

Cardiovascular Implantable Electronic Devices at the End of Life

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At the conclusion of this presentation, learners should...

1. Be familiar with the management of ICDs (Implantable cardioverter defibrillators) at the end of life
2. Be familiar with the management of pacemakers at the end of life
3. Define ethical principles and controversies in relation to device management at the end of life

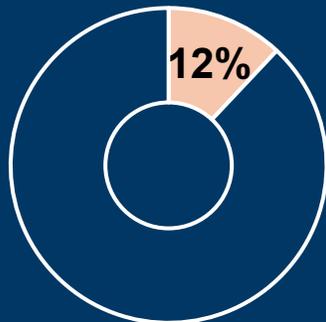
Disclosures

None

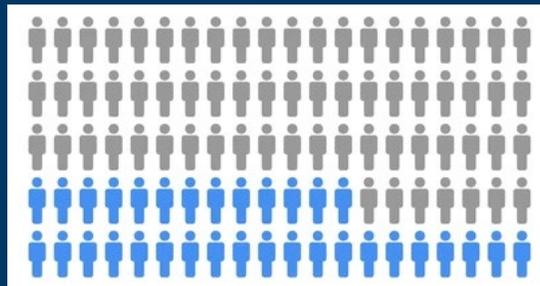
ICDs in Context

- ICD Expansion in use: 3-4 million eligible, +400,000/year^{6,8}
- Extended disease trajectory¹⁰
- 5y post implantation, 1/2 older ICD patients dead or in hospice⁵

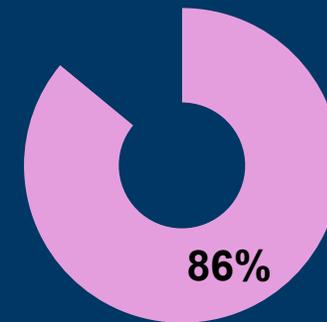
Cardiac disease accounts for 12% of hospice diagnoses⁹



>1/3 of patients dying with ICDs receive hospice⁵



86% hospice programs have ICD patients⁵

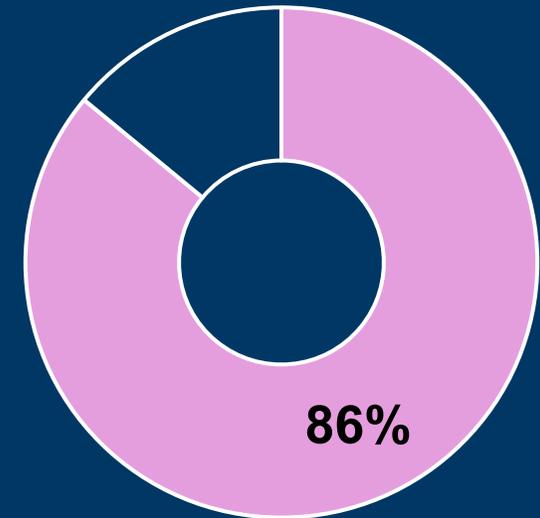
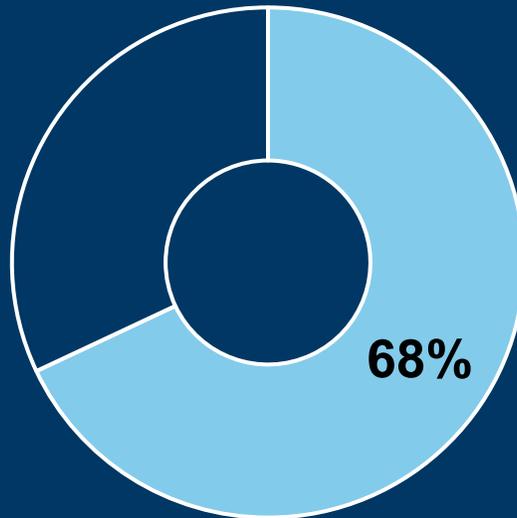


Consequences for patients

Painful and distressing¹¹

Frequent shocks at EOL (up to 68% in last 24h)¹²⁻²³

86% of programs report adverse experience²⁴⁻²⁶



Are we adequately communicating about ICDs?

