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COMPARISON BETWEEN STATIC AND DYNAMIC MEASUREMENTS OF INTRINSIC PEEP (PEEPi) IN MECHANICALLY VENTILATED PATIENTS
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PEEPi is common in mechanically ventilated patients, particularly with airway obstruction (AWO), and has important clinical implications. In routine practice, PEEPi is measured under static conditions using an end-expiratory occlusion (PEEPi,stat). The resulting plateau in airway pressure (Paw) is thought to represent the average PEEPi present in a non-homogeneous lung. PEEPi can also be evaluated dynamically (PEEPi,dyn) by recording the change in Paw required to initiate lung inflation. It has been suggested that PEEPi,dyn reflects the lowest regional PEEPi and will underestimate PEEPi,stat in the presence of significant time-constant inequalities. The purposes of this study was (1) to compare PEEPi obtained by these two methods in mechanically ventilated patients with varying degrees of AWO and (2) to relate any discrepancies observed with indices of respiratory mechanics. Paw, flow, and volume were measured during controlled mechanical ventilation in 20 sedated, paralyzed patients whose primary diagnosis included an acute exacerbation of COPD or asthma (16), ARDS (1), sepsis (1), or stroke (2). PEEPi,stat and PEEPi,dyn were obtained as described above. End-inspiratory occlusions were also performed to determine respiratory compliance (Crs), maximal (Rmax) and minimal respiratory resistance (Rmin), effective resistance (ΔR) due to time-constant inequalities and viscoelastic pressure losses, and the corresponding pressure drop used to compute ΔR (ΔP). PEEPi,dyn was significantly less than PEEPi,stat in AWO, averaging 3.0 ± 0.5 and 9.3 ± 1.1 (SEM) cmH2O, respectively ($p < 0.05$). In the remaining patients, however, these values were similar averaging 3.6 ± 0.8 and 4.5 ± 1.3 cmH2O, respectively. As a result, the ratio between PEEPi,dyn and PEEPi,stat was 0.36 ± 0.06 for AWO compared to 0.87 ± 0.07 without AWO ($p < 0.005$). Rmax was markedly different between AWO (23.5 ± 3.2) and the other patients (8.4 ± 2.2 cmH2O/L/s) ($p < 0.05$). Similar findings were true for Rmin and ΔR. There was a significant correlation between ΔP and the ratio of PEEPi,dyn to PEEPi,stat in all patients ($r = 0.54$, $p < 0.005$). No correlation was found between this ratio and Rmax, Rmin, ΔR, or Crs. This study indicates that PEEPi,dyn considerably underestimates PEEPi,stat in AWO patients. This is in contrast to those without significant AWO, where PEEPi,dyn approximates PEEPi,stat more closely. The data suggest that the difference between PEEPi,dyn and PEEPi,stat is primarily related to regional inequalities in mechanical time-constants within the lung and/or increased viscoelastic pressure losses rather than the apparent overall severity of AWO.

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CONTINUOUS MONITORING OF PEEPi.
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We have developped a ventilatory mechanics monitoring system for anesthetized and paralyzed patients. Tracheal pressure (Ptrach) and flow signals are obtained from the ventilator (SIEMENS LMA C or CFPO CESAR) in the controlled ventilation mode with constant flow inflations and end-expiratory pauses. PEEPi the intinsic positive end expiratory pressure (including possible imposed PEEP) is automatically calculated every minute. In addition, 3 mechanical parameters are simultaneously measured: 1) Rrs,min the resistance of the respiratory system (including endotracheal tube) obtained with the end-inflation occlusion technique, 2) Ers the respiratory system elastance (inspiratory) calculated from the slope of Ptrach profile during inflation, 3) dPdiff/dt the slope of the pressure drop at the beginning of end-inflation occlusion (an estimate of respiratory system time constant inequalities). The signal processing needs only 3 parameters to be set, namely a time delay corresponding to the oscillations at the beginning of each phase (inflation, pause and expiration) and the 2 times intervals for respective regressions used in the estimation of Ers, dPdiff/dt and PEEPi. After initial adjustment of these parameters on the first patient, the system proved to work on all other invetigated patients. Monitored PEEPi is well correlated with PEEP measured from end-expiratory pauses.

