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*The behaviours of the inhabitants of the Lublin region  
in the situations of sudden cardiac arrest as reflected  
in the opinions of the Ambulance Service doctors*

Diseases of blood circulation system are believed to be the major cause of deaths in Poland. Each year 500 people per 100 thousand population die due to this reason. In 60% of sudden diseases cardiac arrest is the consequence of cardiovascular diseases. Rasmus made it known that each layperson will perform resuscitative actions more than 6 times in one's life and there is 70-80% of chance that these actions will concern people that he or she knows (family members, acquaintances etc.) (1, 2).

Education of the society as well as effective training in BLS (Basic Life Support) both strengthen first links of the chain of survival (4, 6). Immediate call for emergency service and launching basic resuscitative actions by laypeople increases the chance of survival and reduces the danger of severe neurological damages. What occurs in the situation of sudden cardiac arrest after 3-4 minutes is anoxia of nerve cells and within 6 minutes – nearly always the irreversible brain damage. Each person should be capable of applying first-aid. Witnesses and participants of the event are usually the first ones at the scene of an accident and therefore, it is their early initiated and correctly applied first-aid that determines the chances of survival or recovery of the victim.

#### OBJECTIVE

The aim of the paper was to determine to what extent the inhabitants of the Lublin region are prepared to rescue victims of sudden accidents by means of cardiopulmonary resuscitation and proper response in the situation of the sudden cardiac arrest.

## MATERIAL AND METHODS

In order to carry out the research a self-made close survey with a single choice of answer was prepared. The survey was executed among 74 Ambulance Service doctors working in Lublin as well as in the region, employed permanently and being on duty in rescue, accident and general teams. The survey included doctors working in 4 posts of Ambulance Service: Lublin-Śródmieście, Lublin-Czechów, Lublin-Bronowice and Garbów. The survey consisted of 22 questions grouped in 4 thematic sections. The first part of the survey contained questions concerning behaviours and responses of witnesses of an accident in the situation of sudden cardiac arrest. Another section was concerned with ability to perform CPR (Cardiopulmonary Resuscitation) among the inhabitants of the Lublin region. The third section was concerned with organizing first-aid trainings. The fourth section consisted of questions concerning personal data of Ambulance Service doctors (their specialization, period of employment in first-aid as well as the kind of rescue teams in which they are on duty).

## RESULTS

Among 74 respondents 77% were male and 23% female. The majority of the doctors under survey were anesthesiologists with the first or second degree of specialization (39.2% of the total) as well as surgeons (including general and children's surgeons –16%) and internists (14.7%). The remaining are: paediatricians (6.7%), family physicians (5.4%), orthopedists (2.7%) and doctors with two specializations (14.7%). In rescue teams there are 29 doctors on duty, in accident teams there are 12, while in general teams – 33 physicians. Among the doctors of the Ambulance Service the largest group (40 people – 54%) consists of those who have been employed for 6–10 years, 20 doctors

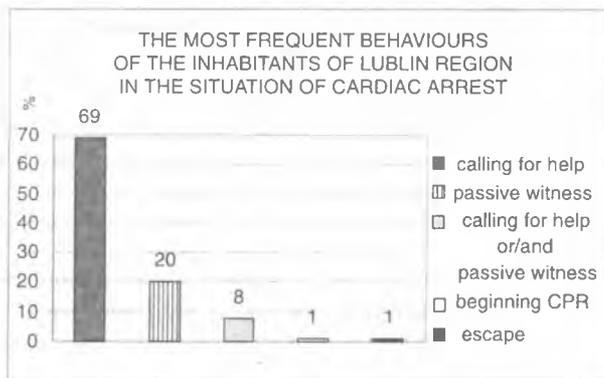


Fig. 1

(27%) who have been working for a period of time shorter than 5 years, and 14 physicians (19%) with long work experience in emergency service – above 11 years.

Figure 1 presents behaviours of the inhabitants of the Lublin region in the situation of sudden cardiac arrest. The majority of Ambulance Service doctors (70%) stated that in the case of sudden cardiac or/and respiratory arrest the witness's reaction is usually calling for an ambulance.

