JACC: CARDIOVASCULAR INTERVENTIONS
VOL. 9, NO. 17, 2016

ISSN 1936-8798/$36.00
PUBLISHED BY ELSEVIER
http://dx.doi.org/10.1016/j.jcin.2016.06.027

FDA PANEL PROCESS

Overview of the 2016 U.S. Food and Drug Administration Circulatory System Devices Advisory Panel Meeting on the Absorb Bioresorbable Vascular Scaffold System

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ABSTRACT

OBJECTIVES This study aims to describe the discussions and recommendations made during the U.S. Food and Drug Administration (FDA) Circulatory System Device Panel pre-market approval application for the Absorb Bioresorbable Vascular Scaffold (BVS) System.

BACKGROUND The Absorb BVS System is a first-of-its-kind fully bioresorbable percutaneous coronary intervention technology. The absorb BVS was studied in the ABSORB III (A Clinical Evaluation of Absorb BVS, the Everolimus Eluting Bioresorbable Vascular Scaffold in the Treatment of Subjects with de Novo Native Coronary Artery Lesions) trial, the pivotal U.S. investigational device exemption trial.

METHODS Observational report of the FDA Circulatory System Device Panel pre-market approval application meeting held on March 15, 2016.

RESULTS The U.S. FDA Circulatory System Device Panel members reviewed the ABSROB III trial outcomes and additional post hoc analyses presented by the sponsor and the FDA. The ABSORB III trial met the primary endpoint of noninferiority of Absorb BVS compared with the control, XIENCE drug-eluting stent, for target lesion failure at 1 year. Although a higher numerical trend for adverse outcomes was reported for the Absorb BVS, there were no statistical differences between Absorb BVS and XIENCE for any safety or effectiveness components for target lesion failure or for the secondary pre-specified outcomes. Panel members raised concerns with regard to the ABSORB III results and post hoc analyses focusing mainly on the noninferiority design of the trial, the apparent safety issues of the Absorb BVS in small vessels, the mismatch of visually versus intravascular imaging assessed vessel size found in ABSORB III and its implications on the adequate device labeling, the safety of Absorb BVS in specific patient and lesion subsets, and the post-approval commitments of the sponsor.

CONCLUSIONS Following panel discussions and the evidence presented, the panel voted for approval of the device. (J Am Coll Cardiol Intv 2016;9:1757–64) © 2016 by the American College of Cardiology Foundation.

The Absorb Bioresorbable Vascular Scaffold (BVS) System (Abbott Vascular, Santa Clara, California) is a first-of-its-kind fully bioresorbable percutaneous coronary intervention technology (1). The ABSORB III (A Clinical Evaluation of Absorb BVS, the Everolimus Eluting Bioresorbable Vascular Scaffold in the Treatment of Subjects With de Novo Native Coronary Artery

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Manuscript received April 6, 2016; revised manuscript received June 3, 2016, accepted June 15, 2016.

ABBREVIATIONS AND ACRONYMS

BMS = bare-metal stent(s)

BVS = bioresorbable vascular scaffold

DES = drug-eluting stent(s)

FDA = U.S. Food and Drug Administration

MI = myocardial infarction

PMA = pre-market approval application

QCA = quantitative coronary angiography

RVD = reference vessel diameter

TLF = target lesion failure

Lesions) trial (2) was the United States' pivotal investigational device exemption trial. The Absorb BVS was reviewed by the Division of Cardiovascular Devices, Center for Devices and Radiological Health, U.S. Food and Drug Administration (FDA) under a pre-market approval application (PMA) and submitted to the Circulatory System Devices Advisory Panel (hereinafter referred to as the panel) meeting, which was held on March 15, 2016. This summary aims to describe the discussions and recommendations made during the panel meeting with respect to the reasonable assurance of safety and effectiveness of the Absorb BVS marketing in the United States.

