

## CPR Education before Internship

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### Abstract

**Background and purpose:** The importance of training basic and advanced life support for undergraduates and graduated physicians are now widely recognized. Graduates of medical schools in

Iran immediately get license to practice medicine without any supervision. Therefore, Clarification of the best phases for training CPR and the optimum mastery level in each phase is very important. This study is an attempt to find out the ideas of stakeholders about training CPR before internship, the experience needed at the beginning of internship, the best phase for training it and the assessment method.

**Methods:** It is a survey study designed in Isfahan University of Medical Sciences to investigate the opinions of head-nurses, interns, residents and educational directors (in ten clinical departments/wards) about training CPR before internship. Respondents completed self administered anonymous questionnaires. The questionnaires' items covered opinions of respondents about CPR as interns' duty, level of experience; best course for training and the assessment method. Meanwhile, views of participants were compared against educational directors' idea by Fisher exact test.

**Results:** 32 head-nurse, 285 interns, 13 resident and 15 educational directors participated in the study and all agreed with CPR as interns' duty in all clinical wards. Although, directors had different idea about level of experience for CPR to be achieved by interns, residents suggested level 3 of experience. According to the results externship is the best phase for CPR training and combination of observation and OSCE suggested as the best assessment method.

**Conclusion:** To prepare the graduates achieving full competency in CPR performance, it is needed to implement training programs before internship. Internship is the best phase for getting expertise in CPR. Based on the results CPR considered as interns' responsibility and medical schools should feel confidence about the competency of interns in CPR at the beginning of internship.

**Keywords:** CARDIOPULMONARY RESUSCITATION/EDUCATION, EDUCATIONAL MEASUREMENT SCHOOLS, MEDICAL STUDENTS, MEDICAL

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### Introduction

Cardiopulmonary resuscitation (CPR) training for undergraduate medical students and junior doctors has been a subject of considerable interest for some time (1). Junior doctors perceive performing cardiopulmonary resuscitation (CPR) as a stressful experience and many feel inadequately trained for the task

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(2). Many studies have shown poor levels of CPR training for junior doctors and consequently a low standard of CPR skills in medical students and newly qualified doctors (1, 3). This may be because retention of skills declines months after CPR training (3 -7). According to a study, monthly updates in cardiopulmonary resuscitation are suggested to maintain knowledge and skill in physicians (3). Meanwhile, many deaths from cardiopulmonary arrest can be prevented by the prompt and effective administration of cardiopulmonary resuscitation (CPR) (8).

General physician training program in Isfahan University of Medical Sciences is composed of five phases: basic sciences, introduction to clinical medicine (ICM) clerkship, externship and internship. Each phase aimed at preparing trainees for entering the next phase. Considering the great importance of CPR to be implemented in the undergraduate curriculum and its necessity for graduates to be competent to manage a patient who needs advanced life support; pre-internship phases may be the best time to begin CPR training and internship is the period for students to get expertise in resuscitation. On the other hand, medical school graduates in Iran are eligible to practice medicine by their own (even in emergency departments) without any supervision. Therefore, all doctors who are eligible to practice by their own should be competent to perform basic life support and regular practice is required to maintain practical CPR psychomotor skills and would suggest that monthly intervals are appropriate (3).

In UK it is suggested that CPR competence be examined at both undergraduate and postgraduate examinations and all graduates who are licensed to manage patients should be competent to perform basic life support as a minimum requirement (3).

Although, many studies emphasis on training CPR in under- and postgraduates programs (6, 7,9,10), the level of competency needed at undergraduate levels is less clarified.

The propose of this study is investigating the opinion of different stakeholders about cardiopulmonary resuscitation training in pre-internship courses, the level of competency

needed by interns at the beginning of internship, and the most appropriate phase for training CPR.

