

REVIEW

Organ donation after euthanasia in the Netherlands

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Abstract

Organ donation after euthanasia is performed in the Netherlands, Belgium, Spain and Canada. In these countries, altruistic patients, who often suffer from a neurodegenerative or psychiatric disease, are able to donate their lungs, liver, kidneys and pancreas. In the Netherlands, they even have the possibility to donate their heart. Research demonstrates that about 10% of all patients who undergo euthanasia might be medically eligible for organ donation. Preliminary short-term outcomes of transplants from these donors demonstrate good results. Intensive care physicians and nurses play an important supportive role in this combined procedure because of their expertise in end-of-life care and organ donation, and because these procedures are often performed in the intensive care unit. This article provides a practical summary of the various steps that need to be fulfilled to facilitate organ donation after a euthanasia procedure. Furthermore, it elaborates on the medical, legal and ethical aspects of organ donation after euthanasia, and identifies the possible advantages and challenges of this meaningful procedure.

Introduction

Organ donation after euthanasia has been performed in the Netherlands since 2012. By November 2021*, 83 patients were able to donate their organs following euthanasia, resulting in a significant number of donated kidneys, livers, lungs and pancreas glands. Most of these procedures took place in the intensive care unit (ICU), supported by intensive care physicians and nurses, who were already familiar with end-of-life care and organ donation procedures in their department. However, the psychological impact of death as a result of euthanasia should not be underestimated. Belgium has also facilitated organ donation after euthanasia since 2005, and Canada was able

to rely on the experiences from Belgium and the Netherlands when they initiated a program of organ donation after medical assistance in dying (MAID).^[1]

This article discusses the legal aspects and history of organ donation after euthanasia, the practical aspects of this combined procedure, its impact on the intensive care staff, and future challenges. This article is a synopsis derived from the more detailed discussion of these aspects in the thesis ‘Organ donation after euthanasia: medical, legal and ethical considerations’.

Legal aspects

When performing organ donation after euthanasia, one must act in accordance with the provisions of the Act on Organ Donation and the Termination of Life on Request and Assisted Suicide Act (Euthanasia Act).^[2] However, the actions of a care provider must also meet the standards of the Medical Treatment Agreement Act [WGBO: wet op de geneeskundige behandelingsovereenkomst], and hospitals must adhere to the Healthcare Quality, Complaints and Disputes Act [Wkkgz: Wet kwaliteit, klachten en geschillen in zorg].^[3]

Euthanasia

Causing someone’s death, even at his own request, is still illegal. However, the Euthanasia Act, which came into effect in 2002, states that a physician is allowed to perform euthanasia if the patient’s request fulfils all due diligence requirements: the patient must be suffering hopelessly and unbearably, he needs to be well-informed, his request needs to be deliberate and voluntary, no other reasonable options should be available, and a second – independent – physician has to assess the patient. If the patient requests euthanasia due to psychological suffering, an independent psychiatrist needs to consult the patient as well.^[4] Six weeks after euthanasia has been performed, a review

committee decides whether these requirements were met and whether the physician has acted correctly. If the due diligence requirements were not fulfilled, the physician risks prosecution, which has occurred on several occasions in the past – although so far not related to a combined procedure with organ donation. In 2021, 7666 patients underwent euthanasia in the Netherlands.^[5]

Organ donation

The Organ Donation Act of 1996 describes how organs can be donated in a ‘living’ or ‘deceased’ procedure. Organ donation following euthanasia is a donation after circulatory death (DCD) procedure. Kootstra et al. introduced four, Maastricht categories of DCD in 1995.^[6] Within this context, organ donation after euthanasia is described as ‘category III’, comparable with cessation of treatment of a patient admitted to the ICU (also referred to as withdrawal of life-sustaining therapy). In a DCD III scenario, a patient can be an organ donor if the patient dies within two hours and if prolonged, severe hypotension and hypoxia and thus ischaemia to organs has not occurred. The difference between a classical DCD III and donation after euthanasia is that in classical DCD III there is withdrawal of life-sustaining therapy while in organ donation after euthanasia there is an active ending of life on the request of the patient in well-defined circumstances. Because of this difference, some authors define organ donation after euthanasia as DCD V.^[7] While in DCD III the patient is often comatose, the main advantage of the combined procedure is that the patient can provide first-person consent and it is therefore not necessary to rely on their possible registration in the Donor Registry or input from the patient’s relatives.

