

## The Key Role of a Bystander Improving the Effectiveness of Cardiopulmonary Resuscitation Performed in Extra-Urban Areas

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**Abstract :** The aim of the study was to analyse the usefulness of the 'E-rescuer' pilot project planned to be implemented in a chosen area of Eastern Poland in the cases of suspected sudden cardiac arrests in the extra-urban areas. Inventing an application allowing to dispatch simultaneously both Medical Emergency Teams and the E-rescuer to the place of the accident is the crucial assumption of the mentioned pilot project. The E-rescuer is defined to be the trained person able to take effective basic life support and to use automated external defibrillator. Having logged in using a smartphone, the E-rescuer's readiness is reported online to provide cardiopulmonary resuscitation exactly at the given location. Due to the accurately defined location of the E-rescuer, his arrival time is possible to be precisely fixed, and the substantive support through the displayed algorithms is capable of being provided as well. Having analysed the medical records in the years 2015-2016, cardiopulmonary resuscitation was considered to be effective when an early indication of circulation was provided, and the patient was taken to hospital. In the mentioned term, there were 2.291 cases of a sudden cardiac arrest. Cardiopulmonary resuscitation was taken in 621 patients in total including 205 people in the urban area and 416 in the extra-urban areas. The effectiveness of cardiopulmonary resuscitation in the extra-urban areas was much lower (33,8%) than in the urban (50,7%). The average ambulance arrival time was respectively longer in the extra-urban areas, and it was 12,3 minutes while in the urban area 3,3 minutes. There was no significant difference in the average age of studied patients - 62,5 and 64,8 years old. However, the average ambulance arrival time was 7,6 minutes for effective resuscitations and 10,5 minutes for ineffective ones. Hence, the ambulance arrival time is a crucial factor influencing on the effectiveness of cardiopulmonary resuscitation, especially in the extra-urban areas where it is much longer than in the urban. The key role of trained E-rescuers being nearby taking basic life support before the ambulance arrival can effectively support Emergency Medical Services System in Poland.

**Keywords :** basic life support, bystander, effectiveness, resuscitation

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