ABSORB SYSTEM CLINICAL RESEARCH PROGRAM

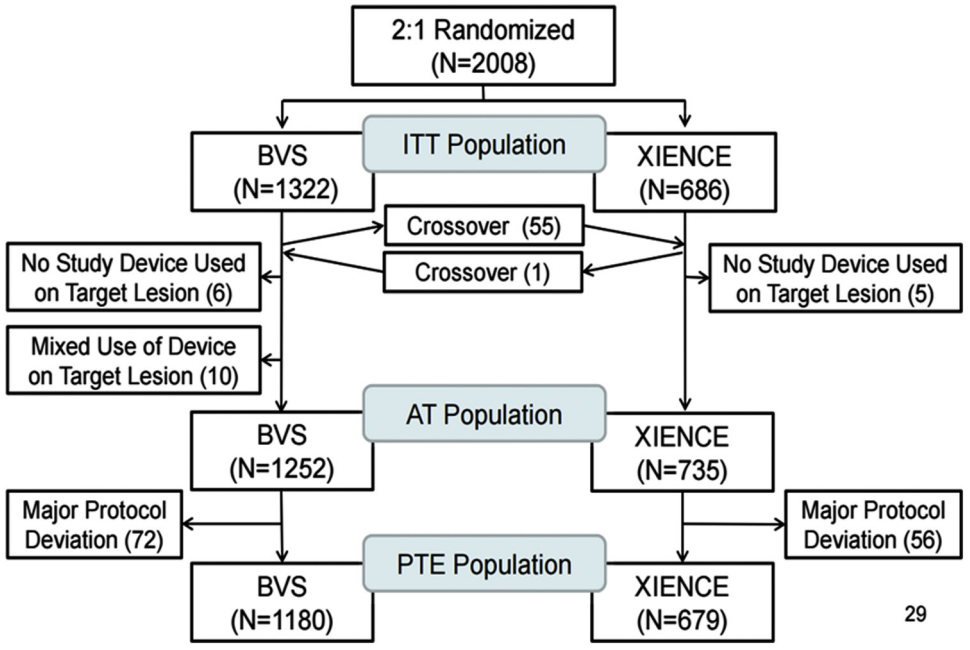
NON-U.S. CLINICAL STUDIES. The first-in-human ABSORB Cohort A study (3) enrolled 30 patients. At the 6-month follow-up, the angiographic in-stent late loss was 0.44 ± 0.35 mm and was mainly due to a mild reduction of the cross sectional area of the stented region (-11.8%) as measured by intravascular ultrasonography. Late lumen loss was lower compared with historical bare-metal stent (BMS) data, but was greater than historical XIENCE results. The increased BVS late loss versus XIENCE was believed to have been due to premature loss of scaffold structural integrity and radial strength. This outcome led to a modification in the BVS design, and thus the cohort A study results were not reviewed further by the panel. Subsequently, the results of ABSORB Cohort B (4) (n = 101) at 6 months showed that the cross-sectional area of the stented region was reduced by only 2.0% with intravascular ultrasonography. The late lumen loss amounted to 0.19 ± 0.18 mm with a limited relative decrease in minimal luminal area of 5.4% on IVUS. Optical coherence tomography at follow-up showed that 96.8% of the struts were covered with endothelium. The ABSORB EXTEND (ABSORB EXTEND Clinical Investigation: A Continuation in the Clinical Evaluation of the ABSORB Bioresorbable Vascular Scaffold (BVS) System in the Treatment of Subjects With de Novo Native Coronary Artery Lesions) study (5) included 800 patients. At 1 year, the composite endpoints of ischemia-driven major adverse cardiac events, composed in these series of trials of cardiac death, myocardial infarction (MI), and ischemia-driven target lesion revascularization and ischemia-driven target vessel failure were 4.3% and 4.9%, respectively, and the cumulative rate of definite and probable scaffold thrombosis was 0.8%. The ABSORB II trial (6) randomized 501 subjects to the Absorb BVS (n = 335) or the XIENCE (n = 166). The 1-year composite device orientated endpoint was not significantly different between the BVS and XIENCE (n = 16 [5%] vs. n = 5 [3%], respectively; p = 0.35) and similarly, nonsignificant outcome rates were observed for the combined secondary outcome of target vessel failure (n = 18 [5%] vs. n = 8 [5%], respectively; p = 0.78), or for its components of cardiac death, all MI and ischemia-driven target lesion revascularization. Similar noninferiority results versus everolimus-eluting stents were reported in the ABSORB Japan (7) the ABSORB China (8) trials.