History of organ donation after euthanasia

In 2005, a Belgian patient who fulfilled the due diligence requirements for euthanasia requested her physician to be able to donate her organs as well. After the initial procedures of organ donation after euthanasia were published, healthcare providers wondered whether this combined procedure was allowed from a legal, medical and ethical perspective. Initially, the response was cautious due to unfamiliarity with the procedure and uncertainty about the possible implications. Compared with the decades which it took before euthanasia was legalised, the time before the combination of euthanasia and organ donation found its way into medical practice was relatively short. Amending the legislation proved unnecessary, because euthanasia and organ donation were existing legal procedures in the Netherlands.

How is organ donation after euthanasia performed?

The national Dutch Guideline on organ donation after euthanasia was introduced in 2018, and is partly based on the practical manual jointly developed by the Maastricht University Medical Center and Erasmus Medical Center Rotterdam.^[8] The steps in this process will subsequently be elaborated upon.

Step 1

All due diligence requirements for euthanasia need to be fulfilled. The performing physician – often the patient’s general practitioner or a physician from the Euthanasia Expertise Centre – assesses these criteria, together with a second, independent, physician. This aspect is paramount to maintain a strict separation between the euthanasia procedure on one hand and the organ donation procedure on the other. This is necessary to avoid a situation where a patient might choose euthanasia *because* he would then be able to donate his organs. Only after a positive decision about the patient’s euthanasia request can the patient request to donate his organs following euthanasia.

Step 2

The performing physician subsequently contacts the organ donation coordinator and/or the local or regional intensive care physician specialised in organ donation. Together they investigate whether any contraindications for organ donation exist, after the patient has approved to review their medical chart. Often preparatory examinations, such as blood and urine tests, will be necessary, which can be done during a visit at the patient’s home by the organ donation coordinator and/or the local or regional intensive care physician, or while the patient visits the hospital. Patients suffering from a neurodegenerative disease, such as multiple sclerosis, amyotrophic lateral sclerosis or Huntington’s disease, are often suitable as donors. In addition, patients with severe psychiatric suffering have undergone organ donation after euthanasia as well, although this category of patients is currently not yet mentioned in the national guideline. Organ donation is not possible in patients with malignancy. A patient’s old age might also be a contraindication, even though strict guidelines on age are no longer applicable.

Step 3

The performing physician, together with the organ donation coordinator and/or the intensive care physician, inform the patient about the different aspects of the procedure. It is important to clarify that additional preparatory examinations are necessary, often a CT scan of the chest and abdomen, that the patient will have to die in the hospital in order to facilitate organ donation, and that his relatives can nevertheless be present in the hospital during the euthanasia procedure. Even more important is that the patient can withdraw from the procedure at any time. He must be assured that he can always choose to undergo euthanasia at home (and thus discontinue the organ donation procedure) or not to undergo euthanasia at all.

Step 4

The organ donation coordinator will arrange a patient room in the hospital, an operating room and a surgical team, as well as ensure permission from the medical director, and medical and nursing heads of department to perform the procedure

in the hospital. An experienced and dedicated critical care nurse is approached to assist in the procedure. The performing physician will keep contact with the patient. Depending on local agreements, the performing physician or the intensive care physician will facilitate the ordering of the euthanasia drugs at the hospital pharmacy or the local pharmacy. The whole team, together with the patient, then chooses a date to perform the organ donation after euthanasia procedure.

Step 5

On that date the patient is admitted to hospital and undergoes the preparatory investigations, depending on the organs potentially suitable for donation. After notification of the procedure, Eurotransplant will allocate the organs, which can already be done on the day before the procedure. Organs donated following euthanasia will only be transplanted to countries that have decriminalised euthanasia. Potential recipients are called to their hospital. The actual euthanasia procedure should be performed in relatively peaceful and quiet surroundings where the patient's relatives can be present. Depending on the local procedures and regulations, it is commonly the general practitioner who performs the procedure – analogous to performing euthanasia at home.