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Nursing

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THE MANAGER'S ROLE IN COMPUTERIZATION THROUGH CLINICAL INFORMATION SYSTEMS IN I.C.U. : AN ESSENTIAL COMMITMENT
N. Gantz

Healthcare issues throughout the world parrell in numerous avenues. Intensive Care Units are becoming the hospital"s largest expense as well as occupancy of the institution. It, thus, remains the I.C.U. Manager"s responsibility, both ethically and fiscally, to make certain that these units are strategically directed toward instituting clinical information systems. The electronic medical record has shown to be of great asset in high acuity, multisystem failure patient units. The high financial investment offsets the savings on the increased staff productivity, efficiency, elimination of task work and effective organization. Through a Manager's commitment and perseverence, this can be a reality for hospital's of all sizes in today's world. The challenge and opportunity comes through demonstration in a methodical, strategic and practical style.

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PREVENTION OF NASAL ESCHARS (NF) IN PATIENTS WITH NASOGASTRIC TUBES (NGT) AND/OR NASOPHARYNGEAL TUBES (NTP) BY AN HYDROCOLLOÏD WAFER (DUODERM^R).
R. Boiteau, T. Lherm, M. Covelli, C. Leroy, A. Tenaillon, D. Perrin-Gachadoat.

Nasal eschars in patients with NGT and/or NPT are frequently observed ; the most severe complication is the necrosis of nose wings.

This study investigated whether an hydrocolloïd wafer (Duoderm^R) would reduce nasal eschars.

102 consecutive patients were randomly assigned to 2 groups : in group D (50 patients), a small round holed wafer of Duoderm^R was applied on the nostrils around NGT and/or NPT, as soon as the tubes were inserted ; in group R (52 patients) no prevention was made. Every day, the nurses filled a questionnaire concerning patients datas, eschars description (surface, degree).

RESULTS : in both groups, several risk factors for nasal eschars have been identified : diabètes, arteritis, dopamine infusion, NGT or NPT duration, deep sedation. In D group, 13 patients developped nasal eschars against 25 in R group ($p < 0,01$). In D group, eschars appeared after 87 hours for NGT (against 52 hours in R group, $p < 0,05$) and after 76 hours for INT (against 46 hours in R group, $p < 0,05$). Eschar degree was significantly more severe in R group than in D group.

CONCLUSION : Duodermr^R prevention is effective for it decreases nasal eschars incidence, nasal eschars severity and nasal eschars occurence delays.
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CATEGORIES OR LEVELS OF NURSING IN THE ICU

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Objectives:

- To stimulate professional competence in nursing
- To make ICU nursing more attractive
- To improve the efficacy and efficiency of results
- To increase economic compensation

Developmental process of the CIN program:

- Exact and precise information to all unit personnel
- Involve all nurses in the process
- Evaluation of the results in 3, 6 and 12 months
- Maximum responsability in the development of those responsable for the service
- Initiate only when a safety level of 0 defects is guaranteed

Nursing levels:

There are four different nursing levels with requisites and pre-established functions :

- General nursing knowledge
- Knowledge and experience in the speciality
- Specific functions such as management, teaching, training and research.

Technological advances, the need for ever more qualified personnel, and the problems that nursing in general, is currently experiencing have made us search for alternatives that will at least allow well qualified professionals who have trained or are now in training in these units to be placed where they should be.