U.S. CLINICAL STUDIES. The results of the ABSORB III (2) were the primary focus of the FDA's evaluation of the PMA. The primary endpoint was target lesion failure (TLF) at 1 year defined as the composite of cardiac death, target vessel-MI, or ischemia-driven target lesion revascularization. The ABSORB III included 2008 subjects (**Figure 1**) randomized to Absorb BVS (n = 1,322, 1,385 lesions treated) or XIENCE (n = 686, 713 lesions treated). For the intention to treat population, the 1-year TLF rates in the Absorb BVS and XIENCE groups were 7.8% and 6.1%, respectively (**Table 1**), and the difference between the 2 study groups was 1.7% with corresponding 95% confidence interval (CI) of (-0.51% to 3.93%), the upper bound of which was less than the pre-specified noninferiority margin of 4.5%. Therefore, the noninferiority endpoint for the Absorb BVS versus XIENCE was met (p = 0.007). Although all components of the TLF were numerically higher for Absorb BVS, none of them achieved statistical significance.

PANEL DELIBERATIONS

All authors of the present review attended the meeting. The meeting was chaired by Dr. Richard Page and initiated with presentations by the sponsor and the FDA. The sponsor, represented by its chief medical officer, Dr. Charles Simonton, suggested the following labeling: "The Absorb GT1 BVS is a temporary scaffold that will fully resorb over time and is indicated for improving coronary luminal diameter in patients with ischemic heart disease due to de novo native coronary artery lesions (length ≤24 mm) with a reference vessel diameter (RVD) of ≥2.5 mm and ≤3.75 mm." In view of the known inaccuracies in the visual estimation of RVD, the sponsor also suggested the following precaution and warning: "Precaution: In

FIGURE 1 Analysis Population Flow Chart



Intent-to-treat (ITT) population included all randomized subjects. The per-treatment-evaluable (PTE) population included subjects who received only study devices (bioresorbable vascular scaffold [BVS] or XIENCE) at the target lesion, excluding subjects with major protocol deviations. The as-treated (AT) population included subjects who received both Absorb and XIENCE at separate target lesions and were analyzed based on the randomization assignment.

small vessels (visually assessed as ≤2.75 mm), on-line QCA [quantitative coronary angiography] or intravascular imaging is strongly recommended to accurately measure and confirm appropriate vessel sizing (≥2.5 mm); Warning: If quantitative imaging determines a vessel size <2.5 mm, do not implant Absorb. Implantation of the device in vessels <2.5 mm may lead to an increased risk of adverse events such as MI and scaffold thrombosis." Finally, in view of previous experience gained with the device, the sponsor recommended the following precaution: "Precaution: Post-dilation is strongly recommended for optimal scaffold apposition. When performed, post-dilation should be at high pressure with a noncompliant balloon." The main concerns raised by the panel members are summarized below.

ABSORB III NONINFERIORITY MARGIN

In the ABSORB III, the basis for the sample size calculation to provide 96% power was based on the following assumptions: 1) 1-sided $\alpha = 0.025$; 2) a true 1-year TLF rate was assumed to be 7.0% for both Absorb BVS and XIENCE groups based on the data of similar XIENCE patient population (n = 2,051) from the SPIRIT IV trial (9); 3) a 5% lost to follow-up rate at 1 year; and 4) the noninferiority margin of 4.5% for the primary endpoint was selected following the FDA's guidance and agreed upon with the FDA. Because there was no historical trial comparing XIENCE and BMS directly in the patient population similar to ABSORB III, an indirect approach was taken by first comparing XIENCE against first-generation drug-eluting stent (DES) and first-generation DES against BMS. The results for the meta-analysis for the first and second comparisons showed treatment effect estimate and risk difference ± standard error (90% CI) of 11.6 ± 0.0231% (90% CI: 7.8% to 15.4%) and 2.5 ± 0.0077%

TABLE 1 Primary Endpoint Analysis in the Three Populations Analyzed

Population	Absorb	XIENCE	Difference (95% CI)	Noninferiority p Value
ITT	7.8% (102/1,313)	6.1% (41/677)	1.7% (-0.5% to 3.9%)	0.007
PTE	7.8% (91/1,174)	5.7% (38/670)	2.08% (-0.19% to 4.35%)	0.018
As treated	8.0% (99/1,245)	6.1% (44/726)	1.9% (-0.35% to 4.1%)	0.011

Values are % (n/N) unless otherwise indicated.
ITT = intention to treat; PTE = per treatment evaluable.

