

# Cardiac Assist Devices Market to 2017 - Increasing Uptake of Ventricular Assist Devices and Total Artificial Heart to Drive Growth

Reference Code: **GBIME00041MR**

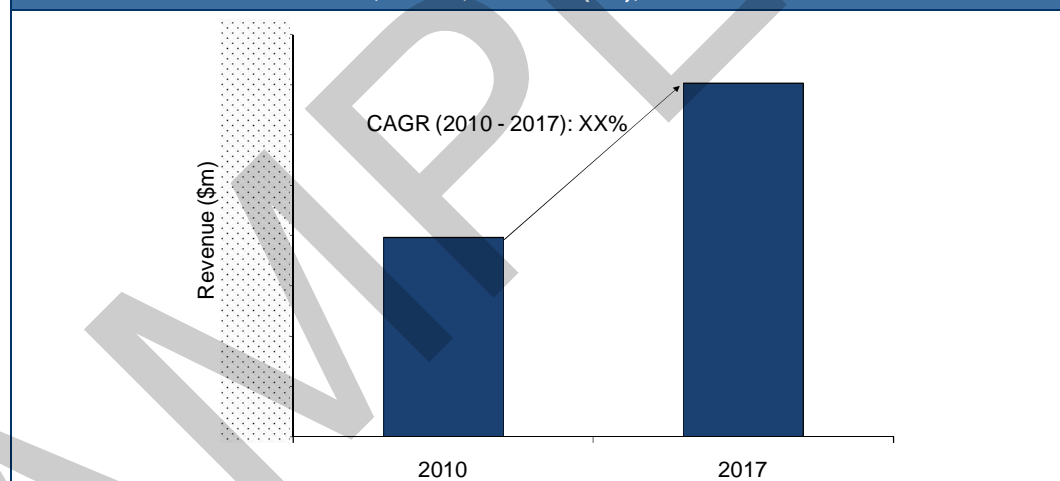
Publication Date: **January 2012**

*The global market for cardiac assist devices is forecast to reach \$XX billion by 2017 with a Compound Annual Growth Rate (CAGR) of XX% from 2010 to 2017*

## The Global Cardiac Assist Devices Market is Forecast to Reach \$XX Billion by 2017

The global market for cardiac assist devices is forecast to reach \$XX billion by 2017 with a Compound Annual Growth Rate (CAGR) of XX% from 2010 to 2017. The market is expected to be driven by an increase in Cardiovascular Diseases (CVD) and a growing aging population. The shortage of donor hearts for transplantation is also leading to an increase in the adoption of cardiac assist devices for patients with end-stage heart failure. Cardiac assist devices are also being used as Bridge-To-Transplantation (BTT), bridge-to-recovery and destination therapies, depending on the requirement of the patient and the severity of their disease. Technological advancements, which make the devices more efficient and minimally invasive, are expected to further drive the demand for cardiac assist devices in the future.

**Cardiac Assist Devices Market, Global, Revenue (\$m), 2010 - 2017**

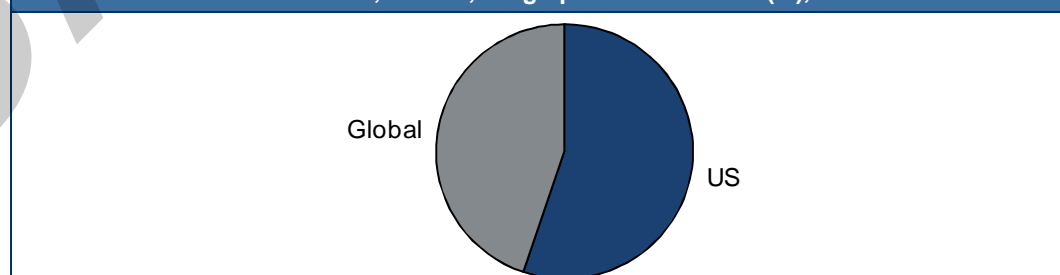


Source: GBI Research, Annual Reports, SEC Filings, Investor Presentations, Earning Call Transcripts, News and Press Releases, Scientific Journals, Trade Associations, Interviews with Industry Experts and Key Opinion Leaders (KOLs)

## The US is the Biggest Market for Cardiac Assist Devices

*The US is the biggest market for cardiac assist devices, contributing about XX% of the global market share in 2010*

