

## Design and Evaluation of the “Preparation Course for New Entrant Assistants” on the Awareness and Skills of Newly Arrived Surgery Resident

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### Abstract

**Background:** Beginning of assistance course is associated with anxiety. This due to unfamiliarity with the assistance and insufficient training, knowledge, and required skills. The aims of this study were to design, implement and evaluate the effects of a period of 1-month as “preparation course for new entrant assistants” on the awareness and skills of newly arrived residents.

**Methods:** 12 newly arrived assistant student were divided into two equal groups. Some steps such as understanding the environment and legislation, education about an emergency, and dealing with patients and also, suturing, chest tube insertion, and cut down skills were passed by the first group before starting the assistance course. The second group was entered in the assistance course without this preparation course. For performance evaluation and comparison of these two groups, four questionnaires were created and filled consequently before the entrance, at the end of the 2<sup>nd</sup> month, based on direct observation of procedural skills (DOPS) exam, and at the end of 6<sup>th</sup> month.

**Results:** There were no significant differences between two groups at the beginning of the study ( $P < 0.05$ ). At the end of the 2<sup>nd</sup> month, the first group had better performance in understanding the environment, patient examination, diagnosis and emergency skills in comparison to the second group ( $P < 0.05$ ). Based on the DOPS score, the first group had significantly better performance ( $P < 0.05$ ) except in performing cut-down ( $P > 0.05$ ). Also procedure, the first group was better than the second group just in the consensus of the procedure ( $P < 0.05$ ). Finally, at the end of the 6<sup>th</sup> month, the difference between two groups was becoming lower, and supervisors believed that after additional 3 months, this difference would be lost.

**Conclusions:** Conducting a 1-month period of preparation for new entrant assistants can be useful in increasing awareness, understanding the environment, performance, the knowledge of the theory and how to deal with patients as well as increase their skills in performing the expected procedures.

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### Introduction

The transition from medical school to residency period presents many unavoidable and unpredictable challenges. As shown that medical students experience anxiety at the prospect of entering the clinical education years (1), also new entrant assistants often have high anxiety about the execution of technical skills (2). On the other hand, surgical residents often

begin their internship with a widely variable fund of prerequisite knowledge and skills necessary for appropriate patient care. Some educational directors identified a lack of medical knowledge would be maximum make point of incoming interns (3). Addressing these anxieties through additional skills instruction during internship has been shown to ease the transition from medical school to residency (4). This is true in the case of newly arrived surgery

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residents, because the transition from medical student to surgery internship can be stressful, and has potentially negative consequences for both interns and patients (5). The causes of this stress are taking primary responsibility for patient care, excessive workload, sleep deprivation, and personal stressors in addition to the lack of appropriate preparation course (6,7).

Orientation to clinical skills is often “on the job” and requires a steep learning curve in the first few weeks or months of each new training year (8). Limitations on the resident’s work hours, safer training and less reliance on humans as training models, and economic pressures to more efficient use of operating room time cause shifting resident education away from the operating room (2,9,10). Therefore, need for a preparative course before entrance of resident in the assistance course is highly sensed. Flexible curriculum seems effective in education and training during residency to improve skills and medical knowledge (11).

We hypothesized that even a very brief course would help alleviate the anxiety and improve the performance of new entrant surgical residents. Therefore, the purpose of this study was to determine the effect of short 1-month preparative course on surgery residents’ perception of confidence, performance, and proficiency. We chose the incoming 1<sup>st</sup> year surgical residents as our initial target group.

## Materials and Methods

### *Brief description of the course*

The Department of Surgery affiliated to Shiraz University of Medical Sciences teaches a short course “preparation course for new entrant assistants (PCNEA)” prior to the entrance of residency in 2014. This 4 weeks elective course which was held at the Department of Surgery and was targeted to new entrant assistants consisted of nine theoretical and four skills-specific sessions (Table 1).