TABLE 2 1-Year Clinical Outcomes Rates Stratified by RVD Above and Below 2.25 mm

	RVD <2.25 mm		RVD ≥2.25 mm		All ITT Population	
	Absorb (N = 242)	XIENCE (N = 133)	Absorb (N = 1,074)	XIENCE (N = 549)	Absorb (N = 1,322)	XIENCE (N = 686)
TLF	12.9	8.3	6.7	5.5	7.8	6.1
Cardiac death	0.8	0.0	0.6	0.2	0.6	0.1
TV-MI	10.0	4.5	5.2	4.6	6.0	4.6
ID-TLR	6.6	6.8	2.2	1.5	3.0	2.5
Device thrombosis	4.6	1.5	0.9	0.6	1.5	0.7

Values are %. All comparisons were not statistically significant.

ID-TLR = ischemia-driven target lesion revascularization; RVD = reference vessel diameter; TLF = target lesion failure; TV-MI = target vessel myocardial infarction.

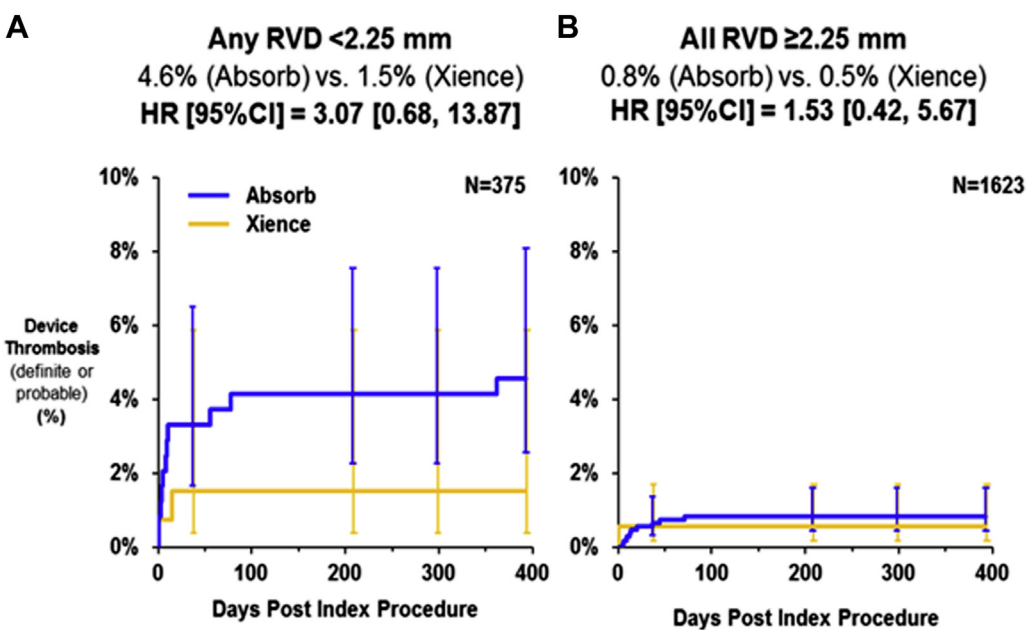
(90% CI: 1.2% to 3.7%), respectively. Thus, a treatment effect estimate was calculated as the addition of the 2 lower CI margins as 9%. The noninferiority margin was than selected as 50% of the treatment effect estimate to preserve at least 50% of the treatment effect of XIENCE in ABSORB III.

Dr John C. Somberg and Dr Andrew Farb of the panel raised their concerns regarding the noninferiority margin being possibly too large. When questioned, however, the FDA statistical representative assured that the margin was reasonable. Dr Farb mentioned that some may think the margin is too large, also noting that the protocol was written and approved by the FDA before data about the low rates of events were known. Dr Scott R. Evans later expressed his thoughts regarding the assessment of effectiveness with respect to noninferiority, stating that the noninferiority margin was based on a description of DES over BMS to retain 50% of the effect over BMS. He also noted that although point estimates were more in favor for XIENCE, caution should also be used when over interpreting the point estimates. Finally, he noted that therapeutic exchangeability or equivalence of the Absorb BVS to XIENCE would require more patients and questioned if this noninferiority margin really equates to clinical relevance.