75% of the respondents claimed that in the cases of sudden cardiac arrest the inhabitants of the Lublin region called for the ambulance in proper time. 40% of the Ambulance Service doctors claimed that in the situation of sudden cardiac arrest the witnesses react with excessive excitement, confusion or stupefaction. 54% of the respondents maintained that bystanders were capable of reacting and following the instructions of the rescue party. According to 73% of the respondents sudden cardiac arrest most frequently occurs at home or in the street (12% of the doctors). Half of the respondents maintained that CPR action was performed by the family members at the scene of an accident, while 29% observed the assistance of strangers.

The physicians under the survey stated that the resuscitative actions were only taken up by the witnesses in fewer than 10% (93% respondents), 6% claimed that in 20-30% cases, while only 1% of the respondents expressed the opinion that CPR actions were launched in 40-50% of cases.

The answers of the respondents to the questions concerning actions that accident witnesses performed in the situation of sudden cardiac arrest are presented in Figure 2. The

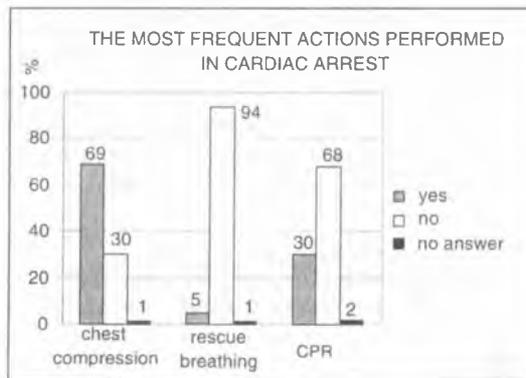


Fig. 2

majority of doctors claimed that inhabitants of the Lublin region more frequently apply rescue breathing during CPR. Similarly, the majority of the respondents maintained that resuscitative actions, both mere rescue breathing and indirect heart massage as well as rescue breathing and indirect heart massage done simultaneously were more often applied by men than women.

41% of the respondents claimed that the major cause for not applying resuscitation by the inhabitants of the Lublin region rested on insufficient knowledge concerning CPR application. Other reasons for not applying CPR include: conviction that an easier solution is to call an ambulance (12%), belief that first-aid applied by a layperson can be more harmful (4%), lack of confidence in one's own competence (2%), stress overwhelming the rescuer (8%) or simultaneous occurrence of all these reasons (32% of the respondents). The level of competence for performing CPR by inhabitants of the Lublin region was evaluated as poor by 49% of the respondents. Nearly all the respondents claimed that CPR was applied in an incorrect manner, while only 2% believed it to be done correctly.

When the respondents were given the question if the witness-rescuer obstructs or helps rescue party to perform resuscitation the majority of them stated that they did help (42%) or definitely help (7%), while according to 24% of the physicians bystanders generally obstruct rescue actions. For 22% of respondents the presence of witnesses is insignificant for the process of the rescue action.

According to Ambulance Service doctors the inhabitants of the Lublin region acquire knowledge about first-aid at Rescue School (43% of the respondents), secondary schools (23%), workplaces (20%), as a part of driving license courses (14%), or by media (10%). 12% of the doctors maintain that the inhabitants of the Lublin region were not trained and 4% were not able to give the answer to this question. 65% of the physicians stated that those trainings were not sufficient for effective resuscitation. The respondents declared that they should be proceeded by doctors (94% of the respondents) in the properly prepared and equipped training centers (89%). According to 53% Ambulance Service doctors people with qualifications to be first-aid instructors (teachers, Red Cross instructors) should not run such trainings, while 46% declared the opposite opinion on this issue. Reminder trainings concerning premedical first-aid should take place each year according to the majority of doctors (52%). (Fig. 3).