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NURSE-PATIENT COMMUNICATION: A DESCRIPTIVE STUDY EXPLORING THE NATURE AND FREQUENCY OF INSTRUMENTAL AND EXPRESSIVE TOUCH IN THE INTENSIVE CARE SETTING.
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Nurses are key providers of intimate physical care and psychological support of patients and their families. Touch constitutes a major part of care and as a powerful form of non-verbal communication it creates opportunities for human closeness which should be utilised for its therapeutic effects.
The study set out a) to observe the frequency and type of touch used by nurses caring for patients in an intensive care unit(ICU); and b) to identify variables which affect the use of instrumental and expressive touch. A random sample of 15 nurse-patient pairs were selected from one ICU. Data was collected using non-participant observation. of nurse-patient interaction. Touch types and their components were recorded using an observation instrument (Porter et al, Intern.J.N.Studies 23:11-20 1986).
The results demonstrated that of the 769 touches observed 83% were instrumental and 16% were expressive. The nature of expressive touch was found to be significantly different in relation to the length of touch episode, location of body area, nature of verbal communication accompanying the touch, and the type of response made by the patient. Significant differences were also found in relation to age, sex, marital status, and length of ICU nursing experience; and the age, sex, marital status, and social class of the patient.
Many complex variables influence the use of expressive touch in the care of the critically ill. The study forms a descriptive basis for further study in this area. The challenge of providing holistic care necessitates review of the principles on which practice is based.

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SEVERE HEAD INJURY PATIENTS.VARIATION OF INTRACRANIAL PRESSURE RELATED TO HEAD POSITION AND BRONQUIAL SECRETIONS SUCTIONING.
Arribas,M.,Bosch,S.,Fontan,C.
OBJECTIVE.To study severe head injury patients monitoring ICP,CPP and PAM and their variabilities in relation to two nursing methods i.e. a) head position b)bronquial secretions suctioning.
MATERIALS AND METHODS. 25 severe head patients with GLASGOW score equal to or less than 12, monitoring ICP,CPP and PAM were studied.All patients had a neutral head position with the body in midline.
Study of patient in A)patient recumbent 30Ω\patient flat\patient in a 30Ω position. B) (average standard deviation)
RESULTS.When the patiente lies flat ICP rises an average of 8mmHg and this provokes a fall in CPP of 11.6mmHg.The removal of secretions produces an average rise in ICP basal of 43.7mmHg.The average time of recovery form inicial ICP is 4.5 hours.
CONCLUSIONS.Routine nursing techniques for severe head injury patients modify ICP,CPP and PAM. We can say from this preliminary study that 1) the preferencial position for a severe head injury patient is that of the semi-Fowler of 30Ω and that 2)in said position the removal of secretions is made as brief and infrequent as possible.To determine the influence on outcome the study must be carried further.
KEYWORDS.ICP (intracranial pressure) CPP (cerebral perfusion pressure) PAM (mean artery pressure).

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Previous Quality of Life and Length of Stay in ICU

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Introduction

We analysed the influence of the Previous Quality of Life (QL) and other social variables on the length of stay in ICU.

Methodology

From March 1991 to April 1992 we studied prospectively 421 ICU patients. The level of dependency (D), the degree of chronic disease (APACHE II) and the subjective perception of QL (P) were analysed using the daily activity of living, Karnofsky scale and the perceived quality of life indexes respectively. The economic, social, working and cultural characteristics of each patient were recorded. The severity of illness and risk of death were measured using Apache II and Mortality Predicted Model (MPM). Short stay was defined as less than 5 ICU days. Univariate and multiple logistic repression analysis were used to identify the different factors that influenced the ICU stay.

Results

The table summarizes the data of univariate analysis.

Stay (days)	<5	>5	Prob.
D	0,22	0,31	0,30
K(%)	84,4	81	0,03
P(%)	75	75	0,60
Age (years)	61	63	0,15
Apache II	9,9	16,5	0,0001
MPM	20	33	0,0001
Risk of death	14	30	0,0001

Apache II and risk of death, outcome and cardiovascular disease were the significative factors determined by the multivariate analysis.

Conclusions

The previous evaluation of QL is not useful to determine the length of ICU stay which depends on the severity of the illness.