Important but rarely done²⁷

Unaware of patients' understanding²⁸

- 1/3 internists & 2/3 electrophysiologists believe patients are aware.
- Less likely to have conversations

Hospice Communication²⁹

- 20% of hospices have ICD question
- 10% deactivation policy
- 25% magnet; of these, 64% provided training

What is best/ideal practice?

- Question on intake and policy³⁰
- Screen and proactively manage⁵

Sample Policy

Identification of device

Informed consent re deactivation

Process for reprogramming

Process for deactivation in emergent scenario

What is the consensus regarding ethics?

- Court decisions
- Code of Federal Regulations
- AMA Code of Ethics
- HRS Expert Consensus Statement³²

HRS Expert Consensus Statement on the Management of Cardiovascular Implantable Electronic Devices (CIEDs) in patients nearing end of life or requesting withdrawal of therapy

This document was developed in collaboration and endorsed by the American College of Cardiology (ACC), the American Geriatrics Society (AGS), the American Academy of Hospice and Palliative Medicine (AAHPM); the American Heart Association (AHA), the European Heart Rhythm Association (EHRA), and the Hospice and Palliative Nurses Association (HPNA).

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s) have saved lives for
for five decades,³ and
'RT) devices more re-
nprove symptoms and
e therapy continue to

Withholding or Withdrawing Life-Sustaining Treatment

Decisions to withhold or withdraw life-sustaining interventions can be ethically and emotionally challenging to all involved. However, a patient who has decision-making capacity appropriate to the decision at hand has the right to decline any medical intervention or ask that an intervention be stopped, even when that decision is expected to lead to his or her death and regardless of whether or not the individual is terminally ill. When a patient lacks appropriate capacity, the patient's surrogate may decline an intervention or ask that an intervention be stopped in keeping with ethics guidance for surrogate decision making.

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PROTECTION OF PATIENT RIGHTS

PACEMAKERS



87yo female

- CKD, DM2, HTN, HLD, CVA
- Heart block, PM 2013
- Vascular Dementia, decline 2020

HPI

- Home hospice, recent decline
- Daughter with intellectual disability, daughter mPOA out of state

Social History

- High functioning, productive life
- Airforce, caretaker, school and investments

Advance Directives

- Procedures that artificially prolong dying be withheld/withdrawn

Plan

- Accepted inpatient hospice
- Family requests PM deactivated

EP note #1

- Unresponsive, severe end-stage dementia
- Deactivate PM, expect imminent death

EP note #2

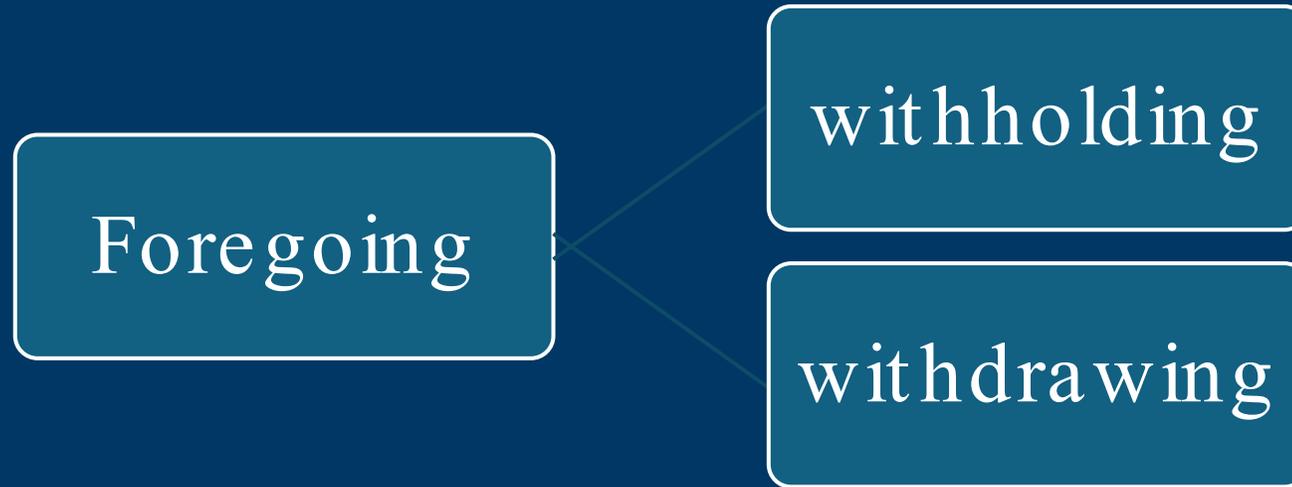
- Per nurses, more alert
- Generator change 2023, preferred therapy
- Do not see suffering
- PM does not impact condition
- Withdrawal will cause suffering, immediate death
- "My conscience does not align with PM deactivation"