## Materials and Methods

It is a survey study devised to determine the views of stakeholders about CPR training in pre-internship course. Head-nurses, interns, residents and educational directors were surveyed in ten clinical wards in Isfahan University of Medical Sciences including: anesthesiology, internal medicine, surgery, orthopedics, urology, infectious disease, neurology, obstetrics and gynecology, pediatrics and neurosurgery.

Questionnaires designed for data gathering (Table1). Two experts were asked to determine its content and face validity. The reliability of interns' questionnaire was determined (alpha cronbach=0/81). All respondents could complete the questionnaire anonymously. Proportions of respondents' opinion about CPR as interns' duty were tested against educational directors' idea by Fisher exact test and a P-value <0.01, was considered statistically significant. The researcher interviewed all people included in the study and asked them to complete the questionnaires.

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surveyed in one month rotation. The study was extended to two months if less than ten interns were introduced to each ward by education office monthly. Interns acquired to determine if they believe CPR as their own duty and whether

**Table 1.** Heading row of questionnaires

Interns questionnaire	My duty		Not my duty			
			I am obliged to perform		I need to know how to perform	
	Yes	No	Yes	No	Yes	No
Head-nurse questionnaire	It should be considered as interns' duty		It is suggested to be learned by interns			
	Yes	No	Yes	No	Yes	No
Residents' questionnaire	It should be considered as interns' duty		Level of experience			
	Yes	No	1-4			
Educational directors' questionnaire	It should be considered as interns' duty		Level of experience		Level of experience	
	Yes	No	1-4		1-5	

Head nurse is a graduate from nursing school (either bachelor or master degree) and is assigned as nurse administrator for a given clinical ward by nursing office in each hospital. All head-nurses in major teaching hospitals affiliated to Esfahan University of Medical Sciences (AI Zahra, Noor and Kashani Hospitals) were included in the study.

Head-nurses were asked to determine if they believe CPR is interns' duty.

Intern is a medical student who successfully passed comprehensive pre-internship exam and is assigned to work and practice in each clinical ward. In the present study they should have worked for at least 1 week in the rotation under survey. All interns in each specific rotation were asked to indicate: first, if they assume CPR as their duty.

Then, in the case that they do not believe CPR as their duty, they should determine whether they were asked to do it or not. Finally, they were asked if they perceive need for competency in CPR when the skill is not believed as their duty and there is no obligation to do it. Name of hospital that interns practice in it and their sex is also asked in the questionnaires. All interns were

they do not consider it as duty they are either obliged to perform it or they need to know how to perform it. Included Resident in the study is one of the residents in each specialty who has been assigned by the head or council of department as the coordinator for interns. They should have at least two years experience as a general physician. If the resident assigned as coordinator did not have any experience as a general physician, another experienced one is also included in the study. Residents were asked to indicate the most advanced level of experience interns should have at the beginning of internship rotation (0=familiarity with it is not needed; 1=has observed the procedure upon performing; 2=perfumed it once while being observed; 3=perfumed it a few times while being observed; 4 =perfumed it independently without being observed).

Educational director is a faculty member who had the broadest, most comprehensive involvement with planning and monitoring their undergraduate medical education curricula. Educational directors were surveyed as residents. In addition, they were asked about the level of experience interns should have, in which

course they should catch the competency (ICM, Clerkship) and by which tool procedural skills should be assessed.

All respondents were asked to determine if they believe that CPR should be considered as interns' duty.

## Results

In each department/ward four groups of stakeholders were asked and the number of people surveyed is presented in Table 2. All residents participated in the study had 2 years or more experience as general doctor and, 6, 3 and, residents were 1st year, 2nd year and 3rd year residents, respectively. Of interns involved in the study, 35% were male and 65% were female. Incomplete questionnaires (two in internal medicine department, one in neurosurgery department and one in gynecology and obstetrics department) were excluded from the analysis. All chief residents and educational directors were asked to complete the questionnaires. In internal medicine department out of seven directors were participated in the study.