ABSORB SAFETY IN SMALL VESSELS

In the ABSORB III trial, a target vessel size inclusion criterion was a RVD determined following pre-dilation of ≥2.5 mm, as visually assessed by the operator. Despite this inclusion criterion, the angiographic core lab found that 19% of intention to treat subjects

FIGURE 2 1-Year Device Thrombosis Stratified by Vessel Size: Any RVD <2.25 mm Versus all RVD ≥2.25 mm

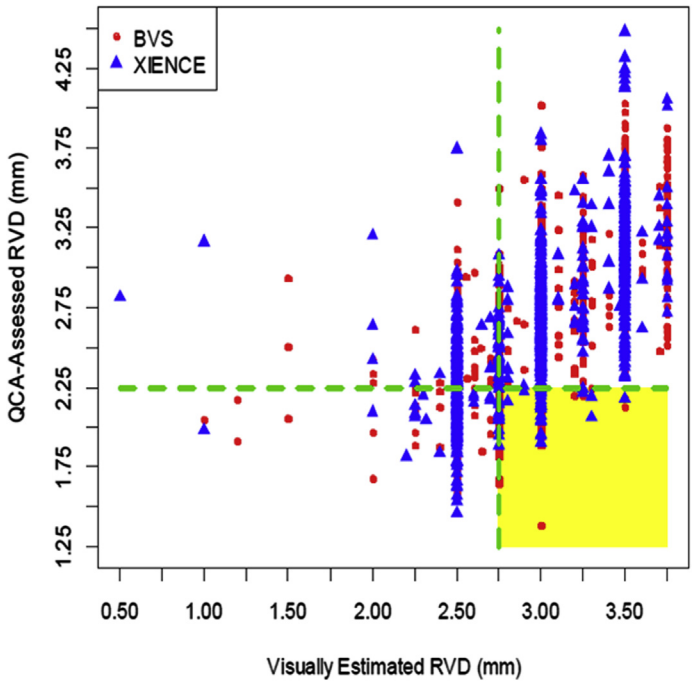


In the ABSORB III trial, the angiographic core lab found that 19% of intent-to-treat subjects (Absorb n = 242; XIENCE n = 133) underwent treatment of an artery with a QCA-assessed RVD of <2.25 mm **(A)** and ≥2.25 mm **(B)**. Post hoc analysis results show a nonsignificant trend toward device thrombosis with smaller vessels.

(Absorb BVS n = 242; XIENCE n = 133) underwent treatment of an artery with a QCA-assessed RVD of <2.25 mm. At the request of the FDA, the sponsor presented a post hoc subgroup analysis to assess the impact of vessel size on clinical performance. Baseline clinical, angiographic, and procedural characteristics for the ≥2.25-mm and <2.25-mm RVD subgroups were similar between the Absorb BVS and XIENCE groups. The 1-year TLF, its components, and device thrombosis rates for both devices were higher in small vessels than in larger vessels. However, despite the numerically higher outcome rates for the Absorb BVS as compared with XIENCE, there were no differences between the 2 devices for either the <2.25-mm or ≥2.25-mm groups (Table 2, Figure 2). Also presented were the results of the MICAT (Coronary Slow-flow and Microvascular Diseases) European registry (10), showing reduced rates of BVS thrombosis when an optimized implantation strategy was used.

