



**Exploration and classification of intensive care nurses' clinical decisions**

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### INTRODUCTION

Decision-making is a fundamental cognitive function, which involves deliberate choice between at least two alternative actions, recognizing triggers for the initiation of an action, commitment to act in a particular way and the expectation for achieving goals (Noone 2002).

Clinical decisions and their underlying processes are an integral part of health care practice. Although, clinical decision-making, along with the uncertainty embedded in this process, may be viewed as situated largely within the scope of practice of physicians, Kitson (1999) suggested that clinical decision-making is an important skill for any health care professional.

Clinical judgment and decision-making are inherent in nursing work and constitute indisputable components of the nursing process. In the context of intensive care units (ICU), the ability of nurses to make clinical decisions and to act upon them, is strongly linked with improved patient outcomes (Curley 2002; Kollef et al 1997) and the quality and safety of patient care (Bucknall 2003; Bucknall & Thomas 1997).

### BACKGROUND

Clinical decision-making is central to the science and practice of nursing (Hardy & Smith 2008). Thompson et al (2004) estimate that emergency care nurses make one decision approximately every ten minutes and Bucknall et al (2000) reported one decision every thirty seconds for nurses in intensive care.

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3 There is little research evidence on the types of decisions in their routine practice  
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5 (McCaughan et al 2005). Thompson et al (2001) analyzed qualitative data from  
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7 observation and interviews with 240 nurses and they classified nursing decisions into  
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9 eleven categories: decisions related to intervention/ effectiveness, targeting,  
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11 prevention, timing, referral, communication, service organization/  
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13 delivery/management, assessment, diagnosis, information seeking and  
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15 experiential/understanding/hermeneutic. McCaughan et al (2005) used qualitative  
16  
17 methods to explore clinical decision-making in a purposive sample of 29 nurse  
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19 practitioners and developed a seven-fold typology capturing the types of decisions  
20  
21 nurses made on a daily basis concerning assessment, diagnosis, intervention, referral,  
22  
23 communication, service delivery and information seeking. Previously, Bucknall  
24  
25 (2000) had described the decision-making activities of 18 critical care nurses in the  
26  
27 actual ICU setting using content analysis of observation transcripts. Decision-making  
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29 activities had been categorized into three core categories: intervention,  
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31 communication and evaluation.  
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37 The first two classification systems mentioned above, are not specific for intensive  
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39 care context and the third one, though it focalizes on critical care nursing decisions, its  
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41 categories of decisions are broad, making it difficult to highlight the range and  
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43 complexity of potential judgements. Thus, in order to improve the understanding of  
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45 intensive care nurses' clinical decisions and to establish an adequate framework for  
46  
47 multi-centre researches, the elaboration of a classification scheme is necessary.  
48  
49 Moreover, no research evidence exists with regard to Greek intensive care nurses'  
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51 clinical decision –making practices, despite reports of low decisional autonomy  
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53 among Greek critical care nurses (Papathanassoglou et al 2005; 2012).  
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## AIMS OF PROJECT

The aims of this study were the recording, identification, coding and classification of clinical decisions made by nurses in ICUs in Greek hospitals.

## METHODS

### Design

A naturalistic qualitative approach was employed based on content analysis of clinical diaries in which clinical decisions made by ICU nurses were recorded during the course of their shift.

### Sample

Twenty-three nurses from general intensive care units of three major Greek hospitals were purposefully selected, based on their educational level, previous nursing experience and intensive care experience in order to gather in-depth and rich information (Holloway 2005). ICUs were selected on the criterion of reasonable representativeness of standard practice. The specific inclusion criteria for participants were (1) licensed registered nurses, (2) at least five-year nursing clinical experience, (3) at least two-year ICU experience. The sample size was determined by the point at which elements data began to be repeated and no new information were added (theoretical saturation) (Potter & Wetherell 1987).

