ORIGINAL RESEARCH ARTICLE

*Tanaffos* (2005) 4(15), 53-56


# Expertise of the Resuscitation Team, Personnel Network, Equipment and Drug Availability during Cardiopulmonary Resuscitation in Emergency Wards

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## ABSTRACT

***Background:*** *Requirements of cardiopulmonary resuscitation must be always prepared and available in emergency ward as the result of acute condition of patients hospitalized in this ward and risk of possible exacerbation in them. Equipping the emergency ward and recruiting expert personnel can effectively reduce the rate of hospital related morbidity and mortality.*

***Materials and Methods:*** *This was a descriptive cross sectional study conducted to evaluate the expertise of the resuscitation team staff, personnel network, and availability of drugs and equipments during cardiopulmonary resuscitation. A questionnaire was used including two main parts. The first part included the data regarding age, sex and underlying diseases and the second part consisted of 67 questions in terms of expertise of the resuscitation team while resuscitating and had 71 scores.*

***Results:*** *The nurse in the resuscitation team was spending an obligatory period of work (Tarh) in 64.4% and the physician was a resident in 91% of the cases. Defibrillator apparatus was in a good condition and working properly in all cases and the period of time using defibrillator from the moment of cardiopulmonary arrest to performing the first shock, was 0.5 to 4 minutes. Regarding availability, amiodarone was least available during resuscitation.*

***Conclusion:*** *According to this study, resuscitation team members in emergency wards of selected centres were not optimally expert in this regard. More researches are recommended in the field of resuscitation and training courses must be held every six months for all members of the treatment team.* ***(Tanaffos 2005; 4(15): 53-56)***

***Key words:*** *Expertise, Personnel Network, Equipments, Cardiopulmonary resuscitation*

## INTRODUCTION

Cardiopulmonary resuscitation is of the main steps in saving lives of patients who develop a cardiopulmonary arrest; this process needs complete knowledge and skill in this regard (1).

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The most powerful resuscitation team belongs to those centres that have a professional and skilful nursing team (2).

These nurses have become expert in presenting first aids to save patient's life till the physician arrives (3).

Emergency ward staff should have a programmed

method to confront cardiopulmonary emergencies and start resuscitation (1). Since the patients in this ward are mostly in critical conditions requiring urgent care, it is necessary for the resuscitation team personnel to be expert and the necessary equipments and drugs must be available and ready to use (4).

According to the witnesses, unsuccessful resuscitation and futile efforts are of the major obstacles in emergency ward, which may lead the patient to death.

Therefore, this study was conducted to help recognizing the strength points of emergency wards regarding expertise of the resuscitation team personnel and availability of drugs and equipments during resuscitation and to find a proper solution to obviate the difficulties considering the importance of recovering the patient's heart and lung function.

## MATERIALS AND METHODS

This was a descriptive cross sectional study conducted to evaluate the expertise of the resuscitation team staff, personnel network, and availability of drugs and equipments during cardiopulmonary resuscitation.

For collecting the data, a questionnaire as a check list/ was used including two main parts.

The first part included the data regarding age, sex and underlying diseases and the second part consisted of 67 questions in terms of expertise of the resuscitation team while resuscitating and had 71 scores. According to the scores, 71 points are considered as expertise at a completely desirable level, 60-70 means optimal (desirable), 50 to 59 means almost desirable and fewer than 50 means undesirable.

Researchers filled up the questionnaire by observing the resuscitation team while resuscitating a patient who developed a cardiopulmonary arrest in emergency ward.

Presence of researchers during resuscitation process was of the confounding factors in this study. This study was conducted in three selected centres (Imam Hossein, Booali and Torfeh educational and medical centres) in two shifts of evening and night.

Data were entered using Excel software and SPSS was used for data analysis.

## RESULTS

According to the result of this study, the highest score was 65 (out of 71 points) which was related to the expertise of the resuscitation team (Figure 1). The mean point was 55.1.

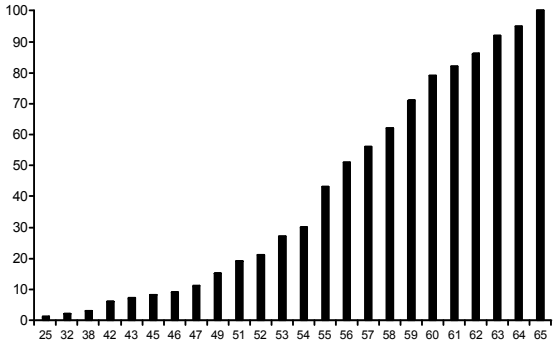


**Figure 1**. Distribution of the resuscitation team expertise level during resuscitation.

According to Figure 2, in 80% of cases expertise score was at the range of "almost desirable" (55-65) and the expertise rate at the range of completely desirable (71 points) was not seen in any of the 80 resuscitations performed.

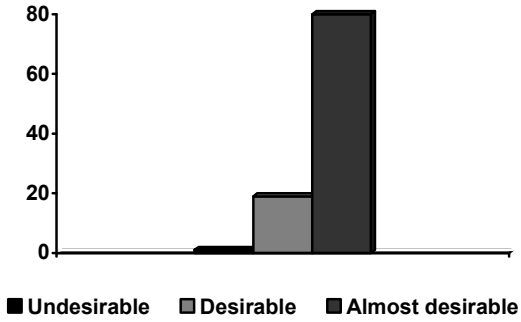


**Figure 2**. Distribution of the resuscitation team expertise level during resuscitation.

According to table 3, period of time between the moment of cardiopulmonary arrest and performing the first electric shock was 1-180 seconds in 53.3% of the cases and 240-900 seconds in 47.7% of the cases.