**Cardiac Assist Devices Market, Global, Geographic Contribution (%), 2010**



Source: GBI Research, Annual Reports, SEC Filings, Investor Presentations, Earning Call Transcripts, News and Press Releases, Scientific Journals, Trade Associations, Interviews with Industry Experts and Key Opinion Leaders (KOLs)

## 1 Table of Contents

1	Table of Contents .....	4
1.1	List of Tables .....	6
1.2	List of Figures .....	7
2	Introduction .....	8
2.1	GBI Research Guidance .....	9
3	Cardiac Assist Devices - Market Characterization .....	10
3.1	Global Cardiac Assist Devices Market, Revenue (\$m), 2003 - 2010 .....	10
3.2	Global Cardiac Assist Devices Market, Revenue Forecast (\$m), 2010 - 2017 .....	11
3.3	Global Cardiac Assist Devices Market, Key Technology Trends .....	12
3.3.1	<i>Technological Advancements in Cardiac Assist Devices and Paradigm Shift Towards use of the Total Artificial Heart .....</i>	<i>12</i>
3.4	Global Cardiac Assist Devices, Market Dynamics .....	13
3.4.1	<i>Market Drivers .....</i>	<i>14</i>
3.4.2	<i>Market Restraints .....</i>	<i>17</i>
3.5	Global Cardiac Assist Devices Market, Key Company Share (%), 2010 .....	18
4	Global Cardiac Assist Devices Market - Category Analysis and Forecasts .....	19
4.1	Ventricular Assist Devices (VADs) .....	19
4.1.1	<i>Ventricular Assist Devices Market, Global, Revenue (\$m), 2003 - 2010 .....</i>	<i>20</i>
4.1.2	<i>Ventricular Assist Devices Market, Global, Revenue Forecast (\$m), 2010 - 2017 .....</i>	<i>21</i>
4.1.3	<i>Ventricular Assist Devices, Market Dynamics .....</i>	<i>22</i>
4.2	Intra-Aortic Balloon Pumps (IABPs) .....	24
4.2.1	<i>Intra-Aortic Balloon Pumps Market, Global, Revenue (\$m), 2003 - 2010 .....</i>	<i>25</i>
4.2.2	<i>Intra-Aortic Balloon Pumps Market, Global, Revenue Forecast (\$m), 2010 - 2017 .....</i>	<i>26</i>
4.2.3	<i>Intra-Aortic Balloon Pumps - Market Dynamics .....</i>	<i>27</i>
4.3	Total Artificial Heart .....	29
4.3.1	<i>Total Artificial Heart Market, Global, Revenue (\$m), 2003 - 2010 .....</i>	<i>29</i>
4.3.2	<i>Total Artificial Heart Market, Global, Revenue Forecast (\$m), 2010 - 2017 .....</i>	<i>30</i>
4.3.3	<i>Total Artificial Heart - Market Dynamics .....</i>	<i>31</i>
5	Global Cardiac Assist Devices Market - Country Analysis and Forecasts, 2003 - 2017 .....	32
5.1	Revenue Forecasts, by Country, 2003 - 2017 .....	32
5.1.1	<i>Cardiac Assist Devices Market, US, Revenue (\$m), 2003 - 2010 .....</i>	<i>32</i>
5.1.2	<i>Cardiac Assist Devices Market, US, Revenue (\$m), 2010 - 2017 .....</i>	<i>33</i>
5.1.3	<i>Cardiac Assist Devices Market, Canada, Revenue (\$m), 2003 - 2010 .....</i>	<i>34</i>
5.1.4	<i>Cardiac Assist Devices Market, Canada, Revenue (\$m), 2010 - 2017 .....</i>	<i>35</i>
5.1.5	<i>Cardiac Assist Devices Market, UK, Revenue (\$m), 2003 - 2010 .....</i>	<i>36</i>
5.1.6	<i>Cardiac Assist Devices Market, UK, Revenue (\$m), 2010 - 2017 .....</i>	<i>37</i>
5.1.7	<i>Cardiac Assist Devices Market, Germany, Revenue (\$m), 2003 - 2010 .....</i>	<i>38</i>
5.1.8	<i>Cardiac Assist Devices Market, Germany, Revenue (\$m), 2010 - 2017 .....</i>	<i>39</i>
5.1.9	<i>Cardiac Assist Devices Market, France, Revenue (\$m), 2003 - 2010 .....</i>	<i>40</i>
5.1.10	<i>Cardiac Assist Devices Market, France, Revenue (\$m), 2010 - 2017 .....</i>	<i>41</i>
5.1.11	<i>Cardiac Assist Devices Market, Italy, Revenue (\$m), 2003 - 2010 .....</i>	<i>42</i>
5.1.12	<i>Cardiac Assist Devices Market, Italy, Revenue (\$m), 2010 - 2017 .....</i>	<i>43</i>
5.1.13	<i>Cardiac Assist Devices Market, Spain, Revenue (\$m), 2003 - 2010 .....</i>	<i>44</i>
5.1.14	<i>Cardiac Assist Devices Market, Spain, Revenue (\$m), 2010 - 2017 .....</i>	<i>45</i>
5.1.15	<i>Cardiac Assist Devices Market, Japan, Revenue (\$m), 2003 - 2010 .....</i>	<i>46</i>
5.1.16	<i>Cardiac Assist Devices Market, Japan, Revenue (\$m), 2010 - 2017 .....</i>	<i>47</i>
5.1.17	<i>Cardiac Assist Devices Market, China, Revenue (\$m), 2003 - 2010 .....</i>	<i>48</i>
5.1.18	<i>Cardiac Assist Devices Market, China, Revenue (\$m), 2010 - 2017 .....</i>	<i>49</i>
5.1.19	<i>Cardiac Assist Devices Market, India, Revenue (\$m), 2003 - 2010 .....</i>	<i>50</i>
5.1.20	<i>Cardiac Assist Devices Market, India, Revenue (\$m), 2010 - 2017 .....</i>	<i>51</i>
5.1.21	<i>Cardiac Assist Devices Market, Australia, Revenue (\$m), 2003 - 2010 .....</i>	<i>52</i>
5.1.22	<i>Cardiac Assist Devices Market, Australia, Revenue (\$m), 2010 - 2017 .....</i>	<i>53</i>
5.1.23	<i>Cardiac Assist Devices Market, Brazil, Revenue (\$m), 2003 - 2010 .....</i>	<i>54</i>