A written informed consent was obtained from every participant after they had been informed about the aims of the study, the voluntary nature of the participation, their right to privacy, anonymity and confidentiality, as well as the right to withdraw from

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3 the study at any time. Additionally, the study was approved by the Scientific Review  
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5 Board of each participating hospital.  
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### 8 **Data collection**

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11 Data collection took place over a period of eight months (October 2010-May 2011).  
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13 The main tool employed an original log sheet of decisions, designed specifically for  
14  
15 the purpose of the study, through a panel of experts and pilot application. The  
16  
17 decisions' log will be hereon referred to as the "diary of decisions". It comprised of i)  
18  
19 a socio-demographic data questionnaire, including gender, age, educational  
20  
21 background, overall nursing experience and ICU nursing experience, ii) two questions  
22  
23 inquiring about the specific nursing shift and day of the week when recordings were  
24  
25 made and iii) blank sheets for notes by the participants. The recordings took place  
26  
27 during an eight-hour shift in relation to one patient assigned to each participant.  
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29 Before commencement of data selection, the research team clarified that the  
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31 researchers did not explore whether participants' decisions were correct or not, but  
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33 were rather interested in the clinical thinking process.  
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39 In order to overcome the obstacle of the time delay between the making and recording  
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41 of decisions and to avoid loss of significant information, two alternative approaches to  
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43 data collection were selected including real time and real environment: the think-  
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45 aloud technique (Erickson & Simon 1993; Kushniruk 2001; Lundgren-Laine &  
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47 Salanterä 2010) or the completion of hand-written notes of the actions and thoughts of  
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49 nurses in ICU (Rycroft-Malone et al 2004). The think-aloud approach, that is the  
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51 simultaneous oral commentary and action, was not well accepted by participants, who  
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53 complained that narration delayed and restricted their actions. Thus, the decision was  
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55 made to use the manual hand-onto paper recordings of decisions and pertinent  
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3 considerations after completion of a judgment. All recordings were completed by  
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5 participants. The main researcher observed participants from a discreet distance and  
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7 reminded them to continue to record decisions.  
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### 10 **Data analysis**

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13 Diary entries were analyzed by content analysis. Two researchers read all the diaries  
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15 of decisions several times to familiarize themselves with the data therein. Coding and  
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17 categorizing were carried out independently. Frequent meetings were held to discuss  
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19 the findings and to achieve consensus when disagreements occurred. Whole diaries of  
20  
21 decisions were contemplated as units of analysis. Words and sentences were  
22  
23 considered as meaning units which encapsulate the conceptual content of the notes.  
24  
25 Codes were assigned to specific text excerpts that represented a decision. Then an  
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27 initial list of coding categories was generated. Although, there was no pre-specified  
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29 coding scheme, after an initial analysis, it became obvious that emerging coding  
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31 categories largely reflected processes as described in the nursing process theory.  
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33 Within the course of qualitative content analysis an additional dimension of codes  
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35 emerged inductively. These additional codes referred to attributes of decisions, such  
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37 as frequency, urgency and degree of dependence on medical orders and they spanned  
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39 all previous coding categories.  
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46 In addition, a quantitative analysis of demographic and professional  
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48 information data was employed. Moreover, the frequency with which specific  
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50 categories of decisions were recorded was computed along with the mean values and  
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52 standard deviations of the number of decisions per participant and per category using  
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54 the statistical package SPSS 17.  
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## FINDINGS

### Descriptive data

Completion of diaries of decisions took place during the course of seven morning, 11 evening and five night shifts during a period of 17 weekdays and six holidays. Participants' background as well as demographic and professional data are shown in Table 1.

### Categories of clinical decisions made by ICU nurses

Eight categories of decisions emerged from the data: evaluation decisions, prevention decisions, intervention decisions, patient communication decisions, clinical information seeking decisions, clinical priorities' setting decisions and communication with health care personnel decisions.

#### *1. Evaluation decisions*

Participants made several distinct decisions to evaluate patient specific parameters and data with minimum and maximum frequency of 4 to 37 decisions respectively per participant during an 8-hour shift and an average frequency of 14 ( $\pm 7,24$ ) evaluation decisions per participant per an 8-hour shift. Such evaluation decisions fell under the following three sub-categories:

- i) Assessment of physiological functions and symptoms (through taking vital signs, interpreting monitoring readings, use of clinical assessment scales and laboratory tests)*

Most decisions belonged to this sub-category. Assessment of pathological-physiological parameters of patients, included physiological functions such as respiratory ("I assessed breathing frequency"), cardiovascular ("I measured the blood