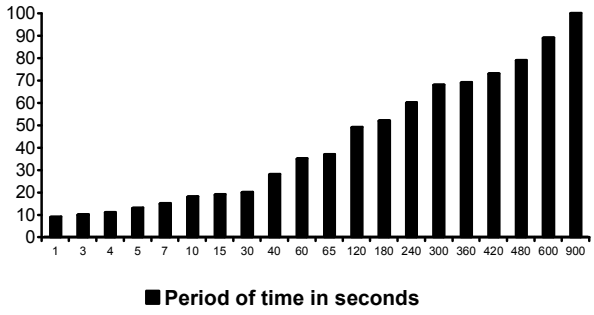


**Figure 3**. Period of time between the cardiac arrest and the first electric shock.

Considering figure 4, in 64% of cases the nurse participating in resuscitation was spending the obligatory period of work (Tarh). Results indicate that the time it takes for the nurse to come to the patient's bed side (from the moment of cardio pulmonary arrest) was 30 seconds in 34 cases (out of 78) and the longest time was 780 seconds.

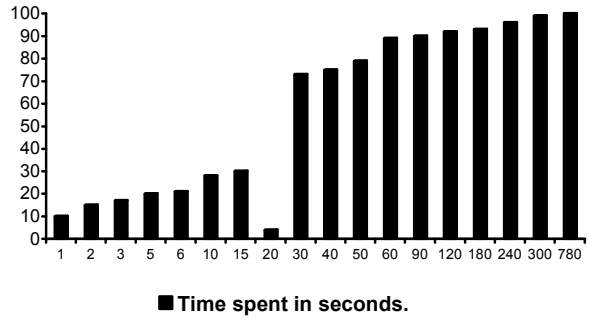


**Figure 4**. Time spent from the cardiopulmonary arrest to the moment when the nurse comes to the patient.

According to Figure 5 the time it takes for the physician to come to the patient from the moment of cardiopulmonary arrest was 30 seconds in 27 cases and 20 minutes in one case.

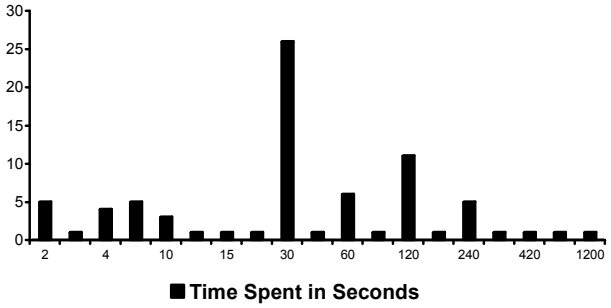


**Figure 5**. Time spent from the moment of cardiopulmonary arrest to the moment when the physician comes.

## DISCUSSION

According to the results, gaining the complete score, revealing the completely desirable expertise, was not detected in any of the under study centres.In 80% of the cases expertise rate was at "almost desirable" level.

Adib in his study indicated that there was a significant difference between the expertise of the resuscitation team personnel and type of ward (5).

Time between the cardiac arrest and the first electric shock was 4.5 minutes in average. In a similar study, this time was reported to be 10.41 minutes. Cummins shows that from the moment of cardiac arrest, delay in using defibrillator is decreased up to 10% per minute and 10 minutes after the cardiac arrest chance of survival comes to an end (1).

In our study, 64.4% of nurses participating in resuscitation process were spending the obligatory period of work. Whereas, according to reliable authorities, resuscitation team members must be of the most efficient and experienced medical staff (2).

Also, number of nurses and physicians in resuscitation process was 2 and 2.8 members in average respectively.

In a study conducted by the members of the department of anaesthesiology of Queen Mary

Hospital in Hong Kong, average number of nurses and physicians was 2.5 and 1.8 respectively.

The time it takes for the nurse and physician to come to patient's bed side was 52.5 and 86.6 seconds in average respectively. Based on many researches, if resuscitation process begins in less than 4 minutes performing by professional members and defibrillator and drugs are available, blood circulation will resuscitate in 8 minutes and chance of discharging from the hospital will be 40%.

According to Spearman's correlation coefficient there was a significant correlation between the time of cardiac arrest and presence of nurse and physician, and the correlation rate was 0.8. Also, there was a significant correlation between the position of personnel and number of them regarding their arrangement, and the rate was 0.5. There was a significant difference between the number of physicians and nursing arrangements in terms of position and the rate was 0.6.

In the study conducted in Queen Mary hospital in Hong Kong in 1996 the below-mentioned results were obtained:

- The spare time between the moment of diagnosing cardiopulmonary arrest and starting resuscitation was 1.36 min.
- The spare time between the arrest and presence of intern and resident was 2.74 and 7.27 respectively.
- Mean number of physicians was 1.78.
- Mean number of nurses was 2.54.
- Mean duration of performing cardiopulmonary resuscitation was 25.06 min.(6)

**Conclusions**:

According to the results of this study, more researches are recommended in the fields of stable success rate of cardiopulmonary resuscitation, factors affecting the long term success of cardiopulmonary resuscitation and the relation between the underlying diseases and prognosis of resuscitation.

Training courses must be held every six months for all members of the treatment team. Motivation of the emergency ward personnel must be reinforced. Some new drugs such as amiodarone must be available as well as lidocaine.

**Acknowledgement**

We would like to thank the national research institute of tuberculosis and lung diseases, which helped us in performing this research by its financial support.

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