Deactivating Pacemakers at the End of Life

Rev. Benedict M. Guevin, OSB

Abstract. The question of whether it is permissible to deactivate a pacemaker at the end of life has been addressed in medical journals but rarely in ethics journals. The ethics of pacemaker deactivation is especially challenging because of the disparate ways the devices are viewed by both medical professionals and patients. Some consider pacemakers replacement therapy, and some consider them substitutive therapy. If they are the former, then deactivation would not be permitted, since a replacement device is considered a part of the body, akin to a new heart. Some ask whether pacemakers are natural or artificial; if pacemakers are artificial, deactivation would be permissible. Another factor is whether a patient is pacemaker dependent. Some medical experts decide the issue of deactivation on the basis of patient autonomy. Others weigh in on whether pacemakers are ordinary or extraordinary means of care. This paper examines each proposal and concludes tentatively that pacemaker deactivation is not permissible at the end of life. National Catholic Bioethics Quarterly 15.1 (Spring 2015): 39–51.

Two years ago, and about a month apart, two different people consulted me on the same moral dilemma. The first person was the son of a ninety-year-old woman who was suffering from advanced Alzheimer’s disease. He wanted to know if it would be morally permissible to allow his mother’s pacemaker battery to run out (which, according to him, would happen in about three months’ time) without having it recharged. The second person presented me with a different case. His brother was in the final stages of terminal cancer. He wanted to know if it would be all right to

Rev. Benedict M. Guevin, OSB, PhD, STD, is a professor of theology at Saint Anselm College in Manchester, New Hampshire.
have his brother’s pacemaker deactivated since, in his mind, this is what was keeping his brother alive and suffering. In both cases, I dodged the issue. I had never thought about the morality of deactivating a pacemaker at the end of a person’s life and so was uncertain about how to respond adequately to these questions.

This topic has been addressed in a number of medical journals, but rarely in ethics journals. It is time to further the discussion. In what follows, I will limit myself to pacemakers. There is another category of implantable devices, cardioverter defibrillators. Their function is different from that of pacemakers, and their deactivation does not pose the same ethical challenges. So while I will make reference to cardioverter defibrillators in this paper, I will do so only by means of contrast. The deactivation of cardioverter defibrillators is an important issue with its own ethical challenges and deserves to be treated in a separate study.

What Implantable Cardioverter Defibrillators and Pacemakers Do

While not our topic here, we must distinguish pacemakers from cardioverter defibrillators. Implantable cardioverter defibrillators are used to prevent sudden cardiac death due to life-threatening dysrhythmias such as ventricular tachycardia and ventricular fibrillations. They monitor the patient’s inherent cardiac heart rate and rhythm. Based on preprogrammed settings, cardioverter defibrillators respond to dysrhythmias by anti-tachycardia pacing, cardioversion, defibrillation, or back-up...
cardiac pacing. In lay terms, cardioverter defibrillators administer a shock to patients to restore normal rhythm. While very effective in preventing death from sudden cardiac arrest, cardioverter defibrillators are not without their problems. They are particularly challenging during the dying process. In at least one case, a cardioverter defibrillator shocked a dying patient thirty-three times in the last hours of his life, stopping only when the battery ran down. These multiple electronic shocks were painful for the patient and distressing to the family, who had hoped for a more peaceful death for their loved one.

Two types of pacemakers are used to treat arrhythmias, that is, alterations in the rate or rhythm of the heartbeat. The first kind of pacemaker is used to treat bradycardia (a heartbeat that is too slow) and tachycardia (a heartbeat that is too rapid). This pacemaker delivers energy to the atrium or the ventricle. When the pacemaker is in the asynchronous mode, it stimulates an impulse at a preset rate. When it is in the synchronous mode, it stimulates an impulse only when the person’s heart rate falls below a certain preset level. These levels can be adjusted by an external programmer.