Step 6

The five minute 'no touch time' elapses immediately following determination of circulatory arrest. To be certain of this circulatory arrest and to avoid any negative impact on the donated organs due to delay and thus ischaemia, the Health Council of the Netherlands [Gezondheidsraad] advises to use an arterial line in these patients.^[9,10] After death has been determined, the patient is quickly transported to the operating room where the organs are procured. From the moment circulatory arrest occurs, the warm ischaemia time commences during which organs suffer from oxygen deprivation; this should be as short as possible to avoid too much damage to the organs. Since euthanasia is a non-natural death, the public prosecutor needs to give permission for both transporting the deceased and for the organ donation procedure. Informing the coroner and public prosecutor is normally performed *after* the patient has died, but in organ donation after euthanasia the planned procedure is communicated *in advance* to the municipal coroner, so he can be present near the ICU. This allows him to provide a death certificate immediately and to communicate this to the public prosecutor, in order to maximally facilitate the subsequent organ donation procedure.

The recovered organs are then transported to the recipients in the different hospitals according to Eurotransplant's instructions. It is currently not possible for the donor to designate a recipient of a specific organ in advance. After the procedure, the deceased can be transported back home.

Recent lessons learned

A detailed elaboration on the procedure and its ethical aspects can be found in the national guideline on organ donation after euthanasia.^[11]

Recent experiences and insights have led to some additional recommendations:

- Make sure an organ donation coordinator is assigned to coordinate all aspects of the transplantation procedure, and another is assigned to care for the patient's relatives;
- Involve all stakeholders in the process of decision-making and planning, respectively, as soon as possible after receipt of the formal request; this includes the hospital's board of directors, the ethical committee, the pharmacy and the public prosecutor;
- A local protocol based on the national guideline can facilitate the practical processes associated with organ donation after euthanasia to a large extent. Many practical issues can be tackled if they have been anticipated.

How many patients are eligible for organ donation after euthanasia

Research on the Belgian euthanasia data demonstrated that about 10% of patients undergoing euthanasia might be *medically* eligible for organ donation.^[12] Apart from being *able* to donate, the patient also needs to be *willing* to donate his organs, he has to undergo the preparatory investigations, and he must be willing to die in hospital. Therefore, the actual potential number of organ donations after euthanasia is much lower. Nevertheless, every single donated organ can improve or even save another patient's life.

Between 2002, when euthanasia was legalised, and 2021, 82,963 patients underwent euthanasia in the Netherlands. At the end of July 2021, 1355 patients were on the transplant waiting list. If only a small percentage of patients who undergo euthanasia were to choose to donate their organs, the theoretical impact of euthanasia on the transplant waiting lists would still be significant, but this should never be the primary goal.

Results of organ donation after euthanasia

Although the ethical and legal aspects of organ donation after euthanasia require a great deal of attention, an important medical question is whether organ donation after euthanasia yields the desired results. Those who were involved in these combined procedures have informed us that patients were always very grateful that they were able to donate their organs at the tragic end of their life.

Until recently, it was unclear whether the donated organs following euthanasia functioned adequately. In recent research the results of kidney transplants donated after euthanasia were