A total of 15 educational directors surveyed; all of them were assistant professors except one (who was associated professor) and 8 out of fifteen had subspecialty degree.

**Table 2.** Diversity of educational directors' opinion about level of competency for CPR at the beginning of internship course

Level of competency			
1	2	3	4
Orthopedics*	Pediatric	Poisoning	urology
Infectious disease	Surgery	Gynecology & obstetrics	Neurology
Neurosurgery	Nephrology		Cardiology
Rheumatology			pulmonology
			endocrinology

\* one director of each department participated in the study

There was no difference (tested by Fisher exact test) between head-nurses', interns' and residents' opinion against educational directors opinion about CPR to be considered as interns'

duty.

According to majority of residents (60%), interns should achieve level 3 of experience (performed CPR a few times while being observed) before entering internship rotations. But a disagreement observed with the level of experience between educational directors (Table 3).

**Table 3.** Number of participants and proportion of them consider CPR as interns' duty

Respondents	Number of Respondents	Valid % of participants considered CPR as interns' duty
Head-nurses	32	88.57
Interns	285	81.4
Residents	13	100
Educational directors	15	100

61.5% of educational directors recommended extreme ship as an appropriate phase for training CPR and 69.3% suggested OSCE and observation as a suitable method for CPR evaluation.

## Discussion

Cardiopulmonary resuscitation (CPR) training for undergraduate medical students and junior doctors has been noted to be poor in the past. Attempts have been made over the last decade to improve CPR training for all health professionals (1).

In this study, controversial issues were appeared among residents and directors concerning cardiopulmonary resuscitation. Perhaps the most important, the results indicated that management of patient who needs resuscitation is not central to the externship duty list. Some faculty members believed that responsibility for in depth coverage of patient who needs intensive life support lies within the realm of trained interns, graduate medical doctors and residents. In reality, although

not impossible, it is difficult to make interns have level 4 of experience in CPR. According to a study, there are some issues (such as artificial training situation, fear of 'the real thing', the onset of actual clinical responsibility, and the perception that resuscitation is one of the most stressful situations in which medical students and junior doctors find themselves) that prevent trainees to become confident for CPR performance (1).

On the other hand, medical school can not predict distribution of interns in clinical wards. At the beginning of internship course some of them may assigned to wards in which they should resuscitate patient independently without being observed (level 4) and at the same time this level of experience is not needed in another ward. Sabouri et al, also, considered CPR as one of minimum requirements in four major rotations (Internal medicine, surgery, pediatrics and gynecology) of internship (11).

To sum up, it seems reasonable to define level 3 of experience for CPR as an accessible objective. Obviously, the vitality of CPR dictates it to be learned and assessed in advance at the beginning of internship rotations and based on a study further work on CPR training is required to improve both confidence and the amount of advanced life support training provided to medical students throughout their training (1).

More than half of educational directors (61.5%) considered extern ship as the suitable phase for training CPR. Also they (69.3%) selected a combination of OSCE and observation for assessing it. They suggested that procedures should be trained in two phases. At first, students should be instructed in clinical skill laboratory and it would be evaluated by OSCE method, then the trainees can do the skills on real situation and be evaluated through observation.

Some studies suggest that instrumented skill-meter manikins in combination with checklists can provide a reliable and valid instrument for assessing CPR competency (3; 12; 13). With respect to facilities (manikins such as Mega-code and Airway simulators) available in clinical skills learning center (CSLC) of Isfahan

University of Medical Sciences, it may be possible to make sure that all interns are competent with

a defined level of performance in advanced life support skills at the beginning of internship rotations.

In addition, computerized simulator system was as effective as video for maintaining resuscitation skills of medical students, and students were very satisfied with experience of remote computer simulation training (5).

CPR training in undergraduate phases needs further studies in method of training and assessment that simulate the real situation as much as possible and some efforts needed to implement an evaluation system that assures educational directors and managers that interns are competent to carry out CPR at the beginning of internship.

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