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3 *pressure*"), renal ("*I checked the current levels of urea, creatinine*"), digestive ("*I had*  
4 *to monitor the residual gastric content*"), acid-base balance ("*his gases were good in*  
5 *the morning*"), the balance of water and electrolytes ("*she needs fluids*" meaning {the  
6 patient is in negative fluid balance}, "*I checked the potassium*"), the neurological  
7 function and level of consciousness ("*he does not react to painful (stimuli)*"), pain ("*I*  
8 *asked (the patient) about the characteristics and intensity of the pain*"), sleep ("*The*  
9 *patient sleeps during daytime, probably after night with little or no sleep*") and  
10 pressure ulcers ("*the bedsores have spread*").

11  
12 Each participant recorded an average of 12 ( $\pm 6.17$ ) physiological assessment  
13 decisions with a minimum and maximum frequency of 3 and 33 decisions  
14 respectively. An interesting finding was that nurses rarely implemented physical  
15 examination techniques, such as auscultation or palpation (only four recordings).

#### 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 *ii) Assessment of effectiveness of therapeutic interventions*

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34 The evaluation of the appropriateness of therapeutic interventions, according to  
35 patient needs, was recorded several times ("*The patient needed an analgesic*" or "*the*  
36 *patient slept well*" or "*the patient needed endotracheal suctioning due to increased*  
37 *airway resistance*"). Participants recorded an average of 3( $\pm 2.43$ ) decisions of this  
38 sub-category with minimum and maximum frequency of 0 and 9 decisions per shift.  
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#### 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 *iii) Monitoring responses to therapy*

Response to treatment was found in entries, such as "*I administered extra fluids and*  
*rechecked the central venous pressure.*" "*After suctioning patient's secretions, his*  
*breath sounds were improved*" "*As the patient had not slept for one hour, I switched*  
*off the light to improve patient's comfort*", "*I reassessed the patient for pain within*



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3 half an hour to titrate IV analgesic". Participants recorded an average of 3 ( $\pm 1.67$ )  
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5 decisions with a minimum frequency of 1 and a maximum frequency of 6 relative  
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7 decisions respectively.  
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## 10 **2. Diagnosis decisions**

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Diagnosis decisions involved a process of interpreting signs and symptoms to reveal  
an underlying alteration in patient's pathology (the combination of "*thick urine, low  
central venous pressure and feeling thirsty*" were diagnosed as "*hypovolemia* "). The  
diagnoses made by nurses were mainly framed within a medical diagnosis context  
(*delirium* rather than cognitive and psychomotor impairment). Each nurse recorded 6  
( $\pm 6,76$ ) diagnoses on average with a minimum and maximum value of 1 to 35  
decisions per eight- hour shift. Diagnosis decisions were the fourth most common  
category of decisions made by nurses in ICU (10%). Diagnosis decisions included  
identification of respiratory disorders ("*tachypnoea*"), alterations of cardiovascular  
("*supraventricular tachycardia*"), renal ("*renal failure*") and gastrointestinal  
("*gastrointestinal bleeding*") function, disorders of fluid and acid-base balance  
("*acidosis*", "*hyperpotassemia*"), skin pathology ("*cutaneous candidiasis*", "*skin  
rash*"), infections ("*probable bacteraemia*") and pain ("*epigastric pain*").

## 3. Prevention decisions

Prevention decisions included i) identification of potential threats and ii) assessing  
the vulnerability of the patient to these threats, iii) identifying possible outcomes and  
iv) alternative plans to avoid the risk to each patient. Prevention decisions focused on  
preventing the transmission of infections ("*He is an active hepatitis C patient, so I  
must take protective measures*"), aspiration of gastric contents ("*The patient is in  
great risk for aspiration. He needs bed positioning > 30° to prevent aspiration*" ),

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3 development of pressure ulcers (*"I had to move patient's head in the middle position*  
4 *to relieve pressure"*), risk for obstruction of drainage devices and catheters (*"the*  
5 *patient requires frequent suction of his thick bronchial secretions to prevent*  
6 *obstruction of the endotracheal tube"*) and risk for falls (*"the patient was in a delirium*  
7 *and was likely to fall off the bed. So I had to move the bed rails for his protection"*).  
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14 Participants recorded 4 ( $\pm 2,76$ ) prevention decisions on average, with a minimum and  
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16 maximum value of 1 and 10 decisions per shift. Most prevention decisions led to  
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18 decisions to apply interventions to alleviate the threat to patient safety.  
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#### 20 21 22 **4. Intervention decisions** 23

