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A comparison of ambulance responses to incidents of Medical Emergency Teams led by nurses and paramedics––A retrospective single-center study

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ABSTRACT

Background: In Poland there are currently two main types of Medical Emergency Team: basic, run by nurses or paramedics, and specialist, led by physicians. They differ not only in professional qualifications but also in their terms of reference.
Objectives: We compared the responses to incidents of Medical Emergency Teams led by nurses and paramedics, in terms of the frequency of pharmacotherapy use and medical rescue activities.
Study design: Ambulance call reports.
Settings: Medical Emergency Teams in Eastern Poland.
Participants: Medical Emergency Teams led by nurses or paramedics. Exclusion criteria were cancelation of calls by the dispatcher, calls with no patient on the scene, and neonatal and interhospital transportation.
Methods: A retrospective analysis of ambulance call reports. A comparison of actions of nurses and paramedics taken in the field, and decisions concerning transportation of the patient to a hospital or leaving the home were collected.
Results: Of 1115 Medical Emergency Teams calls, those led by paramedics (60.5%) were more common. Paramedics, more often than nurses, provided aid solely in the field—27.5% and 16.0%, respectively—and less frequently transported patients to the hospital—38.5% and 50.7%, respectively. Significant differences in administration of oxygen therapy and analgesics were identified; paramedics used them more often than nurses. Paramedics used cervical collars, 3.6% and 1.1% ($p = 0.01$), respectively, and performed 12-lead electrocardiograms, 4.7% and 1.4% ($p = 0.002$), respectively, significantly more frequently than did nurses.
Conclusions: Despite the comparable competency of paramedics and emergency nurses in Poland, Medical Emergency Teams' activities varied depending on whether a nurse or a paramedic was the team leader. It is recommended that further in-depth research is conducted in this area.

What is already known about the topic

- Medical Emergency Teams' structure and tasks vary among countries.
- Nurses are increasingly becoming involved in teamwork and collaborating in medical emergency services in Poland.

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- Medical Emergency Teams provide basic and specialist aid, depending on the presence of a nurse/paramedic and physician.

What this paper adds

- There is little information regarding the activities of METs when led by nurses *versus* paramedics.
- Emergency nurses working in the field is unique to Poland.
- The data obtained may facilitate optimizing the structure of employment in the EMS but should be confirmed in studies with a wider scope.

1. Introduction

In Poland, the modern emergency medical system has a relatively short history and has been the subject of few scientific studies. The emergency medical system (EMS) in our country was introduced by the Act on the State Emergency Medical Services of July 25, 2001 (The Act on State Emergency Medical Services, 2001). The next step in improving the EMS system was the Act of State Emergency Medical Services of September 8, 2006 (The Act on State Emergency Medical Services, 2001).

The units of the EMS system in Poland are hospital emergency departments and, at the prehospital level, medical emergency teams (METs). They are regulated by The Act on State Emergency Medical Services, 2006. There are two types of METs: basic, run by nurses or paramedics, and specialist, the leader of which is always a physician (Gaszyński, 2007; The Act, 2006; Emergency Medical Service Standards, 2011). This status was legally approved by the Act on National Emergency Medical Services (EMS) (Hladki et al., 2007).

In Poland, the EMS system is based essentially on the Anglo-American model, in which rescue medicine is an independent discipline, with people trained to work in the EMS system (Black and Davies, 2005). In most countries that have used the Anglo-American model of EMS (e.g., the United States of America, Great Britain, Greece), paramedics work at the level of the pre-hospital EMS system (Papaspyrou et al., 2004 and Pozner et al., 2004). In the US, nurses are not directly involved in pre-hospital actions of METs but they can play a consultative role in an "on-line" system, particularly registered nurses (RNs) specializing in intensive care (Minister, 2007). Critical care/mobile intensive care transport and aeromedical EMS are the most common uses of ambulance-based RNs. Such nurses are normally required by their employers (in the US) to obtain additional certifications beyond basic nursing registration. They are entitled to administer emergency medications and to engage in medical rescue activities specifically listed in the regulation, a list of which is set out in Annex 2 of the regulation (Brabrand and Ekelung, 2010).

1.1. Background

The Bachelor of Nursing or Bachelor of Paramedic Science degree in Poland lasts six semesters and ends with a final examination. An important part of the education is apprenticeship training (Blak-Kaleta, 2007; Kózka and Wrońska, 2007; Ziemba, 2011).

In Poland, by the Act of the State Emergency Medical Services, currently, there are certain requirements for a nurse to engage in emergency medical services (The Act on State Emergency Medical Services, 2001). The nurse must be a person with the title of specialist or specializing in the field of emergency nursing, anesthesia, intensive care, surgery, cardiology, or pediatrics. Another option is to have completed a qualifying course in the field of emergency nursing, anesthesia, intensive care, surgery, cardiology, pediatrics, and to demonstrate at least 3 years of work experience in specialty departments, emergency departments, emergency rooms, and the ambulance service (The Act on State Emergency Medical Services, 2006). The Center for Postgraduate Education of Nurses and Midwives, which supervises the bodies responsible for postgraduate education in the Framework Program qualification course in the field of emergency nursing, determined the duration of the course to be 493 educational hours. Specialized training in the field of emergency nursing is of longer duration, a total of 1111 learning hours.

The project "Professional nursing EMS system in Poland – support for post-graduate education," is being conducted from 2009 to 2015. Its aim is to improve the qualifications and skills in emergency nursing of 3500 nurses. This project is co-financed by the European Social Fund under the Operational Program – Human Capital (Rusin-Pawełek, 2011).

A nurse in the system is entitled to temporarily and independently (without a physician order) administer the following 28 drugs: acetylsalicylic acid, amiodarone, atropine, captopril, clemastine, clonazepam, diazepam, drotaverine hydrochloride, epinephrine, flumazenil, furosemide, glucagon, glucose 5%, and 20%, glyceryl trinitrate, hydrocortisone, methylprednisolone, magnesium sulfate, ketoprofen, lignocaine hydrochloride, midazolam (following consultation with a doctor), metoclopramide, morphine sulfate, naloxone hydrochloride, sodium chloride 0.9%, multi-electrolyte physiologic isotonic fluid, salbutamol, Ringer solution, and oxygen (The list of medicines administered to the patient by a nurse and midwife, 2007).

A paramedic is also authorized to administer most of the drugs on this list, except captopril, clonazepam, and drotaverine hydrochloride (Regulation of the Minister of Health of 29 December 2006 on the detailed scope of medical emergency steps that can be taken by paramedics, 2006). Additionally, all nurses in Poland are entitled to administer paracetamol and metamizol and a number of drugs with spasmolytic, antipyretic, laxative, anti-diarrheal, hypnotic, and sedative effects (The list of medicines administered to the patient by a nurse and midwife, 2007).

A nurse in the emergency medical system is also entitled to provide basic and advanced life support and pediatric advanced life support, and to obtain peripheral vascular access. The nurse is supposed to secure a patient during transportation to a hospital, immobilize the spine with particular emphasis on the cervical segment, address wounds, and perform an ECG. The nurse must pass