could be distinguished in the analysis viz., the instrumental, the attentive and the uncommitted. The instrumental mode of being was characterised by team members who concentrated on making rapid and adequate assessments of the patients' physical condition. The instrumental mode of being occurred immediately after the patients arrived at the ED. The attentive mode represented a wide range of caring behaviours such as continuous and empathetic engagement and occurred after the physical examination was done. The communication became more informal and passed over to be diverted and sometimes humorous. All team members were represented in this mode, but the nurses predominated. The third mode of being was called the uncommitted mode which consisted of lack of interest to the patient. Uncommitted mode never occurred initially, but after physical examination and above all on the eve of discharge. The team's modes of being with the patient varied as the care progressed. All encounters included the instrumental mode, and most of the encounters also contained the attentive mode.

**CONCLUSION.** A prerequisite for high-quality encounters in ED was care-givers, who could change their mode of being with the patient between the instrumental and the attentive.