VISUAL VERSUS INTRAVASCULAR IMAGING ASSESSED VESSEL SIZE MISMATCH. The panel recognized that visual estimates of coronary artery dimensions typically overestimate true vessel diameters as measured by angiographic core labs using QCA. In view of the post hoc analysis, the sponsor has preemptively proposed using a minimal RVD cutoff of ≥2.5 mm for labeling purposes as well as suggesting a precautionary statement with a strong recommendation to perform intravascular imaging for visually assessed vessels ≤2.75 mm. When asked by the panel for the specific labeling cutoff of ≥2.5 mm, the sponsor responded that this was a comfortable buffer, because the precise overestimation of vessel diameters by visual assessment is not known, 0.25 mm was a reasonable approximation, such that a 2.50-mm visually estimated diameter correlates with a 2.25 mm QCA-measured diameter. A scatter plot (Figure 3) presented by the FDA showed that in patients who had a visual RVD >2.75 mm (n = 375), the core laboratory assessed QCA measured the RVD <2.25 mm in 17.3% (65 of 375). The sponsor responded with a new calculation reflecting the percentages in the entire cohort, showing that using this methodology only 65 of 2008 (3.2%) would be diagnosed wrongly. The sponsor thereafter presented a Bland-Altman plot where the standard for agreement mean difference was 0.329 mm (90% CI: 0.314 to 0.345), and for an RVD of 2.75 mm the mean difference was 0.228 mm (90% CI: 0.213 to 0.243). Finally, the sponsor presented data from the ongoing ABSORB IV (NCT02173379) trial showing substantially lower rates of BVS implantation in core lab assessed RVD <2.25 mm of about 5% as opposed to about 20% in ABSORB III, reflecting the experience gained in vessel size estimation.

FIGURE 3 Scatter Plot of Visually Assessed RVD Versus ABSORB III QCA-Assessed RVD



In patients who had core laboratory-assessed QCA measured RVD of <2.25 mm, the visual RVD would actually be >2.75 mm in 65 patients, which represents 3.2% of the entire ABSORB III population. QCA = quantitative coronary angiography; other abbreviation as in Figure 2.

ABSORB SAFETY IN PATIENT- AND LESION-SPECIFIC SUBSETS. Diabetes mellitus has been recognized by the panel as a significant risk factor for stent thrombosis and scaffold thrombosis. In response, the sponsor presented a post hoc analysis of diabetes mellitus patients (Table 3) showing no differences from nondiabetics. In further substratifying diabetes mellitus patients according to RVD <2.25 and RVD ≥2.25 mm, the rates of TLF increased substantially in the diabetic population with RVD <2.25 mm, mainly driven by the more than doubling of the target vessel-MI and scaffold thrombosis rates. As before, these results were not powered to and were not found statistically significant, mainly because of the low number of patients in this specific group (Absorb BVS n = 88; XIENCE n = 45). As opposed to that, in the larger diabetic group with RVD ≥2.25 mm (Absorb BVS n = 325; XIENCE n = 177), almost similar rates of outcomes were presented. In response to these results, the notion

TABLE 3 1-Year Clinical Outcomes Rates in Diabetics Stratified by RVD Above and Below 2.25 mm

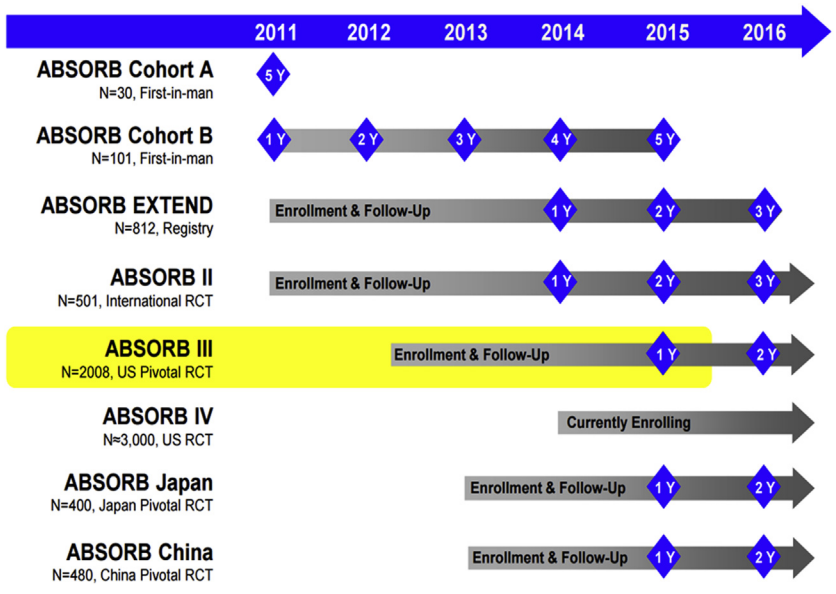
	RVD <2.25 mm		RVD ≥2.25 mm		Overall DM	
	Absorb (N = 88)	XIENCE (N = 45)	Absorb (N = 325)	XIENCE (N = 177)	Absorb (N = 416)	XIENCE (N = 224)
TLF	23.9	15.6	7.2	7.5	10.7	9.1
Cardiac death	1.1	0.0	0.3	0.0	0.5	0.0
TV-MI	19.3	8.9	6.2	6.9	9.0	7.3
ID-TLR	13.6	13.3	3.4	1.1	5.6	3.6
Device thrombosis	10.6	4.4	1.3	0.6	3.2	1.4