Thoughts?

Pacemakers at the end of life

- Quality of life may be so poor patients do not wish to artificially prolong
- Right to refuse LSMT³¹
- Consensus: withdrawal equivalent to refusing, NOT physician-assisted dying or euthanasia³²

Rationale



- Letting die (FOREGOING) v actively hastening death
- PAD/euthanasia: intention to effect death.³³
- CIED deactivation: intention to withdraw burdensome treatment³⁴

Controversy

- Not all agree, and ICD deactivation has less controversy
- 10-30% clinicians view PM deactivation as PAD/euthanasia³⁵
- Nurse perspective³⁶

Rationale for objecting: PMs are different than ICDs

- PM minimal burden
- Doesn't spare symptoms, may worsen
- Functions continuously, potential death quickly

"Disabling an ICD is akin to requesting the medical team not to use the paddles on a patient, *but* turning off a pacemaker is akin to taking out a heart"³⁷

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Is Pacemaker versus ICD deactivation ethically different?

Regulative: Coax the body back to its normal, health status (ICD)

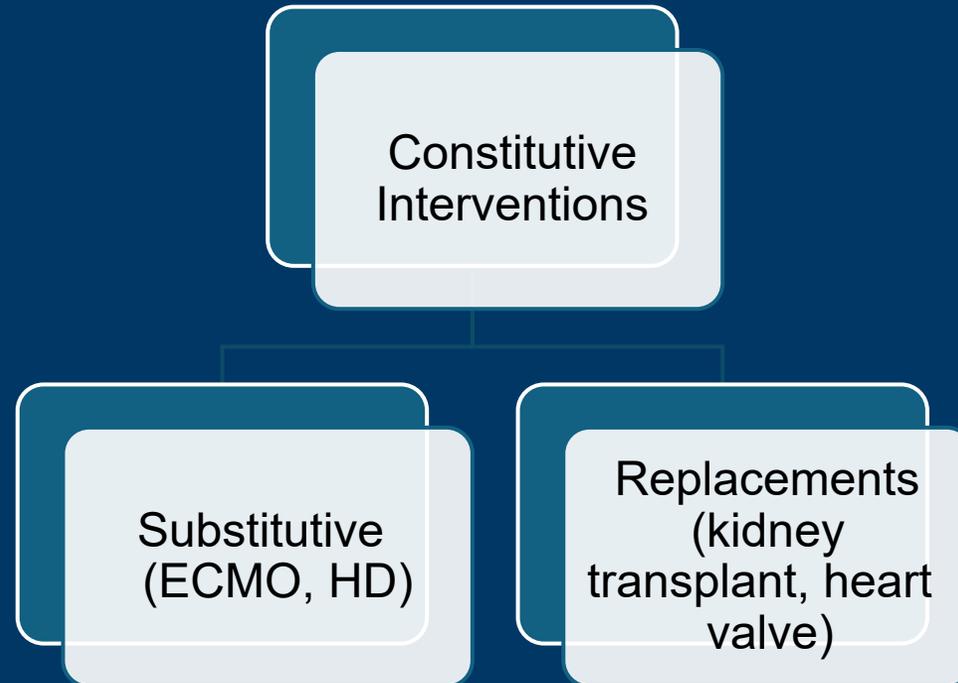
VS

Constitutive: take over a function the body was formerly able to provide (PM)

- Is there an increased ethical obligation to maintain a constitutive therapy?

