PROGRAMMING GUIDANCE

DeFT Response™ Technology
WHEN and HOW you deliver energy matters!
Shock Waveform Programming Guidance

STEPWISE APPROACH: MEASURE - TUNE - TEST

Step 1
- MEASURE
  - Identify Patient-Specific Response

Step 2
- TUNE
  - Program Patient-Specific Therapy

Step 3
- TEST
  - Provide Evidence of Therapy & Safety Margin
Shock Waveform Programming Guidance

STEP 1 - MEASURE

Set-up a Custom EGM
- RVtip to RVcoil

Run a Temp Pacing Test
- 8 beats
- RV Only
- 120 bpm

Take a Freeze Capture
- Extend sweep speed
- Measure pacing complex

Determine the Block
- Fast
- Typical
- Slow
STEP #1: Measure The Patient’s Tissue Conduction Time

WHAT ARE WE DOING?

Approximating cell-to-cell conduction (wavefront propagation) during a fast rhythm

**STEP #1: Measure The Patient’s Tissue Conduction Time**

**WHY ARE WE DOING THIS?**

To quantify how fast electricity is moving through the myocardium (ionic exchange, aka speed of the action potential), which allows us to **match the timing** of the shock to the time it takes the patient tissue to respond.

Electricity Moves **FAST?**
We need **SHORTER** Pulse Widths

Electricity Moves **SLOW?**
We Need **LONGER** Pulse Widths

**STEP #1: Measure The Patient’s Tissue Conduction Time**

**HOW?**

- Pace RV-only at 120 bpm (500 ms) **for 8 beats**
- Use calipers to measure from Peak to Peak on RV$_{\text{Tip}}$ to RV$_{\text{Coil}}$ EGM

**DEEPEST NEGATIVE DEFLECTION**

To the next **HIGHEST POSITIVE**, but not the T-wave

**Fast:** < 40 ms  
**Typical:** 40 – 75 ms  
**Slow:** > 75 ms

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**Programming of the Individual Phases of the Defibrillation Waveform to Achieve an Adequate Defibrillation Safety Margin: Utilization of a Surrogate Cardiac Membrane Time Constant**  
EP Lab Digest Issue Number Volume 12 - Issue 4 - April 2012, Jaclyn Conelius, PhD, William DeForge, PhD®, Michael Pittaro, MD, FA*, Mark Kroll, PhD. Fairfield University, Fairfield, Connecticut; *St. Jude Medical, Norwalk, Connecticut; Â®Cardiology Associates of Fairfield County, Norwalk, Connecticut, March 23, 2012.

STEP #2: TUNE the Shock Waveform

PROGRAM THE SHOCK WAVEFORM MODE TO “PULSE WIDTH”

- Pick values for the 1st and 2nd Phase durations based on the Shock Impedance and the Chart
- Example shown here shows 3.5 ms for each phase (assuming a Typical measurement)
What Is “The Chart?”

A table of Tuned Waveform Values to help you choose an appropriate VT/VF Shock setting (shock duration for each Phase)

SHORTER Pulse Widths when patient conduction is FAST

LONGER Pulse Widths when patient conduction is SLOW
What Is “The Chart?”

**TO SEE ALL POSSIBLE VALUES IN THE TABLE:**
- Select the “Tuned Waveform Help” button, or
- Reference the Brady/Tachy Help Manual for that device
STEP #3: TEST

A DFT TEST CAN PROVIDE PROOF OF SAFETY MARGIN
Measuring Tissue Conduction Time
STEP #1: Set-up the EGM Display

Select the **EGM SETTINGS BUTTON** in the upper right corner of the screen

Select the **POSITION 5 CONFIGURATION BUTTON**
**STEP #1: Set-up the EGM Display, cont.**

Set up a **CUSTOM EGM:** $RV_{\text{tip}} - RV_{\text{coil}}$

1. **Select “…”** to create a Custom EGM
2. **Program** $RV_{\text{tip}}$ to $RV_{\text{coil}}$
3. **Press “Done”** to save the EGM setting
STEP #2: Run a Temporary Pacing Test

1. Select “Tests”
2. Select “Temporary Pacing” Tab
3. Select VVI @ 120 bpm RV Only
4. Start Temporary
After 8 Beats, **Cancel Temporary Pacing**

AND TOUCH THE CAMERA ICON TO SAVE THE IMAGE

2

Take a Freeze Capture
Review the Freeze Capture

SCROLL TO FIND THE SECOND-TO-LAST PACED COMPLEX

Touch Dark Gray bar and Slide Left

Select “Show Calipers” to use Electronic Calipers

Extend Sweep Speed to 50 or 100 mm/sec
MEASURE THE QRS COMPLEX ON THE CUSTOM EGM OF THE SECOND-TO-LAST PACED COMPLEX

- Use the electronic calipers on the screen to measure, or print and measure manually

To the next HIGHEST POSITIVE, but not the T-wave

DEEPEST NEGATIVE DEFLECTION
Close the Freeze Capture and Exit Temporary Pacing Screen

Select the “X” to close the Freeze Capture
Close the Freeze Capture and Exit Temporary Pacing Screen

Press “Undo All” to exit Temporary Pacing
DeFT Response™ Technology

Allows PULSE WIDTH PROGRAMMABILITY, or the ability to control the length of each phase of a shock waveform.

Non-invasive programming options to rapidly optimize therapy performance to each patient’s unique needs, exclusively from Abbott.
References

Unless otherwise noted, the training & education material in the presentation represents the following manuals available at manuals.sjm.com

Bradycardia & Tachycardia Devices Help Manuals
• US—ARTEN100167060
• OUS—ARTEN100165220

Tachycardia Devices Help Manuals
• OUS Tachy Help manual  ARTEN600130216
• US Tachy Help manual   ARTEN100171778
Rx Only

Brief Summary: This product is intended for use by or under the direction of a physician. Prior to using these devices, please review the Instructions for Use for a complete listing of indications, contraindications, warnings, precautions, potential adverse events and directions for use.

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