

**Boston Scientific FSN on Model 3200 S-ICD Programmers**

January 2017

Dear Doctor,

This letter provides important product performance information regarding the potential for radio frequency (RF) interference to alter wireless communication from a programmer, which in rare instances may cause an S-ICD<sup>1</sup> to perform an unintended command. This behavior can *only* occur during an active, in-clinic interrogation/programming session with the Model 3200 S-ICD programmer. There is no risk of this behavior occurring when the LATITUDE Patient Management System communicates with an S-ICD in an ambulatory setting. Boston Scientific is developing software to mitigate this behavior. Until a software update is available, Boston Scientific recommends the additional precautions listed below.

**Description and Clinical Implications**

The Model 3200 S-ICD programmer is a non-implantable, tablet computer that communicates wirelessly (telemetry) with an implanted S-ICD in order to adjust programmable settings and to collect patient data. Programmer labeling includes a warning that the presence of other equipment operating in the same frequency bands as the programmer may interfere with telemetry. RF interference can be reduced or eliminated by moving away from the source of interference.

Both the programmer and the S-ICD check the validity of telemetry commands using an algorithm intended to detect whether these commands have been altered. In nearly all instances, invalid commands are rejected. In rare instances, interference may go undetected and alter communications from the programmer. This can potentially result in the S-ICD performing an induction, utilizing temporary parameters that impair the S-ICD from detecting or treating a tachyarrhythmia during the active telemetry session, or disabling therapy in the permanent programming mode such that therapy will be unavailable after the telemetry session is ended.

Because the programmer display may not match device programming when this behavior occurs, ending the session and re-interrogating the S-ICD is an effective means to check the permanently programmed device parameters. The potential for this behavior to occur during this brief re-interrogation is extremely remote.

All communications between the programmer and S-ICD remain secure. This behavior is not related to a cybersecurity vulnerability. The LATITUDE Patient Management System (remote monitoring) is not subject to this behavior and is a reliable way to check S-ICD settings and performance. There have been no reports of permanent injury or death associated with this behavior.

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<sup>1</sup>Subcutaneous Implantable Defibrillator

**Rate of Occurrence**

Seven observations of unintended programming commands or data changes have been observed within the population of approximately 16,400 EMBLEM and EMBLEM MRI<sup>2</sup> S-ICDs.

Four of the seven had the potential to impact health, but all were successfully detected and managed without patient harm. For the EMBLEM S-ICD, the probability of serious adverse consequence is estimated to be 1 in 25,000 at 5 years.

Three observations of unintended programming commands or data changes have occurred with the SQ-RX<sup>TM</sup> S-ICD. One of the three was associated with a restoration of factory nominal parameters. None of the three were associated with permanent injury or death. For SQ-RX S-ICD, the probability of serious adverse consequences is estimated to be 1 in 200,000 at 5 years.

**Recommendations**

Boston Scientific is developing software to mitigate this behavior. Until updated software is available, the recommendations below mitigate the risks associated with this behavior:

- Using the LATITUDE Patient Management System for routine S-ICD assessments will minimize the number of programmer interactions with an S-ICD.
- If the LATITUDE Patient Management System is not available, consider reducing the frequency of in-clinic checks while following medical society guidelines.<sup>3</sup>
- When performing any S-ICD programming or check using a Model 3200 S-ICD Programmer:
  - ensure external defibrillation equipment and medical personnel skilled in CPR<sup>4</sup> are available during implant and in-office follow-up testing and do not leave the patient unattended
  - place the telemetry wand directly over the S-ICD at all times and increase the distance between any source of interference and the programmer and S-ICD as much as possible
  - minimize the duration of programmer communications and end the programmer telemetry session promptly after completion
- When the programmer is communicating with an S-ICD, it is possible that this behavior may alter temporary parameters without the user's knowledge. Altering of temporary parameters may result in an inability for the S-ICD to detect a tachyarrhythmia or an inappropriate detection of a heart rhythm.
  - To initiate a defibrillation therapy, press the Rescue Shock icon and follow screen prompts.
  - To abort an inappropriate shock, press the Abort button while the S-ICD is charging
- When the S-ICD programming or check is complete, confirm S-ICD settings by performing the following steps:
  - 1- End the original telemetry session
  - 2- Initiate a new telemetry session
  - 3- Print a device Summary Report (see Appendix A)
  - 4- End the telemetry session
  - 5- Confirm device settings: if any settings have been altered from intended programming, contact Technical Services.
  - 6- Instruct the patient to contact their physician if the device emits beeping tones