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25 During the first phase of open coding, clinical intervention decisions were classified  
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27 according to the following pairs of alternative categories: i) decision to take action/  
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29 decision to take no action, ii) decisions independent of/dependent on medical orders,  
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31 iii) decisions based or not on scientific evidence (research data or clinical guidelines),  
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33 and iv) decisions made with or without patient's participation. These were ultimately  
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35 combined to one single category of interventions of intensive care nurses, which  
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37 represents 29% of total decisions made by ICU nurses, with a range of frequencies 1  
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39 to 37, and an average of 16 ( $\pm 8,41$ ) distinct intervention decisions per participant per  
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41 8-hour shift. No-action decisions that they were included instances where participants  
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43 recorded and acknowledged a problem (*"recording high temperature of 38.6"*)  
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45 nonetheless, they did not take any direct action to deal with it. Remarkably,  
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47 intervention decisions based on medical orders (*"administration of medication as per*  
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49 *the nursing log sheet"*, *"weaning from the ventilator following a medical order"*)  
50  
51 rarely seemed to be the result of reassessment of the patient. On the other hand  
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53 decisions for independent nursing interventions (*"care of stage 3 pressure ulcer,*  
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55 *changing of dressing and position"*) were actively made following evaluation of a  
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3 variety of data ("return to the care plan of the previous days" and "choice of a  
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5 suitable dressing from the existing ones" and "purulent secretion from the ulcer "and"  
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7 the area was exposed to moisture"). In two instances, it was recorded that the  
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9 intervention decision was supported by research evidence ("change in the connections  
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11 of the ventilator and the intravenous drug delivery devices according to the guidelines  
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13 of the CDC», «treating hyperglycaemia according to the insulin infusion protocol").  
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15 In several instances individualized patient-specific tolerances with regard to  
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17 physiological alterations were taken into account ("A 120 pulse was normal for this  
18  
19 patient"), without any choice of action being documented. Few decisions were guided  
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21 by the preferences of the patient themselves ("I connected the T-Piece with a  
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23 capnograph for monitoring because of the patient's refusal for arterial blood gas  
24  
25 sampling and measuring of PCO<sub>2</sub>»). Most were made solely by the nurse ("change  
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27 position due to abdominal bloating and explain to patient why he should remain in  
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29 that position") and by following physicians' orders ("giving extra potassium following  
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31 doctor's orders").  
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### 37 **5. Patient and family communication decisions**

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40 Communication decisions made up a separate group of clinical decisions which  
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42 reflected patients' participation in their care. Participants recorded 0 to 6  
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44 communication decisions (mean 1 ± 1,53), when the condition of the patient allowed  
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46 communication during their working hours. It was found that these decisions were the  
47  
48 least frequent (2%) and focused on giving instructions to patients and their relatives  
49  
50 about matters of care ("informing the patient about the need to take fluids  
51  
52 intravenously rather than by the mouth", "informing the relatives about the patient  
53  
54 leaving ICU", "informing the relatives about their obligations towards the Blood  
55  
56 Transfusion Department.").

### ***6. Patient information seeking decisions***

Decisions to seek details about patients' background data, medical history, progress notes, warnings about any allergies or infectious diseases and ICU hand-off reports were classified in a separate category. Participants made 1-5 decisions to obtain additional information (an average of  $1,5 \pm 1,53$  searches per eight-hour shift per participant), which corresponds to 3% of the total recorded decisions in ICU. The main sources of additional information were oral and written reports of nurses (50%) and physicians (32%) rather than the results of laboratory and imaging tests (14%) and literature research data from print and electronic sources (4%).

