Potential Number of Organ Donors After Euthanasia in Belgium

Organ donation after euthanasia involves patients whose request to undergo euthanasia has been granted and who voluntarily want to donate their organs after death. It requires patients to undergo euthanasia in the hospital, and organ donation is performed after circulatory death. The practice is controversial and currently only allowed in Belgium and the Netherlands. Even in these countries, it is rarely performed; as of August 2016, 43 patients undergoing euthanasia had donated organs.1 Organ donation after euthanasia has been described in a practical manual, which addresses the medical, ethical, and legal aspects of performing euthanasia and donation after circulatory death.2

Donation after euthanasia could potentially help ease the shortage of organs for transplantation. It is unknown how many of these patients would be medically suitable to donate organs.3 We examined the number of patients undergoing euthanasia in Belgium who could potentially donate at least 1 organ.

Methods | The Belgian Control and Evaluation Committee granted permission to access deidentified data of all persons undergoing euthanasia in 2015. To calculate the number of potential organ donors, we excluded patients older than 75 years because this is the maximum age for acceptance of donor kidneys, lungs, and pancreas islets after circulatory death within the Eurotransplant region. Patients with cancer were excluded as the majority of malignancies are a contraindication for organ donation. Patients with multiple or infectious pathologies like human immunodeficiency virus (HIV) were excluded because their organs would be unlikely to be accepted.

In addition, the number of potential donors of individual organs was calculated. For kidney donation, patients with renal disease were excluded. For lung donation, patients with lung disease were excluded. For liver donation, patients with liver disease or who were 60 years and older were excluded, as this is the maximum age for liver donation. For whole pancreas donation, patients 50 years and older were excluded, being the maximum age for whole pancreas donation.

Results | In 2015, 2023 patients underwent euthanasia in Belgium (total population 11 million).4 Two patients were excluded because of insufficient data in the euthanasia reports; 926 patients (45.8%) could not donate because they were older than 75 years of age; 1372 patients (67.8%) had a malignancy; 3 patients (0.15%) had HIV; and 239 patients (11.8%) had multiple or other pathologies. Of all patients who underwent euthanasia, 204 (10.1%) were potential donors with at least 1 suitable organ for donation.

Four patients with kidney disease were excluded for kidney donation, resulting in 400 possible kidney donations. Twenty-five patients with pulmonary disease were excluded, leaving a potential 179 lung donors. There were 125 patients between age 60 and 75 years and 4 with liver disease, leaving 75 potential liver donors. For whole pancreas donation, 174 patients between age 50 and 75 years were excluded, resulting in 30 potential pancreas donors. Thus, 684 whole organs could potentially be donated.

Discussion | In 2015, 1288 people were on the Belgian organ transplantation waiting list.5 An estimated maximum of 10.1% of all patients undergoing euthanasia could potentially donate at least 1 organ, with 684 organs potentially available for donation. In 2015, 260 deceased donor kidneys were donated6; if 400 kidneys were donated by patients undergoing euthanasia, the potential number of kidneys available for donation could more than double. Of 104 total donations after circulatory death, 4 were performed after euthanasia (written communication, January 3, 2017, Dirk Ysebaert, MD, PhD, University Hospital, Antwerp, Belgium).

However, medical suitability only implies that a patient is a possible organ donor. Whether the patient is also willing to donate, and is willing to die in hospital, must be carefully ascertained.

Even if only a small percentage of the patients undergoing euthanasia donated an organ, donation after euthanasia could potentially help reduce the waitlists for organ donation. Nevertheless, it is essential that the primary goal of organ donation after euthanasia remains the same as for any patient donating an organ—to enable patients to carry out their last will of donating organs to help other people, after their own death.

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Author Contributions: Drs Bollen and van Smaalen had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.
Zoledronic Acid Dosing Interval for Metastatic Cancer

To the Editor Dr Himelstein and colleagues found that the use of zoledronic acid every 12 weeks compared with the standard dosing interval of 4 weeks did not result in an increased risk of skeletal events over 2 years in patients with bone metastases. The randomized, open-label clinical trial included 855 patients with breast cancer, 689 with prostate cancer, and 278 with multiple myeloma, broadening the potential applicability of the findings. Although the authors concluded that this longer interval may be an acceptable treatment option, we would like to raise a concern about applying the study results to patients with multiple myeloma.

Various preclinical studies showed that nitrogen-containing bisphosphonates, such as zoledronic acid, have antitumor activity, including inhibition of angiogenesis, enhancement of antitumor immune responses, and direct or indirect modulation of the proliferation and survival of myeloma cells. In a large randomized trial that enrolled patients with newly diagnosed multiple myeloma to receive 4 mg of intravenous zoledronic acid as an infusion every 3 to 4 weeks or 1600 mg of oral clodronic acid daily, the investigators found that zoledronic acid not only reduced skeletal-related events but also improved overall survival by 6 months. A meta-analysis involving 6 randomized clinical trials comparing bisphosphonates vs control showed that zoledronic acid therapy with a standard dosing interval was associated with a clinically and statistically significant improvement in overall survival compared with the control (hazard ratio, 0.51 [95% CI, 0.33-0.77], P = .002). Therefore, for patients with multiple myeloma, information concerning overall survival is crucial before widely applying the use of zoledronic acid every 12 weeks instead of the standard dosing interval of 4 weeks in clinical practice. However, the current study would be underpowered to detect a difference in overall survival between the 2 dosing intervals in patients with myeloma.

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COMMENT & RESPONSE

A noninferiority trial investigated the optimal schedule for zoledronic acid in patients with metastatic breast cancer, metastatic prostate cancer, or multiple myeloma with at least 1 bone metastasis, demonstrating similar efficacy with less frequent administration. This finding is important because some adverse effects of bisphosphonates are related to cumulative drug exposure. Furthermore, life expectancy of these patients is increasing, and therefore they are treated for longer periods. In patients with castration-resistant prostate cancer metastatic to bone, zoledronic acid induces a significant reduction in the incidence of skeletal-related events. The administration of zoledronic acid during earlier phases of disease was not associated with a significant effect on skeletal morbidity. The CALGB 90202 (Alliance) study compared zoledronic acid vs placebo in terms of reduction in the risk of first skeletal-related event in patients with hormoneresistant bone metastasis, without demonstrating any significant between-group difference.