Values are %. All comparisons were not statistically significant.
DM = diabetes mellitus; other abbreviations as in Table 2.

in the panel's deliberation was that it was the small RVD size that mainly affected the higher, albeit not significant, adverse outcome rates in diabetics. The panel further inquired regarding the Absorb BVS outcomes in complex coronary lesions, specifically in ostial lesions and lesions with significant calcifications. Regarding the former, the sponsor showed that the Absorb BVS and XIENCE were implanted in 17 and 7 ostial lesions, respectively, without any events of scaffold thrombosis or stent thrombosis. The sponsor thereafter presented the rates of lesions with moderate and severe calcifications. Overall, the rates of lesions with moderate and severe calcifications were similar between the 2 groups (Absorb BVS: 21% and 12%, respectively; XIENCE: 19% and 12%, respectively). Thus, about one-third of patients in each group had a device implanted in a moderate or severely calcified lesion; however, patient outcomes rates did not differ between lesions with or without calcifications. A motion was noted to include a precautionary statement for complex coronary lesion, such as a left main lesion, chronic total occlusions, and ostial lesions.

THE USE OF POST-DILATION. In view of previous reports (10), the sponsor has preemptively recommended post-dilation for the device with the appropriate labeling. The panel reviewed the ABSORB III trial post hoc results with regard to post-dilation. Overall, in the Absorb BVS arm, post-dilation was performed in 63.4% of lesions (809/1276). In post hoc analysis, there was no evidence of higher device or procedure success rates or 1-year clinical outcomes when post-dilation was performed. To that, the sponsor responded that, because post-dilation was at the discretion of the operator, these results cannot be addressed unless a new randomized controlled study was performed. In addition, as mentioned, the MICAT

FIGURE 4 Long-Term Follow-Up Available From the ABSORB Research Program



The latest clinical follow-up of ABSORB study subjects available in 2016 is from the ABSORB cohort B (4), ABSORB EXTEND (5), ABSORB II (6), ABSORB Japan (7), ABSORB China (8), ABSORB III (2), and ABSORB IV (NCT02173379). RCT = randomized, controlled trial; other abbreviation as in Figure 2.

registry has shown that with the use of post-dilation, the rates of scaffold thrombosis may be even lower (10).

LONG-TERM FOLLOW-UP AND THE POST-APPROVAL PHASE. One of the concerns raised by the panel was the lack of long-term data for the new device. To that, the sponsor presented continued follow-up data from other trials of the Absorb BVS research program (**Figure 4**). Subsequently, the sponsor presented its post-approval commitments. First, the sponsor will continue the ABSORB III and IV follow-up through 5 years and perform superiority analysis to XIENCE at 5 years with both cohorts. Second, the sponsor will conduct a post-approval study that will include up to 3,000 patients at approximately 150 to 200 sites, broader patient populations and physicians, analysis of low-frequency events and confirmation of generalizability to real-world practice, an imaging subgroup to evaluate effectiveness of labeling and training to avoid Absorb BVS placement in small vessels (<2.5 mm), and 5-year follow-up of safety and effectiveness. The sponsor also presented its detailed proposal for device distribution, which would include a phased commercial launch and a mandatory comprehensive education and training program.