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<sup>2</sup>Magnetic Resonance Imaging

<sup>3</sup>2012 ACCF/AHA/HRS Focused Update of the 2008 Guidelines for Device-Based Therapy of Cardiac Rhythm Abnormalities. Heart Rhythm, Vol 9, No 10, October 2012, page 1746, Table 3. In person checks for S-ICD's without evidence of battery depletion 3-6 months and with battery depletion 1-3 months. <http://dx.doi.org/10.1016/j.hrthm.2012.08.021>

<sup>4</sup>Cardiopulmonary Resuscitation

**Affected Programmer**

Model 3200 S-ICD programmers. This programmer is the only means to program implanted S-ICDs and should remain in service at the institution.

**Additional Information**

Boston Scientific recognizes the impact of this communication on both you and your patients, and wants to reassure you that patient safety remains our primary concern. If you have additional questions regarding this communication or would like to report clinical events, please contact your Boston Scientific representative or Technical Services (# +32 2 416 7222).

Sincerely,



Marie Pierre Barlangua  
Quality Department  
Boston Scientific International S.A.

### Appendix A – Sample S-ICD Summary Reports



#### SUMMARY REPORT

Report Printed: 11/17/2016 10:30 AM  
 GenE Software Version: 1.27.0  
 Device Software Version: 3.1.529

Patient Name: 108355Sep13,2016 20:45:56  
 Last Follow-up Date: 09/12/2016  
 Follow-up Date: 09/13/2016  
 Implant Date: 05/16/2016

Device Model #: A209 EMBLEM™ S-ICD  
 Device Serial #: 108355  
 Electrode Model #: 3401  
 Electrode Serial #: A125760

#### Programmable Parameters

##### Current Device Settings

Therapy: ON  
 Shock Zone: 250 bpm  
 Conditional Shock Zone: 200 bpm  
 Post Shock Pacing: ON  
 SMART Charge: 1.83 s (8 intervals)  
 SMART Pass: ON

Gain Setting: 1X  
 Sensing Configuration: Primary



##### Initial Device Settings

Therapy: ON  
 Shock Zone: 250 bpm  
 Conditional Shock Zone: 200 bpm  
 Post Shock Pacing: ON  
 SMART Charge: 1.83 s (8 intervals)  
 SMART Pass: ON

Gain Setting: 1X  
 Sensing Configuration: Primary  
 Shock Polarity: STD



Parameter changes this session: NO

#### Episode Summary

##### Since Last Follow-Up

Untreated Episodes: 0  
 Treated Episodes: 0  
 # of Shocks Delivered: 0

##### Since Implant

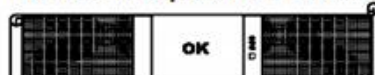
Untreated Episodes: 2  
 Treated Episodes: 2  
 # of Shocks Delivered: 3

#### Battery Status



Remaining Battery Life to ERI: 93%

#### Electrode Impedance Status





### SUMMARY REPORT

Report Printed: 10/05/2016 04:14 PM  
 GenE Software Version: 1.27.0  
 Device Software Version: 2.7.422

Patient Name: 017309Sep23,2016 11:58:24  
 Last Follow-up Date: 08/11/2016  
 Follow-up Date: 09/23/2016  
 Implant Date: 01/19/2015

Device Model #: 1010 SQ-RX  
 Device Serial #: 17309  
 Electrode Model #: 3010  
 Electrode Serial #: A114337

#### Programmable Parameters

##### Current Device Settings

Therapy: ON  
 Shock Zone: 250 bpm  
 Conditional Shock Zone: 200 bpm  
 Post Shock Pacing: ON

Gain Setting: 1X  
 Sensing Configuration: Secondary



##### Initial Device Settings

Therapy: ON  
 Shock Zone: 250 bpm  
 Conditional Shock Zone: 200 bpm  
 Post Shock Pacing: ON

Gain Setting: 1X  
 Sensing Configuration: Secondary  
 Shock Polarity: STD



Parameter changes this session: NO

#### Episode Summary

##### Since Last Follow-Up

Untreated Episodes: 0  
 Treated Episodes: 0  
 # of Shocks Delivered: 0

##### Since Implant

Untreated Episodes: 0  
 Treated Episodes: 0  
 # of Shocks Delivered: 1

#### Battery Status



Remaining Battery Life to ERI: 75%

#### Electrode Impedance Status