The second kind of pacemaker is biventricular. This type of pacemaker may be indicated for patients suffering from heart failure. A biventricular pacemaker paces both right and left ventricles simultaneously. The goal is to improve hemodynamic function by restoring ventricular synchrony for a patient with intraventricular conduction delays. Because of the low-energy pulses that the pacemaker delivers, the patient has no sensation of having an implanted cardiac device.

**A Replacement or Substitutive Therapy?**

What makes the deactivation of a pacemaker so morally challenging is, in part, due to the manner in which doctors and patients view the device itself. David Sulmasy suggests that pacemakers should be considered “replacement therapy.” By this Sulmasy means a “technological intervention that participates in the organic unity of a patient as an organism. This is what it really means to say that a technological intervention has become ‘a part of the patient.’” Neal Kay and Gregory Bittner,
who agree with Sulmasy’s description, explain this further: “A replacement therapy is one that functions as part of a patient’s restored physiology; it provides a function that has been pathologically lost in a manner similar to which the patient was able to function when healthy.”9 Without using the word “replacement,” many doctors and patients view the pacemaker, now a part of the person’s body, as they would a new heart or a new kidney.

Kay and Bittner note several additional ways in which a permanent pacemaker meets Sulmasy’s criteria for a replacement therapy: it is integrated into the patient’s body, it responds to changes in the patient and his or her environment, it is immunologically compatible with the patient, and it can function for many years without an external energy supply.10 Viewed this way, getting a pacemaker would be analogous to having a heart or renal transplant. Just as no doctor would consider “turning off” a heart transplant by injecting potassium into the heart, no doctor should consider turning off a pacemaker. This would be a direct act of killing by the interruption of a replacement therapy.11

Others disagree with calling the pacemaker a replacement therapy. They prefer to think of a pacemaker as “substitutive therapy.” This way of looking at a pacemaker is akin to the way in which one views a ventilator. Both the pacemaker and the ventilator substitute for a pathologically disordered bodily function, but the devices are not organically integrated into the patient as the term “replacement therapy” suggests.

These differences, according to various authors, have moral consequences. Sulmasy’s position, that the pacemaker is a replacement therapy, does not allow for its deactivation. Those who believe that the pacemaker is a substitute also believe that it is morally permissible to refuse or deactivate it since it is akin to other types of substitute therapies, such as the ventilator.12

Lynn Jansen makes a closely allied argument regarding whether or not the pacemaker is considered to be “natural” or “artificial.” The larger and more philosophical issue is the question of what constitutes the self. The constitution of the self, she proffers, is fixed in large measure by our concepts and social conventions. Regarding pacemakers, she considers two possibilities: (1) an artificial device is an object that is not composed of human cells and tissues, and (2) an artificial device is one that is

---


11 Sulmasy, “Within You / Without You,” 71. See also Kay and Bittner, “Implantable Cardioverter Defibrillators and Permanent Pacemakers in Terminal Illness,” 336. Others disagree with this view. Richard Zellner, Mark Aulisio, and William Lewis write, “Pacemakers are not capable of growth or self-repair. They rely on batteries that deplete. Pacemakers are subject to malfunction, often need expert intervention, and are subject to recall. Thus, pacemakers are not ‘replacements.’” Zellner, Aulisio, and Lewis, Response to Kay and Bittner, Circulation: Arrhythmia Electrophysiology 2.3 (June 2009): 339.

alien to the person—that is, it is not part of the self, but extrinsic to it. The pacemaker, she goes on to say, is clearly artificial, in that it is not composed of human cells and tissues, but she counters that it is perhaps not artificial simply because it is alien to the person. Ultimately, she concludes, the ambiguous artificiality of the pacemaker is not decisive in determining whether or not it can be deactivated. The same ambiguity obtains, then, in the question of whether deactivating a pacemaker is an instance of killing or of allowing a person to die. Given the advances in medical technology, Jansen foresees that this kind of ambiguity will increase over time. Therefore, she says, we must either revise our moral principles or learn to live with the possibility that current or revised moral principles will provide no guidance in such cases.13