### *Participants, implementation and evaluation of the PCNEA*

About 12 new entrant surgery resident was enrolled in this study. Six of them participated in the workshop,

1-month before entering the residency course (PCNEA approved). Other six resident started the residency course with the first group without passing the PCNEA (not-PCNEA approved). For performance evaluation and comparison of these two groups, four questionnaires were designed. The first questionnaire was about familiarity with the laws, sections, emergency and skill in performing the procedures and filled by themselves before entrance to the PCNEA. The second questionnaire was filled by their supervisors at the end of 2<sup>nd</sup> month and it was about understanding the environment, knowledge of the tasks, the expertise, skill, and ability to deal with the patient. At the end of the 6<sup>th</sup> month, performing of history taking from emergency or/and trauma patients, cut down and inserting of chest tube were assessed based direct observation of procedural skills (DOPS) exam. Finally, environmental awareness, knowledge, and ability to perform procedures were assessed by senior assistants or supervisors at the end of 6<sup>th</sup> month (Table 2).

The outcome of interest is the total scores of performance. All scores were presented as mean  $\pm$  standard deviation and were analyzed by Mann–Whitney U-test using SPSS for windows (version 20; IBM Corp., Armonk, NY, USA). The  $P < 0.05$  was considered as the significant statistical difference.

## Results

The obtained scores from filled questionnaire are presented in table 3. Although the score of six questions of questionnaire 1 in PCNEA approved group was higher than not-PCNEA approved group, and this demonstrated a lower level of primary expertise, but these differences were no significant ( $P > 0.05$ ). As demonstrated in table 3 in part of questionnaire 2, after 2 months, the mean of scores in all questions except Q5-8 were lower in the PCNEA approved group than not-PCNEA approved group. Approximately, all of these differences were statistically significant ( $P < 0.05$ ) except Q5 and Q8, which were about the emergency condition and PCNEA value.

**Table 1.** Brief review of PCNEA

Theoretical sessions	Skill specific sessions
Friendly meeting with arrived residents	Suturing
Educational and administrative rules stated in sections	Chest tube insertion
Describes the of 1 <sup>st</sup> year residents responsibilities	Cut down
Brief introduction of hospital and departments	Cricothyroidectomy
How to deal with patients	
Emergency training courses	
How to deal with traumatic patients (trauma training at ABC)	
How to deal with acute abdomen patients	
How to manage patients before operation	

PCNEA: Preparation course for new entrant assistants

## Preparation Course for New Entrant Assistants

**Table 2.** Survey questionnaires and their related questions

<b>Residents were evaluated in four steps according to the following questions</b>	
Questionnaire 1	
Q1: Understanding the environment	
Q2: Understanding the law	
Q3: Understanding the sections	
Q4: Experience working in surgery emergency previously	
Q5: Chest tube insertion	
Q6: Cut down performing	
Questionnaire 2	
Q1: Passing the PCNEA	
Q2: Having problems in understanding the environment	
Q3: Delaying time for understanding the environment	
Q4: Delaying time for orientation	
Q5: Experience in patients examination and emergency condition	
Q6: Experience in chest tube insertion	
Q7: Experience in cut down performing	
Q8: PCNEA value	
Q9: Understanding the residency rules	
Questionnaire 3	
Q1: Indication and contraindication of procedure performing	
Q2: Ability to procedure performing	
Q3: Quality of procedure performing	
Q4: Overall performance	
Questionnaire 4 (between two groups)	
Q1: Understanding the environment in entering	
Q2: Currently understanding the environment	
Q3: Theoretical knowledge of surgery and dealing with patients in entering	
Q4: Currently theoretical knowledge of surgery and dealing with patients	
Q5: Performing the procedures in entering	
Q6: Currently performing the procedures	
Q7: Time needed for similarity in understanding the environment	
Q8: Time needed for similarity in theoretical knowledge of surgery and dealing with patients	
Q9: Time needed for similarity in performing the procedures	

PCNEA: Preparation course for new entrant assistants

**Table 3.** Comparison of scores mean which obtained in survey questionnaire 1 and 2

	<b>PCNEA approved</b>	<b>Not-PCNEA approved</b>	<b>P-value</b>
Questionnaire 1			
Q1	4.00	3.16	0.34
Q2	4.33	3.83	0.46
Q3	4.16	3.83	0.54
Q4	3.66	2.50	0.17
Q5	4.00	3.33	0.27
Q6	3.50	3.33	1.00
Questionnaire 2			
Q1	1.00	2.00	0.001
Q2	1.16	4.00	0.003
Q3	1.00	4.00	0.002
Q4	1.33	4.33	0.003
Q5	3.66	2.83	0.23
Q6	4.00	2.50	0.03
Q7	4.16	2.16	0.01
Q8	1.66	1.33	0.46
Q9	1.66	3.66	0.01

PCNEA: Preparation course for new entrant assistants

For better evaluation and comparison of two groups, knowledge and performance of them in chest tube and cut down were assessed by DOPS exam. As presented in table 4, the PCNEA approved group showed

significantly better indication and contraindication of procedure performing, ability to procedure performing and overall performance in chest tube and ability to procedure performing in cut down ( $P < 0.05$ ).