Counterexamples: ECMO takes over role played by healthy lungs, HD by healthy kidneys, both constitutive yet clearly permissible to withdraw or withhold at the patient's discretion

What is the ethical difference between taking out a transplanted organ or heart valve and discontinuing a pacemaker?



Replacement Therapy

- Independent from external energy sources
- Independent from external control
- Growth and self repair

Ethics note

- Controversial
- Ethical principles of autonomy, beneficence and non-maleficence
- **HRS Expert Consensus Statement:** minimal direct burdens but indirect burdens may be substantial³²
- Benefit and burden can only be determined by that patient

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It is well-documented that implantable cardioverter-defibrillators (ICDs) save lives in multiple populations at risk for sudden death.² Pacemakers (PMs) have saved lives for individuals with bradyarrhythmias for five decades,³ and cardiac resynchronization therapy (CRT) devices more recently have also been shown to improve symptoms and survival.⁴ As indications for device therapy continue to

Ethics note

- Ethically reasonable to disable PM in this patient
- Moral distress for providers, should not be compelled
 - Do not impose values
 - Do not abandon
 - Second clinician

Chaplain note

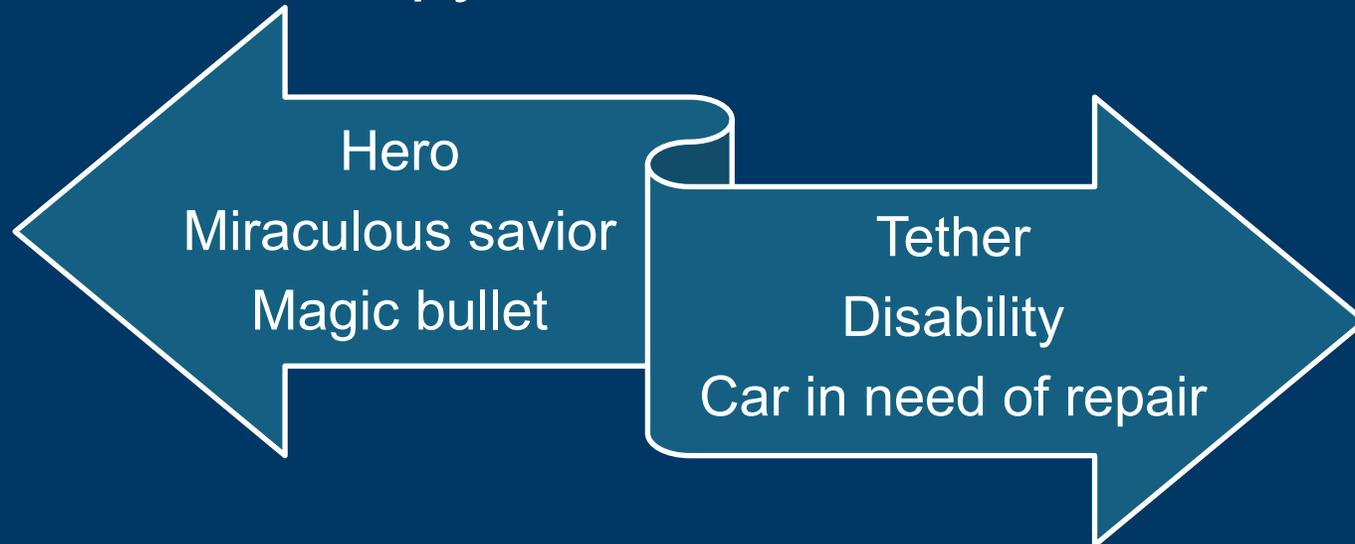
Per family:

the [patient] “wants to go to Heaven and the pacemaker is preventing that”

“the best act of love is to give her the freedom to go”

The Future

- Technology such as LVADs
- Lure of life saving technology, but are we ready?
- Lack of information on long term impacts³⁹
- LVAD patients able to participate in end-of-life decision making, >50% died at home⁴⁰
- Destination LVAD therapy



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