The distinction between what is natural and what is artificial is frequently used by both doctors and patients. How often do we hear expressions like “I don’t want to be kept alive artificially!” or “If some machine is keeping me alive, then pull the plug!” Statements like these betray a misunderstanding of what constitutes artificial means of care as well as to what extent these artificial means are considered morally obligatory.14

In health care, the term “artificial” can apply to the entire spectrum of medicines and procedures created by human beings and used by health care professionals. An aspirin is as artificial as a cardioverter defibrillator. Normally, the use of artificial means of care is relatively short-term, and the person will fairly quickly resume natural functioning. For example, anyone who has had surgery in which general anesthesia was used knows that he or she is placed on a ventilator. But once the surgery is over, the person is removed from the ventilator and begins to breathe on his or her own. Other artificial means of care may last a lifetime, such as a prosthetic limb or a pacemaker. Generally speaking, artificial means of care are deemed “ordinary” if they are the normally prescribed means to help bring our bodies to a healthy state or if they assume a primary function until such time that the body can resume this function on its own. To the extent that they constitute ordinary means of care, artificial medicines and procedures are morally obligatory.

There are situations, however, when an artificial means of care that starts out ordinary becomes extraordinary. For instance, chemotherapy is considered a treatment of choice for combating certain kinds of cancer. If the chemotherapy is beneficial to the person, it can be considered ordinary treatment. But what happens when the chemotherapy is not helping or when it becomes excessively burdensome physically and psychologically? Then, perhaps, chemotherapy has become extraordinary care for this particular individual. Chemotherapy in these cases may no longer morally oblige.

---


In the case of a pacemaker, whether or not it is considered natural or artificial is beside the point. What matters is whether or not the pacemaker is of benefit to the person within the complex circumstances of his or her particular situation. The question of deactivation must, for the time being, be put off until we can determine whether the device provides appropriate benefit.

**Patient Autonomy**

Some authors do not accept Sulmasy’s description of the pacemaker as replacement therapy and deactivation, therefore, as ethically impermissible. For them, the issue lies in a different direction. In her response to an article by Lofty Basta and Todd Jennings titled “A Patient Asks to Put an End to the Nightmare of Living with a Lifesaving AICD” (whose authors conclude that disabling a pacemaker “amounts to euthanasia”), Maria Silveira states her strong disagreement. She regards deactivating a pacemaker as equivalent to withdrawing other life-sustaining treatments, such as a ventilator, feeding tubes, intravenous fluids, or an automatic implantable cardioverter defibrillator, and not as euthanasia. Silveira believes that all patients have the right to withhold or withdraw all life-sustaining treatments and that the deactivation of a pacemaker simply “precipitate[s] a merciful death that would otherwise not occur.”

For Silveira, the accent should fall on patient autonomy, and not on whether the pacemaker is seen as a replacement or a substitute. She writes, “Judicial precedent set forth by the Supreme Court and current ethical standards have established that all patients have the right to withhold or withdraw all life-sustaining treatments. Life-sustaining treatment is any intervention without which a person cannot live.”

Others agree with this position. In their response to Kay and Bittner, Richard Zellner, Mark Aulisio, and William Lewis—a lawyer, an academic, and a physician, respectively—write that the main issue in whether or not to deactivate a pacemaker is “that patient autonomy is paramount.” Given that God created us with reason, will, and the freedom to act ethically, Silveira, Zellner, and others make a valid point. But autonomy tout court is problematic. Does autonomy mean that I can choose to forgo any intervention without which I may die? Let us look at two cases.