5.1.24	Cardiac Assist Devices Market, Brazil, Revenue (\$m), 2010 - 2017.....	55
6	Global Cardiac Assist Devices Market - Competitive Assessment .....	56
6.1	Thoratec Corporation.....	56
6.1.1	Key Marketed Products .....	56
6.1.2	SWOT Analysis.....	57
6.2	MAQUET GmbH & Co. KG .....	57
6.2.1	Key Marketed Products .....	58
6.2.2	SWOT Analysis.....	58
6.3	Teleflex Incorporated.....	59
6.3.1	Key Marketed Products .....	59
6.3.2	SWOT Analysis.....	59
6.4	HeartWare International, Inc. ....	60
6.4.1	Marketed Product.....	60
6.4.2	SWOT Analysis.....	61
6.5	Berlin Heart GmbH.....	61
6.5.1	Key Marketed Products .....	61
6.5.2	SWOT Analysis.....	62
6.6	ABIOMED, Inc.....	63
6.6.1	Key Marketed Products .....	63
6.6.2	SWOT Analysis.....	64
6.7	SynCardia Systems, Inc.....	65
6.7.1	SWOT Analysis.....	65
7	Global Cardiac Assist Devices Market - Product Pipeline Analysis .....	66
7.1	Ventricular Assist Devices .....	67
7.1.1	Left Ventricular Assist Devices.....	68
7.1.2	External Ventricular Assist Devices.....	70
7.1.3	Biventricular Assist Devices.....	70
7.1.4	Other Ventricular Assist Devices.....	71
7.2	Intra-Aortic Balloon Pumps .....	72
7.2.1	Percutaneous Heart Pump.....	72
7.3	Total Artificial Heart.....	72
7.3.1	50cc Total Artificial Heart.....	72
7.3.2	SmartHeart Total Artificial Heart.....	72
7.3.3	BiVACOR Device .....	72
8	Global Cardiac Assist Devices Market - Consolidation Landscape.....	73
8.1	Cardiac Assist Devices Market, Number of Deals, Global, 2005 - 2010 .....	73
8.2	Key Deals of 2011 .....	76
8.2.1	Thoratec Acquires Medical Business of Levitronix .....	76
8.3	Key Acquisition Deals, 2005 - 2010.....	76
8.3.1	Asahi Kasei Acquires 60% Interest in Evaheart Medical.....	76
8.3.2	Getinge Acquires Datascope .....	76
8.3.3	ABIOMED Acquires Impella Cardiosystems .....	77
8.4	Key Partnership Deals, 2005 - 2010.....	77
8.4.1	9World Heart Signed Licensing Agreement with LaunchPoint Technologies and Carnegie Mellon University.....	77
8.4.2	Thoratec Signed an Agreement with Levitronix.....	77
9	Appendix.....	78
9.1	Definitions.....	78
9.1.1	Cardiac Assist Devices.....	78
9.2	Acronyms.....	78
9.3	Research Methodology.....	79
9.3.1	Secondary Research.....	79
9.3.2	Primary Research .....	79
9.3.3	Models.....	80
9.3.4	Forecasts.....	80