### ***7. Priority setting decisions***

Participants, in many cases, prioritized individual activities but the criteria employed to determine the sequence of actions were not clear. Data show that prioritization was probably driven mainly by the need for effective management of nurses' time. Although decisions on setting priorities made up 17% of all nursing decisions (mean  $9,74 \pm 5,94$ , range 0 to 24 decisions), approaches to setting priorities were not clear (e.g., from the most important to the least important, from the very strenuous to the less strenuous or vice versa). The only clear finding that did emerge was that when two actions had to take place at the same time, the urgent one took precedence ("*Start with the correction of hypoxemia by increasing oxygen in the ventilator and call the doctor on call later*").

### ***8. Communication with health care personnel (HCP) decisions***

Participants recorded several decisions to inform other ICU colleagues about a patient's condition and issues of continuity of care within the context of achieving

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3 collaboration ("As they were concerned, we increased the analgesic slightly. The  
4 patient responded well. I informed the doctor during his visit so that he would not  
5 lower the dose of the painkiller"). Decisions of this type were made by the  
6 participants at an average rate of 3,7 ( $\pm$  2,87) per 8-hour shift.  
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16 **Ranking and classification according to additional decision attributes**  
17 **(frequency, urgency, independence)**  
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21 *i. Ranking in order of frequency*  
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24 Nurses' clinical decisions were classified in descending order of frequency (Table 2).  
25 The most frequent decisions regarded "interventions" (29%) and the less frequent  
26 "communication with patient and family" (2%).  
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31 *ii. Ranking in order of degree of urgency*  
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34 The categorization of clinical decisions as urgent/non-urgent was based on i) the need  
35 for rapid intervention, and ii) how threatening the condition was for the patient (Table  
36 3). Non-urgent decisions were 78% of the total nursing decisions in this study. With  
37 regard to intervention decisions, evaluation decisions, priority setting decisions,  
38 patient information seeking decisions and communication with HCP decisions, the  
39 percentages of non-urgent were three times higher than the percentages of urgent  
40 ones. With regard to diagnostic decisions the percentages of urgent and non-urgent  
41 decisions were almost equal (46% and 54% respectively). Nonetheless, in the  
42 category "prevention" and "patient communication" urgent decisions comprised only  
43 a small fraction of total decisions (3% and 4% respectively).  
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3 *iii Classification according to degree of independence/dependence on medical*  
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5 *orders*  
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8 Clinical decisions were further classified as independent or dependent on medical  
9 orders (table 4). Approximately 40% of nursing intervention decisions made were  
10 triggered by a medical order, while the remaining 60% were independent. The  
11 majority of clinical decisions made independently related to basic nurse care tasks  
12 (22%) (hygiene, changing of position, looking after ulcers, changing of dressings),  
13 titration of infusion of medication based on a patient's clinical picture (37%), change  
14 in mechanical ventilation parameters (6%) and renal replacement therapy (2%).  
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27 **DISCUSSION**  
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30 Based on these findings, intensive care nurses in Greek hospitals appear to make  
31 clinical decisions of similar scope as those reported in the international literature  
32 (Corley et al 2009; Rose et al 2008; Holtzdaw 1998; Helmrich et al 2001; Dubose et  
33 al 2009; Hijahi et al 2005; Thomas et al 2006; Nelson et al 2006). The frequency of  
34 decisions recorded in this study was lower compared to a previous research report in  
35 intensive care nurses. Specifically, one decision every thirty seconds was reported by  
36 Bucknall (2000) compared to only 56 decisions per 8-hour shift per participant in our  
37 study. Detailed recording in conjunction with observation conducted in Bucknall's  
38 (2000) study is likely to outweigh written self-reporting diaries, because of the richer  
39 content of speech information.  
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53 Decisions pertaining to the emotional responses and psychosocial well- being  
54 of patients and families were almost absent in contrast to previous reports (Titler et al  
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3 1991; Nelson et al 2005). Moreover, although in many cases, clinical decisions made  
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5 by participants were individualized to specific patients, as reported by others too  
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7 (Klein 1989), these could not be regarded as patient-centred decisions, because of  
8  
9 minimal patient input to care decisions. Such failure to involve patients in their own  
10  
11 care may be due to the dominance of the biomedical paradigm in the ICU culture.  
12  
13 Such medicalized culture may lead nurses to construct representations of disease  
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15 reproducing the basic principles of medical science, which is centred more on the  
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17 disease, rather than human responses and care (Alexias 2001). This is in line with the  
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19 finding that almost all diagnostic decisions made by nurses were medical diagnoses,  
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21 whereas, they seem to make almost no use of nursing diagnoses of patients'  
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23 responses. Nonetheless, despite the aforementioned indications of a dominant  
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25 biomedical paradigm, Greek ICU nurses appeared to make fewer decisions related to  
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27 physical assessment findings. The low implementation of physical examination  
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29 techniques to aid clinical judgements is worth exploring and it may imply that Greek  
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31 ICU nurses are constrained within the boundaries of a conventional and obsolete  
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33 professional role. Within such traditional constraints, physical assessments and the  
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35 ensuing clinical decisions are viewed as belonging to the domain of medicine.  
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41 This study showed that nurses' clinical reasoning was in line with the stages of  
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43 the nursing process. Nonetheless, participants were most likely unaware that their  
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45 clinical judgements corresponded to the nursing process, since the latter is not  