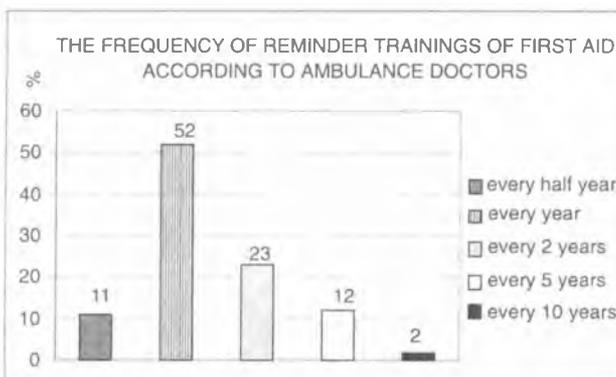


Fig. 3

## DISCUSSION

Cardiopulmonary resuscitation applied and performed in the shortest possible time by the accident witness combined with the early involvement of techniques of Advanced Life Support (ALS) have crucial significance for the survival of the victims of sudden cardiac and/or respiratory arrest (3). On the basis of the research it was claimed that the inhabitants of the Lublin region confine themselves to mere call for an ambulance when facing the cases of cardiac arrest. Emergency services are called immediately after the recognition of any danger to the victim's health or life. Owing to this the time of ALS application gets shorter and the chance of survival increases. When first-aid is applied at the scene of the accident within 4 minutes and professional help within 8 minutes since the sudden cardiac arrest, 435 of sudden cardiac arrest victims get the chance to survive. However, if both first and professional aid is applied after this time only 19% of the victims will have the chance of survival (9). What results from the research is the fact that inhabitants of the Lublin region were calm and ready to follow the instructions of the rescue team. No panic, depressive or somatic reactions were observed in the events' witnesses. The analysis of the survey shows that the place where sudden cardiac arrest occurs most frequently is home; and those who apply CPR to victims tend to be their family members. Comparable data are included in papers by other authors. (4, 10, 11). The situation of applying Basic Life Support (BLS) by the inhabitants of the Lublin region is extremely uncommon in the situation of sudden cardiac arrest. The majority of the doctors under the survey stated that in the situation of sudden cardiac arrest the inhabitants of the Lublin region would more frequently apply only rescue breathing or only indirect heart massage than both rescue breathing and indirect heart massage simultaneously. According to the European Resuscitation Council (ERC), when a rescuer is reluctant or unable to apply mouth-to-mouth respiration indirect heart massage itself is recommended. Chamberlain believes that indirect heart massage combined with rescue breathing gives better results than heart massage itself but indirect heart massage itself is better than not applying any resuscitative actions (5, 8). The analysis of the survey indicates that women apply BLS far less frequently and limit themselves only to performing indirect heart massage. Similar interdependence was observed by Rasmus in his examination in the region of Łódź (10, 11).

In the executed survey the respondents claimed that CPR actions are performed in an incorrect way by the witnesses of the event, and the major cause for not applying resuscitation in the case of sudden cardiac arrest is insufficient knowledge concerning methods of applying premedical aid. What follows from the research carried out by Holmberg and his contemporaries is that resuscitative actions in Sweden were performed twice more often by the witnesses of sudden cardiac arrest than in Poland (10). According to him the argument for launching BLS was respect for another human being and the feeling of moral duty. In the survey research carried out by Rasmus Polish people only declare the will to bring help, not realizing their intentions (10, 11).

What results from the survey is that the level of competence for applying first-aid by the inhabitants of the Lublin region is poor, despite the fact that first-aid trainings are introduced at primary and secondary schools, at workplaces as part of safety and hygiene of work trainings as well as at driving license courses. They are all obligatory trainings attended by each Pole. (3) Ambulance Service doctors stated that premedical aid trainings were insufficient and according to them they should be run by doctors, preferably specialists: anesthesiologists, rescue medicine specialists, surgeons, university teachers of disaster medicine in properly prepared and equipped training centers. The respondents considered it essential to organize reminder first-aid trainings. The majority claimed that they should take place each year and their objective should not only be revising and mastering the abilities acquired before but also introduction of new rescue techniques.

### CONCLUSIONS

1. In the situation of sudden cardiac arrest the inhabitants of the Lublin region confine themselves to calling for an ambulance.

2. The competence for applying CPR among the inhabitants of the Lublin region is poor.

3. The inhabitants of the Lublin region who witness sudden cardiac arrest more frequently apply only rescue breathing rather than rescue breathing and indirect heart massage simultaneously.