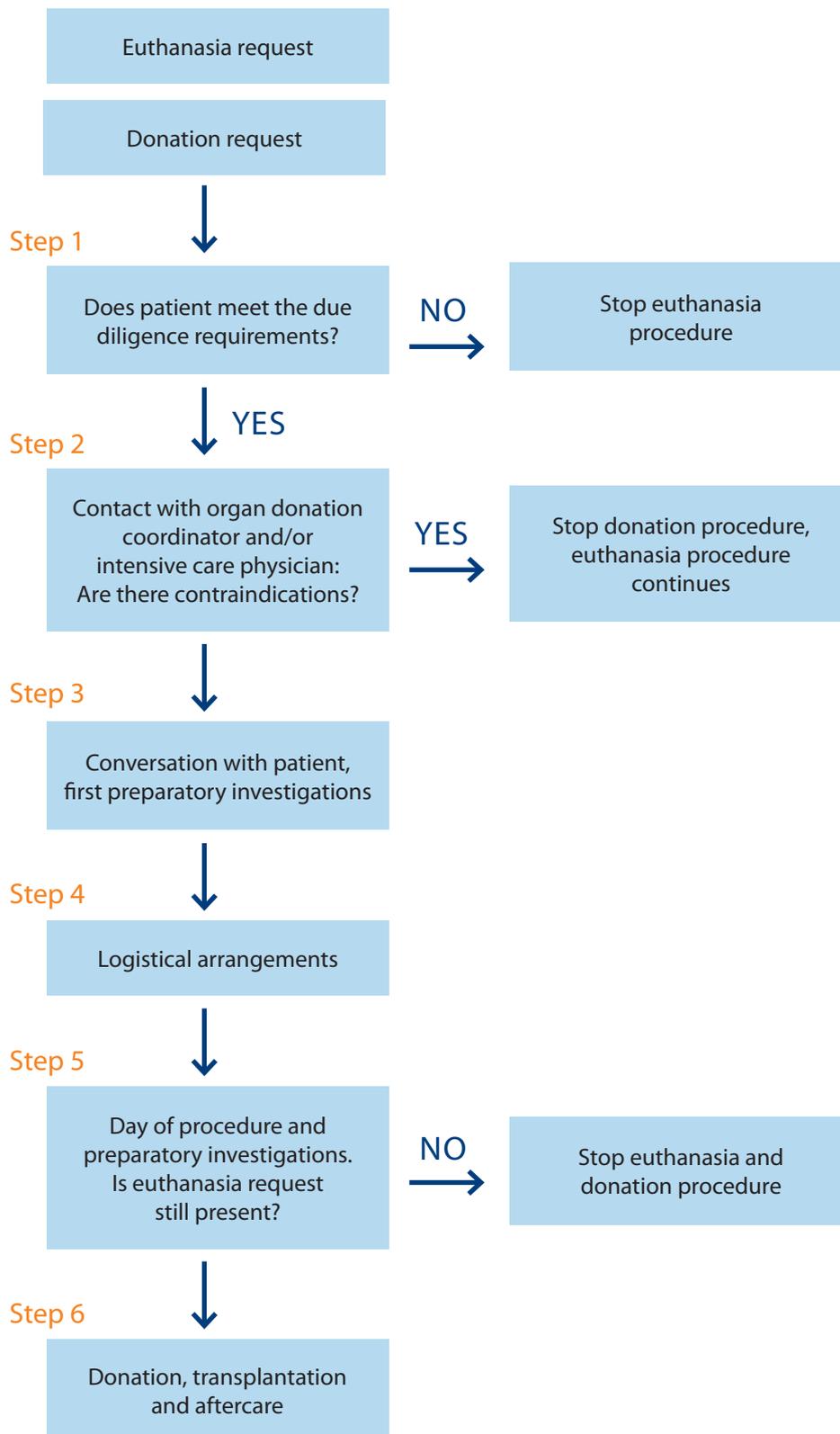


Figure 1. Algorithm of organ donation after euthanasia procedure

compared with kidneys donated after DCD, and with kidneys that were donated after brain death. The study compared 73 kidney transplants after euthanasia with 1212 transplants donated after brain death and 1234 transplants after DCD.^[13] The conclusion of this study was that kidneys transplanted after euthanasia were 3.4 times less at risk of delayed functioning than kidneys transplanted after DCD. Overall, kidneys donated after euthanasia functioned as well as kidneys donated after brain death and better than kidneys donated after circulatory arrest.

Research by Van Reeve et al. suggests that liver transplants donated following euthanasia yield similar outcomes to liver transplants from DCD III.^[14] The long-term outcome of lung transplants from DCD III is comparable with those donated following euthanasia.^[15]

Minors

Organ donation after euthanasia is also legally possible in a minor (between 12 and 18 years), provided the minor makes the request him/herself and is medically eligible. However, the robust legal basis does not alter the fact that organ donation after euthanasia in children is ethically and emotionally a very sensitive issue and it would be unethical to deny these patients their last wish.^[16] It should be noted that euthanasia in minors is very uncommon. Moreover, since almost all minors who undergo euthanasia suffer from malignancy, organ donation has been impossible so far on medical grounds.

Policy makers in the Netherlands regularly discuss whether euthanasia should also be possible for children under the age of 12. It is currently unclear what this would mean for organ donation after euthanasia in minors.

