

NASPE POLICY STATEMENT

The NASPE*/BPEG** Defibrillator Code

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BERNSTEIN, A.D., ET AL.: The NASPE/BPEG Defibrillator Code. A new generic code, patterned after and compatible with the NASPE/BPEG Generic Pacemaker Code (NBG Code) was adopted by the NASPE Board of Trustees on January 23, 1993. It was developed by the NASPE Mode Code Committee, including members of the North American Society of Pacing and Electrophysiology (NASPE) and the British Pacing and Electrophysiology Group (BPEG). It is abbreviated as the NBD (for NASPE/BPEG Defibrillator) Code. It is intended for describing the capabilities and operation of implanted cardioverter defibrillators (ICDs) in conversation, record keeping, and device labeling, and incorporates four positions designating: (1) shock location; (2) antitachycardia pacing location; (3) means of tachycardia detection; and (4) antibradycardia pacing location. An additional Short Form, intended only for use in conversation, was defined as a concise means of distinguishing devices capable of shock alone, shock plus antibradycardia pacing, and shock plus antitachycardia and antibradycardia pacing. (PACE, Vol. 16, September 1993)

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Introduction

With the development of implanted cardioverter defibrillators (ICDs) of increasing capability and complexity, a need has been recognized for a concise and convenient means of distinguishing among devices that provide various combinations of shock therapy, antitachycardia pacing, and anti-

bradycardia pacing. To meet this need, the Mode Code Committee of the North American Society of Pacing and Electrophysiology (NASPE), which had developed the now familiar NASPE/BPEG Generic Pacemaker Code,¹ was reconstituted by Victor Parsonnet, then President of NASPE, and charged with the task of developing a defibrillator code suitable for conversation, record keeping, and device labeling. The Committee included members of NASPE and the British Pacing and Electrophysiology Group (BPEG). On January 23, 1993, the NASPE Board of Trustees approved the adoption of the NASPE/BPEG Defibrillator Code (NBD Code), which is summarized in Table I.

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Table I.
The NASPE/BPEG Defibrillator (NBD) Code

I Shock Chamber	II Antitachycardia Pacing Chamber	III Tachycardia Detection	IV Antibradycardia Pacing Chamber
O = None A = Atrium V = Ventricle D = Dual (A + V)	O = None A = Atrium V = Ventricle D = Dual (A + V)	E = Electrogram H = Hemodynamic	O = None A = Atrium V = Ventricle D = Dual (A + V)

The NBD Code is patterned after the NBG Code and is compatible with it. Like the NBG Code, it is a generic code, but while the NBG Code describes antibradycardia pacing functions in detail and indicates the presence of shock capability without providing specific information, the NBD Code gives more information about cardioversion and defibrillation capabilities and, conversely, indicates the presence of antibradycardia pacing without providing details. Moreover, like the NBG Code, it is intended for use in describing the maximal capabilities of a device, its programmed mode of operation, or the mode in which it is functioning at any given time.

Definition of the NBD Code

The NBD Code is summarized in Table I. It has four positions and is defined in the following fashion.

Position I: Shock Chamber

This position serves to distinguish among devices capable of delivering atrial (A), ventricular (V), and dual chamber (D) shocks. No details are given concerning incremental energy shock protocols. If the defibrillation function is programmed off, the shock chamber is designated as O (none) in Position I when specifying the current mode of operation.

Position II: Antitachycardia Pacing Chamber

This position identifies the location of antitachycardia pacing without specifying the pacing protocol (burst, ramp, etc.). The possible anti-

tachycardia pacing configurations are designated as O (none), A (atrial), V (ventricular), and D (dual chamber).

Where antitachycardia pacing capability is present, the capability of "tiered" therapy (antitachycardia pacing followed, if necessary, by shock) is assumed to exist.

Position III: Tachycardia Detection

This position distinguishes devices that detect a tachycardia by means of electrogram signal processing (E) alone from those that sense one or more hemodynamics related variables (H) as well, such as blood pressure or transthoracic impedance.

Position III is hierarchical in the sense that H implies E. All defibrillators are assumed to use electrogram (EGM) sensing for tachycardia detection.

Position IV: Antibradycardia Pacing Chamber

This position identifies the location of antibradycardia pacing without specifying the mode of pacing. The possible antibradycardia pacing configurations are designated as O (none), A (atrial), V (ventricular), and D (dual chamber).

Usage

The NBD Code is used as an adjective modifying the noun *defibrillator* unless the meaning is clear from the context.

As many positions should be used as required to characterize a device adequately. Positions I and II are used in all cases, and suffice in describ-

ing ICDs that lack antibradycardia pacing and hemodynamic sensing, although Positions III and IV may be added to emphasize this lack, as in a VOEO defibrillator.

Position III should be included whenever hemodynamic sensing is present, to emphasize that the device may behave differently from one that responds to electrogram features alone.

Positions III and IV should be included whenever information about antibradycardia pacing is important.

For device labeling and record keeping, the first three positions of the Long Form of the NBD Code are used, followed by a hyphen and the first four positions of the NBG Code. For example, a ventricular defibrillator with adaptive rate ventricular antibradycardia pacing would be labeled VOE-VVIR or VOH-VVIR, depending on its tachycardia detection mechanism.