4. Among the inhabitants of the Lublin region resuscitative actions are far more frequently performed by men.

5. The premedical aid trainings presently available were considered as insufficient by the respondents and, according to them, should be conducted by doctors in properly prepared and equipped training centers. After the complete basic training reminder trainings should be organized.

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## SUMMARY

Diseases of blood circulation system constitute the major cause of sudden cardiac arrest and deaths in Poland. Approximately 70% of all the cases of cardiac arrest occurs outside hospitals, frequently at patient's home. In the case of applying immediate resuscitation by the event witness in the situation of sudden cardiac arrest the percentage of the victims' survival is estimated at approximately 43%. Each delay of the initiation of Basic (BLS) and afterwards Advanced Life Support (ALS) lowers the chance of survival. Thus, it is extremely significant to educate Polish society in the area of basic resuscitative actions, particularly due to the fact that laypeople are usually the first ones at the scene of an accident. The aim of the paper was to determine to what extent the inhabitants of the Lublin region are prepared to rescue victims of sudden accidents by means of cardiopulmonary resuscitation and proper response in the situation of the sudden cardiac arrest. As results from the executed survey the inhabitants of the Lublin region in the situation of sudden cardiac arrest mostly do nothing but call an ambulance. The witnesses of the sudden cardiac arrest more frequently apply only rescue breathing or only indirect heart massage rather than rescue breathing and indirect heart massage simultaneously. The competence for applying CPR among the inhabitants of the Lublin region is poor and the resuscitative actions are much more frequently taken up by men. Premedical aid trainings are considered insufficient to prepare witnesses of sudden cardiac arrest for applying first-aid. They should be conducted by doctors, in properly prepared and equipped training centers. The majority of the Ambulance Service doctors in Lublin indicated the demand for reminder premedical aid trainings.

### Zachowania mieszkańców Lubelszczyzny w sytuacji nagłego zatrzymania krążenia w opiniach lekarzy Pogotowia Ratunkowego

Choroby układu krążenia stanowią główną przyczynę nagłego zatrzymania krążenia i zgonów w Polsce. Około 70% wszystkich przypadków zatrzymania krążenia występuje poza szpitalami, często w domach pacjentów. W przypadku podjęcia natychmiastowej resuscytacji przez świadka zdarzenia w sytuacji nagłego zatrzymania krążenia w mechanizmie migotania komór odsetek przeżycia chorych wynosi około 43%. Każde opóźnienie wdrożenia podstawowych (BLS – Basic Life Support), a następnie zaawansowanych czynności podtrzymujących życie (ALS – Advanced Life Support) zmniejsza szansę przeżycia pacjentów. Zatem niezmiernie ważne jest uczenie polskiego społeczeństwa podstawowych czynności ratujących życie, tym bardziej że to laicy zwykle są pierwsi na miejscu wypadku. Celem badania było określenie, w jakim stopniu mieszkańcy Lubelszczyzny są przygotowani do ratowania życia ofiar nagłych wypadków w zakresie resuscytacji krążeniowo-oddechowej oraz prawidłowego reagowania w sytuacji nagłego zatrzymania krążenia (nzk). Z przeprowadzonych badań wynika, że mieszkańcy Lubelszczyzny w sytuacji nagłego zatrzymania krążenia (nzk) najczęściej ograniczają się tylko do wezwania karetki pogotowia ratunkowego. Świadkowie nagłego zatrzymania krążenia częściej podejmują tylko sztuczną wentylację lub masaż pośredni serca niż jednocześnie sztuczną wentylację i masaż pośredni serca. Umiejętności prowadzenia CPR przez mieszkańców Lubelszczyzny są słabe i częściej czynności resuscytacyjne podejmują mężczyźni. Szkolenia w zakresie pierwszej pomocy przedmedycznej są niewystarczające, aby przygotować świadków nzk do udzielenia pierwszej pomocy. Powinny być prowadzone przez lekarzy w odpowiednio przygotowanych i wyposażonych ośrodkach szkoleniowych. Większość lekarzy Pogotowia Ratunkowego w Lublinie wskazuje na potrzebę szkoleń przypominających w zakresie pomocy przedmedycznej.