Resume Driving After a Refueling Pit Stop

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The indications for implantation of cardioverter defibrillators (ICD) have broadened from secondary prevention for survivors of sudden cardiac death to primary prevention for high-risk conditions, such as Brugada syndrome, depressed left ventricular ejection fraction and hypertrophic cardiomyopathy.¹⁻³ Furthermore, the indications for cardiac resynchronization therapy with defibrillator (CRT-D) are soon likely to include New York Heart Association class II heart failure.⁴⁻⁶ With the increasing rate of both implantation of ICD and CRT-D because of the broadening of indications and the inclusion of patients with a long life expectancy, the number of generator replacements is growing, despite longer battery longevity.

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Driving a vehicle is an important determinant of a person's range of activity and quality of life. On the other hand, life-threatening tachyarrhythmias occur unpredictably, usually disabling the patient within a few seconds. In addition, ICD shocks delivered while driving may cause traffic accidents and injuries to the driver, the passengers and other motorists or pedestrians. Therefore, driving restrictions that are imposed must balance the issues of patient rights and public safety.

In 2003, a Joint Committee of the Japanese Circulation Society, Japanese Heart Rhythm Society and Japanese Association for Thoracic Surgery published a statement regarding driving restrictions for patients suffering from syncope caused by a cardiac arrhythmia,⁷ recommending that patients undergoing ICD replacement without the addition or repositioning of a lead be prohibited from driving for 1–6 months, depend-

ing on the physician's judgment. These statements raised several issues. First, patients who had been allowed to drive before ICD replacement must quit for 1–6 months after the procedure. Second, several investigators have reported poor patient compliance with the driving limitations imposed by healthcare professionals.⁸⁻¹⁰ The longer prohibition might make it even harder to follow the rules. Third, the basis for the length of the prohibition period is not clear and varies among physicians. These variations might provoke a sense of inequality among patients. On the other hand, this statement has successfully protected the public since, as to the best of our knowledge no traffic accidents caused by an ICD shock or by syncope because of a ventricular tachyarrhythmia after generator exchange, have been reported. Therefore, before revising the statement with a view to improving the patients' quality-of-life, and to gain the acceptance by the public and the authorities, scientific evidence should be offered that a shorter prohibition period will not jeopardize traffic safety.

In their study published in this issue of the Journal, Kawata et al¹¹ measured the incidence of ICD therapy before and after the procedure in 128 patients who underwent ICD generator replacement (72% implanted for secondary prevention) without replacement or implantation of a new lead system. They found (1) no difference in the delivery of ICD therapy between the 3 and 6 months before vs after ICD replacement, (2) delivery of therapy after device replacement in 8.6% of patients who were driving legally according to the Japanese guidelines at 1 year, associated with a low annual risk of death or injury to others, and (3) a single case of inappropriate therapy related to a change in the treatment algorithm, immediately after discharge of the patient from

Table. Comparison of Japanese, European and American Individual Driving Restrictions Imposed After ICD/CRT-D Implantation and Replacement

	Japan 2010	Japan 2003	Europe 2009	United States 2007
ICD implantation for secondary prevention	6 months	6 months	3 months	6 months
ICD implantation for primary prevention	30 days	6 months	4 weeks	Recovery from operation (at least 1 week)
After ICD therapy	12 months	12 months	3 months	6 months
After replacement of the ICD	7 days	1–6 months (depending on physician)	7 days	No specific comment
After replacement of the lead	30 days	6 months	4 weeks	No specific comment

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the hospital. The authors conclude that ICD replacement without a change in lead or algorithm has no effect on the delivery of therapy, and recommended 1 week of driving prohibition after the procedure.

In 2010, the statement by the Japanese National Police Agency pertaining to driving restriction for patients with syncope related to cardiac arrhythmias was upgraded.¹² The key points of the update were (a) a risk stratification based on primary vs secondary prevention, and (b) a shortening of the duration of driving restrictions. Patients legally eligible to drive according to the Japanese guidelines before ICD replacement can resume driving after a 7-day period of observation. If a lead has been replaced or implanted, the observation period should be extended to 30 days. **Table** compares the 2010 and 2003 Japanese, and current European¹³ and American,¹⁴ statements regarding individual driving restrictions imposed after ICD/CRT-D implantation and replacement. Except for the period following ICD therapy, the criteria and duration of prohibition in Japan are nearly the same as in Europe. Besides improving the patients' quality-of-life without jeopardizing public safety, these guidelines may facilitate the counseling by healthcare professionals, as well as the adherence to the rules by the patients.

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