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Monitoring and utilization of the potential of organ donation from brain dead donors

STRESZCZENIE W JĘZYKU ANGIELSKIM

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Transplantation of organs from deceased or living donors is often the only way to save the lives of individuals with severe organ failure [1]. In Poland, hospitals are legally required to report the possibility of organ and tissue procurement for transplantation from deceased individuals [2].

The research presents in the collection of manuscripts aimed to develop a system for monitoring the potential of organ donation in hospitals by:

- building and expanding a network of donor coordinators;
- creating a web-based tool for reporting all deaths in the departments of anaesthesiology and intensive care, neurology, and neurosurgery;
- cataloguing hospitals in Poland with potential for donation;
- developing a stratification of hospitals based on their characteristics to calculate the donation potential from brain-dead patients.

The establishment of a network of hospital donation coordinators in 2010, which has been continuously developed and is employed and financed by the Polish Transplantation Coordinating Center Poltransplant, has led to a significant increase in donation rates nationwide. The number of actual deceased organ donors increased by 24% in less than two years following the establishment of the network of coordinators (2010–2012), with the percentage of multi-organ donors rising up to 56% during this period. The positive impact of employing

coordinators was evident in half of the hospitals with donation potential (51%), where a coordinator position was created in 102 out of 200 hospitals. In the remaining 98 hospitals where a coordinator was employed, additional measures needed to be implemented to support the development of donation.

The next stage of the work aimed to analyse the structure, the tasks assigned, and the actual activities of the transplant coordinator system in Poland, which has been expanded over the years. The nomenclature of coordinators operating at different levels and in various areas of cell, tissue, and organ procurement and transplantation was standardised.

The introduction of a donation potential monitoring system using the tele technical tool *koordinator.net* in hospitals where coordinators are employed has further increased the number of identified potential and actual donors. This improvement was achieved through the systematic analysis of hospital deaths, including those resulting from primary or secondary brain damage. At a later stage, the reporting system facilitated external evaluation (audit) by provincial coordinators and *Poltransplant*, contributing to the calculation of donation potential. The *koordinator.net* system has become a modern tool for streamlining and improving the quality system in the field of organ donation.

The next stage of the study aimed to calculate the potential for brain-dead donation in Polish hospitals in 2018, based on an analysis of monthly reports obtained from the *koordinator.net* register submitted by donation coordinators. Additionally, the study sought to compare these results with the donation rates established by the European Commission's *Improving the Knowledge and Practices in Organ Donation (DOPKI)* programme.

The calculated donation rates from brain-dead individuals retrieved from 70 hospitals differed from those obtained in the *DOPKI* programme, being significantly lower in terms of:

- the number of brain deaths diagnosed in relation to the number of beds in the hospitals - a difference of 23.1%
- the number of brain deaths diagnosed in relation to the number of beds in the anaesthesiology and intensive care unit - a difference of 28.4%
- the number of brain deaths diagnosed in relation to the number of admissions to the hospital - a difference of 20%
- the number of brain deaths diagnosed in relation to the number of

admissions to the anesthesiology and intensive care unit - a difference of 50%

- the number of brain deaths diagnosed in relation to the total number of deaths in the hospital - a difference of 20.7%

- the number of brain deaths diagnosed in relation to the total number of deaths in the anesthesiology and intensive care unit - a difference of 26.7%

- the number of brain deaths diagnosed in relation to the number of deaths in the hospital for causes frequently leading to death according to neurological criteria (based on selected ICD-10 codes - a difference of 20%

- the number of brain deaths diagnosed in relation to the number of deaths in the anesthesiology and intensive care unit for causes frequently leading to death according to neurological criteria (according to selected ICD-10 codes) - a difference of 20.1%.

In order to calculate the potential for brain-dead donation on a national, provincial or hospital basis, it was necessary to catalogue hospitals with donation potential and subsequently develop a hospital stratification system, taking into account their characteristics in terms of:

- having key departments for donor identification and recruitment: (anesthesiology and intensive care unit, neurology department, stroke department, neurosurgery department);

- the number of beds in the hospital as a whole and in individual wards related to donation;

- profile of patients treated (e.g. pediatric or adult patients);

- the hospital's degree of reference.

Based on data from the National Health Fund (NFZ), it was found that out of a total of 1,032 hospitals in Poland, 388 hospitals possess the structural capacity (at least anesthesiology and intensive care unit and operating theatre) as well as the necessary equipment and human resources to determine death according to neurological criteria. Hospitals with donation potential were characterized in a subsequent stage of the work according to the criteria outlined above. The largest group consisted of first-level reference hospitals that have an anesthesiology and intensive care unit for adults (161 hospitals), followed by hospitals with an anesthesiology and intensive care unit and an adult stroke unit (76), and adult hospitals with an anesthesiology and intensive care unit and a neurology unit (25). Another group consisted of adult level II hospitals with an

anesthesiology and intensive care unit, a stroke unit, and a neurosurgical ward (23 hospitals). Following this, there were adult level II hospitals with an adult stroke unit (19), and then level I hospitals with an anesthesiology and intensive care unit, stroke unit, and neurosurgery (17). The remaining 67 hospitals had other individual characteristics.

Among the 388 hospitals with donation potential, 17 had a paediatric profile. The largest group consisted of five inpatient facilities that have an anesthesiology and intensive care unit, a neurology department, and a paediatric neurosurgery department.