---


18 Ibid.

In the first case, Joe is in the terminal phase of non-Hodgkin lymphoma. The cancer has metastasized to the liver, the lungs, and the brain. Joe’s pain is unbearable, and he has become delirious. His wife takes him to the hospital, where it is discovered that Joe is also suffering from pneumonia. The doctor prescribes a round of antibiotics to rid Joe of the pneumonia. Joe refuses them. He just wants to go home. He has had enough. The following day, Joe dies peacefully at home in his own bed.

All things being equal, it seems clear that Joe’s decision to refuse the antibiotics was not a way to commit suicide. Death from cancer was days or weeks away. What benefit would there be in treating his pneumonia at this late stage in his life? Joe is responsibly and ethically exercising personal autonomy. He has fought the good fight. Now is the time to accept the inevitable.

In the second case, Jillian, a recently widowed forty-year-old woman in otherwise good health, has become suddenly ill with a cough and fever. A neighbor drives her to the emergency room, where it is determined that she has bilateral pneumonia. Given her overall good health, the doctor prescribes a round of antibiotics which, he tells her, should take care of the problem. Jillian refuses the prescription. She tells the doctor that she has recently lost her husband and just wants to be him. The pneumonia, she reckons, is her ticket to be once again reunited with him. Jillian, like Joe, is exercising personal autonomy. Legally, she is free to refuse the antibiotic. But is it ethically permissible for her to do so? No. Refusal in this case would be nothing short of suicide. Suicidal ideation after the death of a loved one is not uncommon. The doctor him- or herself, or a sympathetic counselor, should speak with Jillian about her grief and depression. Often, such discussions can help a person see that what he or she is experiencing is normal and will pass. This may diffuse the bomb of suicide that she wants to set off.

I am not suggesting that Silveira, Zellner, and others would see these two cases as legitimate exercises of autonomy. They may or may not. But when giving such tremendous weight to the role of autonomy in a medical setting, one has to be more precise. Autonomy is not an absolute right by which one can freely determine a course of action for oneself. I am not ethically free to murder someone or to commit adultery. In the medical world, I am not ethically free, mutatis mutandi, to refuse ordinary forms of treatment—treatment that is beneficial, affordable, and not burdensome. I am free to refuse extraordinary care—treatment that is not beneficial, not affordable, or burdensome or for which I experience vehemens horror (great dread). For Basta and Jennings, over and against the “esoteric dissociated theoretical ethics [in which] the right of self-determination reigns supreme” should be an ethics in which the virtues

---

20 People who are depressed or who suffer from serious emotional distress are four times more likely, for example, to request euthanasia or physician-assisted suicide than patients without depression or distress. See, for example, Marije I. van der Lee et al., “Euthanasia and Depression: A Perspective Cohort Study among Terminally Ill Cancer Patients,” *Journal of Clinical Oncology* 23.27 (September 20, 2005): 6607–6612. For this reference, I am indebted to Rev. Nicanor Pier Giorgio Austriaco, OP; see his *Biomedicine and Beatitude: An Introduction to Catholic Bioethics* (Washington, DC: Catholic University of America Press, 2011), 152–153, note 48.
of prudence, compassion, and kindness are evident. Instead of too easily accepting a request for euthanasia or physician-assisted suicide, a doctor should show “true understanding of the patients’ suffering, pursue every avenue to alleviate their fear, rekindle their lost hope and reassure them that everything that can be done shall be done to achieve a satisfactory measure of relief.”

**Pacemaker Dependent or Independent**

For others, the way to decide on the morality of deactivating a pacemaker is to ask whether the person is pacemaker dependent or independent. At this time, there is no universal agreement on what constitutes pacemaker dependency. Some physicians consider a patient pacemaker dependent if he or she has an inadequate or absent underlying cardiac rhythm and will develop severe symptoms of syncope, heart failure, or cardiac arrest when the pacemaker has been deactivated. Other physicians consider a patient pacemaker dependent if the ventricle is constantly paced by the implant. Still others identify pacemaker dependency if deactivation results in asystole in the absence of an underlying escape rhythm.