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47 formally employed in Greek ICUs. The nursing process analytical method constitutes  
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49 a scientific problem solving technique with multiple causal relationships at every  
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51 stage of the process, requiring completion of one step before starting the next, dealing  
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53 with one problem at a time and the conscious transition from one stage to another  
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55 (Wilkinson 1996). However, the process of clinical judgement employed by the  
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3 participants did not appear to be linear. In this investigation as well as in other  
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5 international reports, experienced ICU nurses appeared to approach clinical problems  
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7 by a dual process and make their clinical decisions using a combination of analytical  
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9 thinking and intuition (Klein 1989, Aitken & Mardegan 2000).  
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12 The range of clinical decisions made by intensive care nurses in this study was  
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14 indicative of critical thinking skills and of reflective, inductive and productive  
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16 thinking and rational evaluation. However, critical thinking, may "blocked" when  
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18 nurses' judgments are viewed as dependent on medical orders. Based on these  
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20 findings, it appears that when nurses were faced with doctors' decisions, they  
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22 suspended the process of evaluating clinical information. When carrying out medical  
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24 orders nurses may be hindered to exercise their best judgment to reach valid  
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26 conclusions, since, on the one hand, they may feel that their accountability is limited  
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28 and on the other hand, medical orders may provide them with a firm foundation when  
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30 acting in a tight time-frame (Benner et al 2008). Nonetheless, the likely case of nurses  
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32 accepting the traditional authority of physicians with a collective sense of a "learned  
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34 inability" (Patiraki-Kourbani 2003) in the absence of decisional autonomy (Fagin &  
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36 Garelick 2004) cannot be excluded. Indeed, previous studies have shown low  
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38 decisional and low overall autonomy in Greek ICU nurses compared to other  
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40 European ICU nurses (Papathanassoglou et al 2005; 2012).  
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47 Furthermore, the present study showed that the tendency of intensive care  
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49 nurses to support their decisions with research data and scientific evidence is limited,  
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51 which is a finding consistent with the gap between theory and practice recorded in  
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53 previous studies (Parahoo 2000). In this study, nurses appeared to rely mainly on  
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55 interpersonal sources of information and patient records, which is in line with the  
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57 results of other ethnographic studies (McKnight 2006).  
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3 The findings of this study show that intensive care nurses do not communicate  
4 effectively with patients in ICU, except when handling procedural matters. Other  
5 researchers have reached similar conclusions about the serious lack of communication  
6 between nurses and patients (Papathanassoglou et al 2005). Instead intensive care  
7 nurses appear to communicate with their patients mainly with regard to administrative  
8 activities or operational tasks (Crotty 1985). This may be partially explained by  
9 considering that the majority of Greek nurses are graduates of technically- and not  
10 theory-oriented curricula nursing programmes (Papathanassoglou et al 2005).  
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21 The lack of communication seems to extend among the members of the ICU  
22 team since decisions to communicate with other HCP were scarce compared to the  
23 volume of information managed in such a complex clinical environment. The  
24 relatively low incidence of HCP communication decisions may imply either that i)  
25 nurses function in a mechanistic framework where each employee is acting in  
26 isolation, or ii) that they are under a complex system where each nurse "filters" the  
27 information and only transmits the important messages or unresolved issues to the  
28 rest, or iii) that the context of vertical information flow is not conducive to an  
29 interactive discussion about the patient, but rather the traditional transposition of  
30 medical orders from the physician to the nurse and "major" comments from the nurse  
31 to physician (Colon-Emerick et al 2006). Nonetheless, the grounds for the scarce  
32 communication decisions with other HCP are still unclear. In some cases, this appears  
33 to limit the nurse in the formal implementation of medical orders, whereas, in other  
34 cases nurses intervene directly to manage a clinical problem. It needs to be noted that  
35 the titration of pharmacological agents, adjustments of ventilator settings and  
36 autonomous management of renal dialysis are performed by nurses in Greek ICUs  
37 unofficially, since the legislative framework for the scope of nursing practice is  
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3 obsolete and does not include provisions for such interventions (Papathanassoglou et  
4 al 2005). Therefore, Greek ICU nurses may perform such tasks either within the  
5 context of a rapidly changing clinical situation or by delegation of tasks by physicians  
6 (Papathanassoglou et al 2005).  
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12 Although through this research, the researchers used qualitative approach to  
13 improve understanding of nurses' decision in critical care natural settings, the use of  
14 "diary of decisions" may have compromised the richness of the data obtained, since  
15 during the process of recording, participants had the opportunity to reflect on and to  
16 probably filter their recorded decisions. Moreover, although these results cannot be  
17 deemed representative of the entire ICU nurses' population due to qualitative nature  
18 of the design, they may portray just about accurately the types of clinical ICU nurses'  
19 decisions, since the selection of participants was based on their rich experience and  
20 the recordings were made at three different major ICUs.  
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## 37 CONCLUSIONS