Organ donation euthanasia

From a purely medical perspective, it may seem strange to let a patient die first and then remove the organs. This causes oxygen deficiency in the organs, and thus a negative effect on the quality of the harvested organs. Some patients who have undergone organ donation after euthanasia therefore proactively requested to donate their organs while under anaesthesia, and thus wanted to die *as a result of* organ procurement.^[17] In this way the patient would not die from the administered euthanasia drugs, but would receive anaesthesia before the organs, including the heart, are taken out, which then causes death. We have called this 'organ donation euthanasia'. Initially, we supposed that ODE would lead to a better condition of the donated organs, and that ODE would make it possible to donate the heart as well. In the meanwhile, however, the first heart donations following euthanasia have been performed in the Netherlands.

Since the patient is still alive when the organs are removed, organ donation euthanasia is legally classified as donating organs

during life. If organ donation during life is expected to affect the health of the donor, it is not allowed under Dutch law unless the recipient of the organ is in a life-threatening condition which cannot be averted adequately in another way. Theoretically, one could argue that a patient on the transplant waiting list is always in danger to life. In addition, the Dutch legislature has so far always focused on donating *one* organ, since in contemporary practice living donation usually implicates living kidney donation

Organ donation euthanasia is thus currently prohibited under Dutch legislation. Nevertheless, if the legislature were to make organ donation euthanasia possible, it would seem obvious that the same due diligence requirements should be met as for euthanasia. The next opportunity to discuss a possible change in legislation will be with the planned law review in 2023. Regardless of a possible change in the law, it is crucial to avoid giving the general public the impression that there is a "quest" for organs, to take vital organs from living patients. This goes against the current dead-donor rule, which aims to protect the interests of the donor.

Future perspectives and challenges

We assume that an increasing number of patients will be or become aware of the possibility of the combined euthanasia and organ donation procedure, and may request to donate their organs after euthanasia as a final altruistic wish. This makes further research necessary from a medical point of view, in the ethical domain, and from different perspectives such as from healthcare professionals and hospital managers/board members.

The most important medical question is how the transplanted organs following euthanasia will function in the long term. Recently, DCD heart donation was introduced in the Netherlands and the next patient who chose organ donation after euthanasia was able to donate his heart as well. Research on hearts procured following euthanasia demonstrated they functioned adequately.^[18]

Many studies are necessary in the ethical domain. First, the dilemma whether to inform the patient about the possibility of organ donation after euthanasia is unexplored. A second point of discussion is the extent to which the wish to donate is or is not allowed to have an impact on the euthanasia request. Thirdly, a thorough discussion is necessary about sedating and intubating a patient at home prior to transportation to the hospital where the euthanasia can subsequently take place.

Further research might persuade more hospitals to facilitate organ donation after euthanasia, since some of them are still reluctant to allow this combined procedure within their walls.

Occasionally, patients, such as those suffering from psychiatric disorders, are referred to a hospital with which they have no treatment relationship, because their own hospital is not able or willing to cooperate in this combined procedure. The underlying argumentation for this is yet to be unravelled. Also, research is needed on the patients who choose organ donation after euthanasia due to psychiatric suffering.

An even more important aspect to elucidate is the impact of organ donation after euthanasia on the wellbeing of the healthcare professionals involved. They are primarily trained to support, help, care for and cure patients. When confronted with a patient who requests euthanasia because of physical suffering, the underlying somatic illness and associated suffering is often quite clear, and death is imminent. Consequently, alleviating the patient's suffering is the focus of care. The associated moral distress with the same procedure in a psychiatric patient may be substantially higher. The issue of 'directed donation' is also an important point to explore, making it possible to designate a specific organ to an organ recipient, which is currently not legally allowed.

Conclusion

Organ donation after euthanasia is a very valuable procedure for patients requesting euthanasia who have the altruistic wish to improve the life of others. For patients on a transplant waiting

list, every organ that becomes available is life-saving. Legislation does not preclude a combination of both procedures, not even for minors from the age of 12. As a result, this combination has become increasingly accepted in medical practice over recent years. It has been performed more than 83 times in the Netherlands (November 2021). The Dutch ICUs and healthcare professionals make a valuable contribution to these procedures.

However, many legal and ethical dilemmas surrounding organ donation after euthanasia need to be discussed further, including whether a physician should inform a patient who is about to undergo euthanasia about organ donation, organ donation after euthanasia in psychiatric suffering, and the removal of organs from a patient under general anaesthesia. Future research results, experiences and debates might contribute to a change in policy.

Disclosures

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* The figures have been updated since the article was accepted.