Panagiotis Korantzopoulos and colleagues believe that another associated issue needs further discussion, namely, intermittent dependency. Some patients who suffer from atrial fibrillation showed improvement in follow-up exams. Other patients showed that the escape rhythm was unstable depending on what tests were being done on their pacemaker. Such patients, according to these authors, should be considered pacemaker dependent, since the moment of loss of intrinsic rhythm is unpredictable. Those who are pacemaker dependent, that is, “without continuous or nearly continuous pacemaker activation, . . . would suffer life-threatening symptoms.”

---

21 Basta and Jennings, “Patient Asks to End Nightmare,” 327.
25 See Korantzopoulos, “Pacemaker Dependency,” 1152.
28 See Korantzopoulos, “Pacemaker Dependency,” 1153.
Not everyone who has an implanted pacemaker is dependent on it. Pacemaker independence means that the patient’s escape rhythm is enough to sustain an adequate blood pressure. In this case, the pacemaker senses intrinsic cardiac electric potentials. If they are too infrequent or absent altogether, the pacemaker will transmit impulses to the heart to stimulate myocardial contraction. Pacemaker deactivation in these patients would not necessarily lead either to a quick death or to death at all. But neither, in many cases, will deactivation of the pacemaker in patients deemed dependent.

In the medical literature that deals with the ethics of deactivation, there are two schools of thought on whether it is morally permissible to deactivate the pacemaker of a patient who is dependent. There are authors who, as we saw earlier, are in favor of deactivation, arguing that the pacemaker is substitute therapy that can be deactivated on the basis of patient autonomy. They consider the pacemaker to be a form of treatment that a patient may ethically choose to forgo if it becomes too burdensome or futile.

Other authors are opposed to the deactivation of pacemakers because, like Daniel Sulmasy, they consider a pacemaker to be a replacement therapy. For them, the
more a medical intervention serves as a replacement rather than a substitute therapy, the less willing a doctor should be to accede to a patient’s request for deactivation.\textsuperscript{34}

A number of doctors are also opposed to the deactivation of the pacemaker for other reasons.\textsuperscript{35} Two of the most outspoken opponents are Mohamed Rady and Joseph Verheijde.\textsuperscript{36} They offer an appraisal of the lethal pathophysiology and mode of death when either a cardioverter defibrillator or a pacemaker is deactivated. Lethal pathophysiology “means a cascade of disrupted physiological processes resulting in irreversible cessation of three vital functions, i.e., consciousness, respiration, and circulation.”\textsuperscript{37} Lethal pathophysiology can occur with or without the deactivation of a cardiac device. If the cardiac device is functioning normally, death may occur because of an infection or a massive internal hemorrhage with circulatory collapse; respiratory failure; massive brain hemorrhage or infarction; or multiple organ failure. In other words, a life-threatening illness will cause natural death even though the cardiac device remains operative.\textsuperscript{38} When the cardiac device is deactivated in device-dependent patients, a lethal pathophysiology may be set off and cause death even in the absence of a life-threatening illness. Because deactivation allows the patient and the doctor to have control over the time, place, method, and mode of death, it qualifies as assisting death, not as letting “nature take its course,”\textsuperscript{39} and so is unethical.

Rady and Verheijde outline four ways in which cardiac devices interfere with a natural death: (1) Normal functioning of the device can lead to distressing symptoms during the dying process (such as the shocking that can occur in those with a cardioverter defibrillator), so that appropriate medications must be administered to alleviate suffering if the device is not deactivated. (2) If the device is deactivated without the onset of a life-threatening illness, then the mode of death is what the patient objected to when he or she originally consented to implantation of the device. (3) After a pacemaker is deactivated, cardiac resynchronization and ventricular devices can cause new and distressing symptoms in device-dependent patients who require medications to alleviate the suffering and to shorten the dying process. And (4) a life-threatening illness may cause death even in a device-dependent patient, eliminating the need for device deactivation. The normal operation of cardiac devices

\textsuperscript{34} See Kay and Bittner, “Implantable Cardioverter Defibrillators and Permanent Pacemakers in Terminal Illness,” 338.