FDA QUESTIONS TO THE PANEL

The FDA, represented by Dr Bram Zuckerman, presented the panel 8 questions. First, the panel was asked whether the ABSORB III results provide adequate evidence of clinical noninferiority of the BVS as compared with the XIENCE stent with regard to safety and effectiveness in the patient population described by the proposed indications for use. The main issues brought by panel members were with regard to the risk versus benefits of this technology, the advantages of a BVS versus a permanent metal stent, the leap this technology may lead to in the field, and the fact the Absorb BVS was compared with the best-in-class DES and outperformed previously used technologies. After deliberation, the chairman summarized the view of the panel and the data presented in stating that with the data presented, it is reasonable to attribute safety and effectiveness to the device with the following concerns: 1) the point estimates for all outcomes were in the wrong direction; 2) better patient and lesion selection conveyed by proper operator education may reduce events significantly; 3) there are still unknown factors with regard to the optimal use and recommendations of device; and 4) long-term patient follow-up is needed. Questions 2 to 4 dealt with the issue of the risk of the device in small vessels. The panel's chairman summarized that there is a consensus that: 1) the Absorb BVS should not be implanted in QCA-assessed RVD of <2.25 mm; 2) in view of the mismatch between visual estimation and QCA for RVD estimation, there is greater agreement among the panel with a 3.0-mm threshold to perform online QCA and that the FDA should include additional wording in the precaution section regarding the risks of the BVS implantation in small vessels with a possible black box warning; and 3) no additional precautionary labeling is needed regarding diabetes mellitus. In question 5, the panel was asked whether or not the PMA includes adequate follow-up data in a sufficient portion of the patient population identified in the proposed indications to support safety and effectiveness. To that, the panel chairman noted that the panel felt that the current follow-up data were sufficient to meet safety and effectiveness for PMA approval. In question 6, the panel was asked if a strong recommendation for post-dilation should be included in the label. The panel responded that no data to support post-dilation was shown in the current ABSORB III. However, after panel discussion and in view of the experience gained worldwide, the chairman summarized that the panel is feeling comfortable with a strong recommendation for post-dilation. Also noted was that the post-dilation balloon should not be greater than 0.5 mm from the BVS size, and a noncompliant balloon should be used and inflated to 14 atm. In answer to question 7, the panel was supportive of the suggested post-approval commitments of the sponsor. Finally, in question 8, the panel was asked to approve the proposed contraindications, warnings, and precautions in the labeling, and thereafter the meeting was adjourned. The 10 panel members voted on 3 specific questions brought forward by the FDA: 1) Is there reasonable assurance that the Absorb BVS is safe for use in patients who meet the criteria specified in the proposed indication? The panel voted in favor (9:1). 2) Is there reasonable assurance that the Absorb BVS is effective for use in patients who meet the criteria specified in the proposed indication? The panel voted unanimously in favor (10:0). 3) Do the benefits of the Absorb BVS outweigh the risks for use in patients who meet the criteria specified in the proposed indication? The panel voted in favor (9:0, 1 member abstained).

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PERSPECTIVES

WHAT IS KNOWN? The ABSORB III trial met the primary endpoint of noninferiority of Absorb BVS compared with the control, XIENCE drug-eluting stent (Abbott Vascular, Santa Clara, California), for target lesion failure at 1 year. Although a higher numerical trend for adverse outcomes was reported for the Absorb BVS, there were no statistical differences between Absorb BVS and XIENCE for any safety or effectiveness components for target lesion failure or for the secondary prespecified outcomes.

WHAT IS NEW? New post hoc analyses from the ABSORB III trial were presented during the 2016 U.S. Food and Drug Administration Circulatory System Device Panel pre-market approval application for the Absorb BVS. The panel concluded that, despite the lack of statistical significance, the point estimates for all outcomes were not in favor of the Absorb BVS, and the adverse outcome data presented for small vessels may be an issue in real-life practice. Thus, better patient and lesion selection conveyed by proper operator education may significantly reduce adverse events.

WHAT IS NEXT? The sponsor will continue the ABSORB III and IV follow-up through 5 years and perform superiority analysis to XIENCE at 5 years with both cohorts. The sponsor will also conduct a postapproval study with up to a 5-year follow-up of safety and effectiveness that will include 3,000 patients at approximately 150 to 200 sites, broader patient populations and physicians, and an imaging subgroup to evaluate the effectiveness of the proposed labeling and training programs.

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KEY WORDS bioresorbable vascular scaffold, U.S. Food and Drug Administration