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39 Clinical decisions made by ICU nurses appear to span a wide array of judgments and  
40 are basically consistent with the stages of the nursing process. Although nurses  
41 individualized their decisions by taking into account patient-specific data, they  
42 scarcely allowed patients to participate in and guide their care. Diagnostic decisions  
43 mainly involved medical diagnoses, whereas use of nursing diagnoses was almost  
44 absent. Moreover, ICU nurses in this study rarely made decisions regarding matters of  
45 psychosocial care for either patients or families. Furthermore, decisions relating to  
46 physical assessment findings were very scarce, whereas decisions independent of  
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3 medical orders often seemed to be made without assessing the reliability of the  
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5 medical order.  
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### 10 11 **Implications for practice** 12

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14 Although, within the course of critical care, clinical nursing decisions are ample and  
15 they affect patient outcomes significantly, in the ICU of the present study, they are not  
16 recorded in a systemic way in order to fully reflect and adequately document nursing  
17 care. The establishment of written care plans in all ICUs will facilitate a systematic  
18 approach to care, as well as documented, scientific and legally accountable nursing  
19 practice. Moreover, based on these results, ICU nurses need to claim tasks such as  
20 physical assessment, assessment of emotional responses and psychological support  
21 and nursing diagnosis as integral parts of nursing care. Active continuing education of  
22 nursing personnel on these issues could aid this process. Further, most often it seems  
23 that patients and their family are led to adopt passive roles and accept nursing  
24 authority. Hence, one big challenge for ICU nursing is to redefine the concepts of  
25 holistic and patient-centred care. An important consideration for future research  
26 would be to develop a quantitative tool based on the findings of qualitative studies, so  
27 that nurses' clinical decisions can be surveyed and compared among different clinical  
28 settings and countries.  
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**WHAT IS KNOWN ABOUT THE TOPIC**

- Clinical decision-making is an integral part of nursing care in critical care settings
- ICU nurses' clinical decisions affect patient outcomes, quality and safety of care, as well as they involve commitment of large amounts of nursing time, effort and resources.

**WHAT THIS PAPER ADDS**

- An ICU-specific typology of critical care nurses' clinical decisions.
- A framework for evaluating and comparing nursing clinical decisions from different critical care environments.
- Qualitative and quantitative data about different types of clinical decisions, providing a better understanding of the dominant scientific paradigm of critical care nursing, the organizational culture of ICUs, nurses' perceptions of their clinical role and their professional autonomy.