\textsuperscript{35} See, for example, Basta and Jennings, “Patient Asks to End Nightmare”; Kay and Bittner, “Implantable Cardioverter Defibrillators and Permanent Pacemakers in Terminal Illness”; Becker, “Turning Off a Pacemaker”; Huddle and Bailey, “Pacemaker Deactivation”; Rady and Verheijde, “Deactivating an Implanted Cardiac Device”; and Braun et al., “Cardiac Pacemakers and Implantable Defibrillators in Terminal Care.”

\textsuperscript{36} See Rady and Verheijde, “Deactivating an Implanted Cardiac Device.”

\textsuperscript{37} Ibid. 1086. See also Rady and Verheijde, “LVADs as Destination Therapy: Difficult Ethical Decisions,” Lahey Clinic Journal of Medical Ethics 18.2 (Spring 2011): 1–2, 7.

\textsuperscript{38} Rady and Verheijde, “Deactivating an Implanted Cardiac Device,” 1086.

\textsuperscript{39} Ibid., 1086–1087.
does not cause distress in dying patients, although the time line of the dying process becomes unpredictable.\textsuperscript{40}

In short, the presence of a cardiac device will not interfere with the natural dying process. The deactivation of a cardiac device, on the other hand, will set off a new lethal pathophysiology in a device-dependent patient. When this happens, the mode of death will be consistent with assisted dying.\textsuperscript{41}

In a similar vein, Basta writes that tinkering with a pacemaker in a person who is not dying and who is still functional can lead to death in one of several ways: by changing the pacing rate to decrease cardiac output, by changing the output of the pacemaker to less than twice the threshold to decrease capture either by the atrial or ventricular leads, or by changing pacing from dual-chamber to single-chamber pacing in patients who have intact or almost intact responsive atria. Tinkering with the pacemaker is, according to Basta, illegal, immoral, and unethical.\textsuperscript{42} Elsewhere, he and Jennings argue that disabling the pacemaker component of the device to cause death is euthanasia. Disabling the pacemaker is an active intervention, the intention of which is to cause death. To “let die” is different from to “make die.” The intent of the act is what counts.\textsuperscript{43}

Thomas Huddle and Amos Bailey also agree with Sulmasy, viewing the pacemaker as replacement therapy. Because patients who have had pacemakers implanted experience no sensation of having one, and because a pacemaker does not interfere with the natural process of dying, these authors do not believe that one can invoke the principle of double effect to justify its deactivation. A physician might claim to intend something other than the patient’s death when deactivating the pacemaker, but if there is no burden on the patient with a pacemaker, “the only outcome from its deactivation available as an end to the deactivator is the patient’s death. And the pacemaker’s deactivation can then only be a means to that end, whatever the deactivator might claim to otherwise intend.”\textsuperscript{44} Regarding the issue of a patient’s right to refuse treatment, Huddle and Bailey argue that the physician is a bystander with respect to the pacemaker, which is, in large part, a treatment already completed rather than one that is ongoing. A patient’s right to refuse treatment cannot apply, they conclude, to completed treatments.\textsuperscript{45}

A Tentative No

We have examined various attempts to arrive at an ethically sound approach to the challenging dilemma of pacemaker deactivation at the end of life, an issue that has engendered a lot of discussion in the medical community. Some respond with
a positive endorsement of pacemaker deactivation in the name of patient autonomy and the right to refuse further medical interference at the end of life. On the surface, this seems like a reasonable response. Medical ethics strongly embraces patient autonomy, partly as a reaction to the paternalism of doctors in earlier times and partly out of a growing awareness that the dignity of the human being must be recognized in the practice of medicine.

