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Dárcovství orgánů zachraňuje životy a klíčem k jeho etickému provádění je bezpečná diagnostika smrti u dárce. Klasická "lajna" na EKG nestačí, protože srdeční akce se zastavuje a zase obnovuje během umírání i několikrát. Doc. F. Duška, MUDr. P. Waldauf a MUDr. M. Schmidt z Kliniky anesteziologie a resuscitace 3. LF UK a FNKV jsou spoluautory publikace v jednom z nejprestižnějších světových odborných časopisů New England Journal of Medicine. V unikátní observační studii fyziologie umírání se podařilo potvrdit, že pro účely transplantace orgánu i pro bezpečnou diagnózu smrti je potřeba dodržet 5 min bezpulsové období, po kterém již k autoresuscitaci nedochází.

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ORIGINAL ARTICLE

## Resumption of Cardiac Activity after Withdrawal of Life-Sustaining Measures

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### ABSTRACT

#### BACKGROUND

The minimum duration of pulselessness required before organ donation after circulatory determination of death has not been well studied.

#### METHODS

We conducted a prospective observational study of the incidence and timing of resumption of cardiac electrical and pulsatile activity in adults who died after planned withdrawal of life-sustaining measures in 20 intensive care units in three countries. Patients were intended to be monitored for 30 minutes after determination of death. Clinicians at the bedside reported resumption of cardiac activity prospectively. Continuous blood-pressure and electrocardiographic (ECG) waveforms were recorded and reviewed retrospectively to confirm bedside observations and to determine whether there were additional instances of resumption of cardiac activity.

#### RESULTS

A total of 1999 patients were screened, and 631 were included in the study. Clinically reported resumption of cardiac activity, respiratory movement, or both that was confirmed by waveform analysis occurred in 5 patients (1%). Retrospective analysis of ECG and blood-pressure waveforms from 480 patients identified 67 instances (14%) with resumption of cardiac activity after a period of pulselessness, including the 5 reported by bedside clinicians. The longest duration after pulselessness before resumption of cardiac activity was 4 minutes 20 seconds. The last QRS complex coincided with the last arterial pulse in 19% of the patients.

#### CONCLUSIONS

After withdrawal of life-sustaining measures, transient resumption of at least one cycle of cardiac activity after pulselessness occurred in 14% of patients according to retrospective analysis of waveforms; only 1% of such resumptions were identified at the bedside. These events occurred within 4 minutes 20 seconds after a period of pulselessness. (Funded by the Canadian Institutes for Health Research and others.)

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\*The members of the site research groups are listed in the Supplementary Appendix, available at NEJM.org.

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