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**Table 1: Participants' demographic, background and professional data**

Attribute	
Age (years): mean $\pm$ SD	33,6 $\pm$ 2,58 (range:28-42)
Men/ Women (n)	6/17
University / Technological Education (n)	6/17
Postgraduate studies (n)	16
<i>Nursing specialty certificate</i>	1
<i>Masters in Nursing</i>	15
Total clinical experience (years): mean $\pm$ SD	10 $\pm$ 2,79 (range: 6-15)
Experience in ICU (years) ): mean $\pm$ SD	6,26 $\pm$ 2,32 (range: 2.5-12)

**Table 2: Classification of clinical nursing decisions in descending order of frequency**

Type of decisions		Percentage	
Intervention decisions		29%	
Evaluation decisions	Assessment of physiological functions and symptoms	25%	17.5%
	Assessment of effectiveness of therapeutic interventions		3.75%
	Monitoring responses to therapy		3.75%
Priority setting decisions		17%	
Diagnosis decisions		10%	

Communication with other HCP decisions	7%
Prevention decisions	7%
Patient information seeking decisions	3%
Patient and family communication decisions	2%

**Table 3. Classification of clinical nursing decisions according to time priority**

<b>Urgent Decisions</b>	<b>%</b>	<b>Examples</b>	<b>Non-urgent decisions</b>	<b>%</b>	<b>Examples</b>
<b>Interventions</b>	25%	Commencement of Cardiopulmonary Resuscitation	<b>Interventions</b>	75%	Pressure ulcer care and treatment
<b>Priority setting</b>	25%	Start correcting hypoxemia and subsequently call the doctor on call	<b>Priority setting</b>	75%	Training of patient's relatives in feeding their patient with tracheostomy
<b>Evaluation</b>	25%	Evaluation of Vital Signs	<b>Evaluation</b>	75%	Pressure ulcer risk assessment
<b>Prevention</b>	3%	Restraining measures in patients with agitation	<b>Prevention</b>	97%	Precautions to prevent MRSA cross infection

<b>Communication with other HCP</b>	25%	Emergency call for an unplanned extubation	<b>Communication with other HCP</b>	75%	Report on an unplanned nasogastric tube removal
<b>Diagnoses</b>	46%	Identification of ventricular tachycardia	<b>Diagnoses</b>	54%	Pressure ulcer staging
<b>Patient and family communication</b>	4%	Informing relatives about patient's discharge from ICU	<b>Patient and family communication</b>	96%	Informing relatives about hospital policies related to blood transfusion for their patient
<b>Patient information seeking</b>	25%	Search for information on blood type and Rhesus compatibility before a blood transfusion	<b>Patient information seeking</b>	75%	Seeking information from patient's medical record

**Table 4. Classification of nursing clinical decisions in intensive care units according to level of independence**

<b>Independent Decisions</b>	<b>%</b>	<b>Examples</b>	<b>Dependent Decisions</b>	<b>%</b>	<b>Examples</b>
<b>Interventions</b>	60%	Patient bed positioning	<b>Interventions</b>	40%	Correction of electrolytic disorders

<b>Priority setting</b>	83%	Secretion control before ventilator weaning	<b>Priority setting</b>	17%	Commencing weaning from a ventilator
<b>Evaluation</b>	91%	Pressure ulcer staging	<b>Evaluation</b>	9%	Measuring parameters of patient's hemodynamic profile
<b>Prevention</b>	82%	Universal precautions for infection control	<b>Prevention</b>	18%	Transferring patients colonized or infected with multi-resistant bacteria to isolation
<b>Communication with other HCP</b>	50%	Handover report to nurse on the next shift about patient's clinical condition	<b>Communication with other HCP</b>	50%	Informing physiotherapists on patient's mobility
<b>Diagnoses</b>	97%	Impaired gas exchange diagnosis	<b>Diagnoses</b>	3%	Diagnosing of decreased cardiac output
<b>Patient and family communication</b>	96%	Informing a patient's relatives about ICU's visitation hours	<b>Patient and family communication</b>	4%	Informing the relatives about patient's discharge from ICU

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<b>Patient information seeking</b>	46%	Literature review of clinical guidelines in regard to regulating blood sugar with continuous intravenous insulin infusion	<b>Patient information seeking</b>	54%	Searching information from medical records or attending physicians
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For Review Only