While the principle of patient autonomy born of the recognition of human dignity by medical personnel is laudable, some have erred in granting patient autonomy an independence that is not always in the patient’s best interests.46 The patient–professional relationship should be marked by open dialogue, during which the values of medical professionals and patients are heard and respected. Such a dialogue does not mean that medical professionals ought to become mere ciphers for their patients’ every wish and desire. As professionals, they have an obligation to provide all the information needed so that patients can give informed consent to treatments that will benefit them.

At the same time, medical professionals must clearly articulate their position regarding a course of action that would place their patients at risk. Moreover, medical professionals have a duty to themselves to state their reservations if patients choose a course of action that may, without the patients necessarily being aware of it, harm them. Just as patients have an obligation to follow their consciences, so too do medical professionals. While the exercise of patient autonomy is praiseworthy, it is not the only factor in deciding end-of-life care, nor should it be used as a tool by patients to pressure nurses or doctors to engage in unethical practices. Medical professionals should not abdicate their responsibilities to themselves, their patients, and their profession.

As noted earlier, a number of authors approach the matter of pacemaker deactivation differently. While endorsing patient autonomy, they tend to focus on the nature of the pacemaker itself: Is it a replacement therapy or a substitutive therapy? Is the pacemaker “natural” or “artificial”? For some, if a pacemaker is seen as replacement therapy, then it should not be deactivated. Others are reluctant to pronounce on these distinctions one way or the other, leaving it instead to patients to decide for themselves what they think the pacemaker is and then proceeding on the basis of that decision. This, too, seems reasonable at first blush. But is it? In the end, does it really matter if the pacemaker is a replacement or substitutive therapy? In a limited sense, it does matter, for both medical professionals and patients need to have a clear understanding of the role of a pacemaker in the life of a patient. So it is important to clarify whether a pacemaker is more akin to a ventilator or to a donated kidney. One can turn off the ventilator in many end-of-life situations. But would one remove a donated kidney? Clearly not.

Greater clarity on this point is of limited value, however, for a pacemaker is not entirely analogous to a ventilator or to other life-sustaining treatments. How is it different?

46 Recall Zellner et al., Response to Kay and Bittner, 339: “Patient autonomy is always paramount.”
A ventilator is a life-sustaining treatment that either temporarily or permanently replaces normal lung functions. It is perfectly ordinary treatment for a ventilator to be used during surgery under general anesthesia or to help patients breathe until they can do so on their own. But the same treatment can be considered extraordinary for a number of reasons: because it is futile, because it impedes the natural process of dying, because it makes the process of dying unbearable, or because the patient experiences a profound aversion to it. In cases like these, it is morally permissible to discontinue ventilation.

A pacemaker differs from a ventilator in significant ways, however. Indeed, in many cases, the pacemaker is, like the ventilator, life-sustaining. Once it is deactivated, a pacemaker-dependent person may die suddenly, soon, or more slowly and in great distress. Unlike the ventilator, the pacemaker does not interfere with the natural process of dying. The patient’s underlying pathology takes its course whether or not the pacemaker is deactivated. Also unlike a ventilator, the pacemaker is not burdensome to the patient. Once a pacemaker has been implanted, the patient is not aware of its presence or its workings. It is only when the pacemaker is deactivated that the patient experiences the effects of deactivation, either in a sudden death or a shortened process of dying. If death is not immediate, the patient may experience the effects of electric asystole and circulatory arrest. Even if premedication is given to the patient to alleviate the distress of pacemaker deactivation, the process is less like palliation and more like assisted death.

In light of these considerations, I have reached the tentative conclusion that the deactivation of a pacemaker at the end of life is not morally permissible, because the proximate cause of death is, in fact, the deactivation. The sole purpose of deactivation is to bring about, whether suddenly or soon, the death of the patient.

47 See Rady and Verheijde, “Deactivating an Implanted Cardiac Device,” 1087.
49 Ibid., 3.