**Table 4.** Comparison of scores mean which obtained in survey questionnaire about chest tube and cut down procedures

Questionnaire 3 (DOPS exam)	PCNEA approved	Not-PCNEA approved	P-value
Chest tube			
Q1	1.33	2.66	0.04
Q2	1.33	3.00	0.02
Q3	2.00	3.16	0.14
Q4	1.66	3.50	0.03
Cut down			
Q1	1.50	2.50	0.07
Q2	1.66	3.00	0.03
Q3	1.66	2.83	0.08
Q4	2.00	2.83	0.15

PCNEA: Preparation course for new entrant assistants, DOPS: Direct observation of procedural skills

Finally, based on the answers to the questions of the questionnaire 4, differences in the entering time were high to moderate and after 6 month were moderate to no differences. Furthermore, requiring time for similarity in understanding the environment, theoretical knowledge of surgery and performing the procedures were 2, 3, and 3 months.

## Discussion

This study design and evaluate the effect of a short-term preparation course on the performance and knowledge of new entrant surgery residents. We have shown that although there were no significant differences between PCNEA and not-PCNEA approved groups in the beginning of the residency course, but after 6 month the difference in performance, skill and knowledge were significant.

Learning the skills necessary to be a fully trained and competent physician takes time and effort, both on the part of educational programs and the learners (12). In addition, surgical interns often have high anxiety about the execution of technical skills. Addressing these anxieties through additional skills instruction during internship has been shown to ease the transition from medical school to residency (4). We found that PCNEA enabled new entrant residents to learn some skills, including better performing of chest tube and cut down procedures echoing previous studies which conducted approximately similar courses (2,6-9,13).

Boehler and colleagues (7) designed and evaluated a 1-month course for graduate surgical education. In their course, the major elements included faculty- and resident-facilitated case-based sessions. In addition, the students participated in skills laboratory experiences, intensive care unit rounds, and mock interviews and clinical pages. They concluded that a 1-month senior medical student course believed to be essential for all surgical interns. However, their study had two major limitations in comparison with our study. First, only the comments of assistants were the base of judgment and second; the evaluation was limited to the end of the course.

In another study, a 3 weeks surgical skills lab

elective course that enrolled senior medical students applying to surgical residency programs was designed by Peyre and colleagues (2). The purposes of their course were improving surgical skills and control of anxiety and confusion surgical internship. They found that a focused skills lab elective during medical school can bridge the gap and improve confidence prior to internship. This study is very similar to our study in design and implementation except in confidence evaluation. However, designs of both studies can be used together for creation of other complementary course and for conclusion about the beneficial effects of similar preparative courses.

In another recent study, the usefulness of the Fundamentals of Surgery Curriculum (FSC) as a knowledge preparatory tool for incoming surgery interns were evaluated. Their results showed the FSC was a useful preparatory tackle for surgery interns before starting internship; but, this benefit might not extended to the American Board of Surgery In-Training Examination scores (3). In addition, Zeng et al. (14), in 2010 found that 4<sup>th</sup> year medical students planning a surgical career improved suturing and knot tying skills, self-reported comfort, and knowledge via a 7 weeks (21 contact hours) preparatory course. Similar preparative and educative courses were conducted in other targeted groups. For instance, a training program using a structured approach to patient assessment and management for ICU nurses was designed and delivered. Significant improving in their knowledge was highly noticeable in the participants (15).

In conclusion, our findings demonstrated that performing this short-term preparation course for new entering surgical internship results in a higher perception of preparedness and improved skills performance. This study's results add to the literature about the effectiveness of curricula to train new entrant surgery residents. However, our study suffers from one limitation. It is largely due to a limited number of participants. The small size of the study and few numbers of surgery residents prevents an adequate evaluation of the effectiveness of this short time preparation course.

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