The NBD Code may be used to describe the maximal capabilities of a device, the mode of operation to which it is programmed, or the mode in which it is functioning at a specified time. For example, if the antitachycardia pacing feature of a tiered therapy device is programmed off, this fact can be emphasized by using the NBD Code to designate its currently programmed status, listing a VV defibrillator as functioning in the VO mode.

Positions I, II, and III of the NBD Code describe antitachycardia function exclusively. Position IV refers only to antibradycardia pacing, and is included when required in the same way that Position V of the NBG Code may be used to denote the presence of antitachycardia therapy capability.

Comments

Like the NBG Code, the NBD Code uses letters that stand for familiar words. Anyone familiar

with the NBG Code will already have had practice in using the letters A, V, D, and O. The availability of the same four letters in Positions I, II, and IV is intended partly for simplicity, partly to facilitate the designation of the current mode of operation of a device as well as its maximal capability, and partly to accommodate existing devices designed to shock the atrium alone.

Because of the order of Positions I through IV, the NBD Code cannot be confused with the NBG Code; no possible combinations of letters have meaning within the definitions of both codes.

The NBD Code does not indicate shock energy levels, and thus does not distinguish between cardioversion and defibrillation. Positions I, II, and IV indicate only the locations of shock, antitachycardia pacing, and antibradycardia pacing functions respectively.

The Short Form

As an additional means of distinguishing concisely among devices limited to cardioversion or defibrillation and those that incorporate antitachycardia and antibradycardia pacing as well, a "Short Form" code is defined as summarized in Table II. It is intended only for use in conversation.

Comments

It is assumed that a defibrillator with antitachycardia pacing incorporates antibradycardia pacing capability as well. Therefore, T (tachycardia) is used rather than D (dual), which might be misunderstood as S + B (shock plus antibradycardia pacing).

The Short Form does not distinguish among devices that provide shock therapy, antitachycardia pacing, or antibradycardia pacing in the atrium alone, the ventricle alone, or both chambers.

Table II.

The Short Form of the NASPE/BPEG Defibrillator (NBD) Code

ICD-S	= ICD with shock capability only
ICD-B	= ICD with bradycardia pacing as well as shock
ICD-T	= ICD with tachycardia (and bradycardia) pacing as well as shock

ICD = implanted cardioverter defibrillator.

Table III.
Examples of the Use of the NASPE/BPEG Defibrillator (NBD) Code*

Device	Short Form	Long Form	Label
Ventricle-only ICD without pacing	ICD-S	VO VOE VOEO	VOE-0000
Ventricle-only ICD with VVIR antibradycardia pacing	ICD-B	VO VOE VOEV	VOE-VVIR
Ventricle-only ICD with atrial antitachycardia pacing and DDDC antibradycardia pacing	ICD-T	VA VAE VAED	VAE-DDDC
ICD with ventricular cardioversion/defibrillation, dual chamber antitachycardia pacing, and DDDR antibradycardia pacing	ICD-T	VD VDE VDED	VDE-DDDR
Atrium-only ICD with cardioversion, antitachycardia pacing, and AAIC antibradycardia pacing	ICD-T	AA AAE AAEA	AAE-AAIC
ICD with ventricular cardioversion/defibrillation, AF conversion, hemodynamic sensing, and VVIR antibradycardia pacing	ICD-S	DOH DOHV	DOH-VVIR
ICD with ventricular cardioversion/defibrillation, AF conversion, dual chamber antitachycardia pacing, and DDD antibradycardia pacing with telemetry	ICD-T	DD DDE DDED	DDE-DDDC
ICD with ventricular cardioversion/defibrillation, AF conversion, hemodynamic sensing, dual chamber antitachycardia pacing, and DDDR antibradycardia pacing	ICD-T	DDH DDHD	DDH-DDDR

AF = atrial fibrillation or atrial flutter; ICD = implanted cardioverter defibrillator.

* In each instance, the Code refers to the maximal capabilities of the device.

If all future ICDs incorporate antitachycardia and antibradycardia pacing, the Short Form will no longer be needed.

Examples of the use of the NBD Code and the Short Form are given in Table III.

Concluding Remarks

As the NBD Code, the NBD Code was designed intentionally as a generic code, compromising detail in the interests of conciseness and comprehensibility. Thus, for example, no mechanism is incor-

porated for designating the presence of "tiered" therapy explicitly; instead, it is tacitly assumed that whenever antitachycardia pacing and shock capabilities are present in the same cardiac chamber, pacing will be attempted before shock therapy is initiated. Similarly, the code does not distinguish between high energy (defibrillation) and low energy (cardioversion) shocks.

Since the early days of cardiac pacing, the evolution of rhythm management technology has necessitated a parallel development of symbols for identifying and describing that technology in con-

versation and in writing. The usefulness of the NBG Code and its extraordinarily durable predecessors stands as a testament to the designers of the earliest (1974) version of the ICHD Code.² It is

hoped that the NBD Code will be found similarly useful as the evolution of increasingly sophisticated rhythm management devices continues.

References

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Appendix

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