9.3.5	Expert Panels.....	80
9.4	Contact Us .....	80
9.5	Disclaimer .....	81
9.6	Sources .....	81

## 1.1 List of Tables

Table 1:	Cardiac Assist Devices Market, Global, Revenue (\$m), 2003 - 2010 .....	10
Table 2:	Cardiac Assist Devices Market, Global, Revenue (\$m), 2010 - 2017 .....	11
Table 3:	Ventricular Assist Devices, Advanced Technology Based Pipeline Products.....	13
Table 4:	Incidence of Cardiovascular Disease (per 1000), US, 2008.....	14
Table 5:	Population Aged 65 and Above (million), Global, 2004-2010 .....	15
Table 6:	Cardiac Assist Devices Market, Emerging Countries, Average Selling Price (\$m), 2010 .....	17
Table 7:	Cardiac Assist Devices Market, Global, Key Company Revenues (\$m), 2010.....	18
Table 8:	Ventricular Assist Devices Market, Global, Revenue (\$m), 2003 - 2010.....	20
Table 9:	Ventricular Assist Devices Market, Global, Revenue (\$m), 2010 - 2017 .....	21
Table 10:	Ventricular Assist Devices, Advanced Technology Based Pipeline Products.....	22
Table 11:	Ventricular Assist Devices, Clinical Trials Evaluating Safety/Efficacy .....	23
Table 12:	Intra-Aortic Balloon Pumps Market, Global, Revenue (\$m), 2003 - 2010.....	25
Table 13:	Intra-Aortic Balloon Pumps Market, Global, Revenue (\$m), 2010 - 2017.....	26
Table 14:	Intra-Aortic Balloon Pumps, No. of Procedures, (2006 - 2010).....	27
Table 15:	Intra-Aortic Balloon Pumps, No. of Procedures, (2010 - 2016).....	27
Table 16:	Total Artificial Heart Market, Global, Revenue (\$m), 2003 - 2010.....	29
Table 17:	Total Artificial Heart Market, Global, Revenue (\$m), 2010 - 2017.....	30
Table 18:	Cardiac Assist Devices Market, US, Revenue (\$m), 2003 - 2010.....	32
Table 19:	Cardiac Assist Devices Market, US, Revenue (\$m), 2010 - 2017.....	33
Table 20:	Cardiac Assist Devices Market, Canada, Revenue (\$m), 2003 - 2010 .....	34
Table 21:	Cardiac Assist Devices Market, Canada, Revenue (\$m), 2010 - 2017 .....	35
Table 22:	Cardiac Assist Devices Market, UK, Revenue (\$m), 2003 - 2010.....	36
Table 23:	Cardiac Assist Devices Market, UK, Revenue (\$m), 2010 - 2017.....	37
Table 24:	Cardiac Assist Devices Market, Germany, Revenue (\$m), 2003 - 2010 .....	38
Table 25:	Cardiac Assist Devices Market, Germany, Revenue (\$m), 2010 - 2017 .....	39
Table 26:	Cardiac Assist Devices Market, France, Revenue (\$m), 2003 - 2010.....	40
Table 27:	Cardiac Assist Devices Market, France, Revenue (\$m), 2010 - 2017.....	41
Table 28:	Cardiac Assist Devices Market, Italy, Revenue (\$m), 2003 - 2010.....	42
Table 29:	Cardiac Assist Devices Market, Italy, Revenue (\$m), 2010 - 2017 .....	43
Table 30:	Cardiac Assist Devices Market, Spain, Revenue (\$m), 2003 - 2010.....	44
Table 31:	Cardiac Assist Devices Market, Spain, Revenue (\$m), 2010 - 2017.....	45
Table 32:	Cardiac Assist Devices Market, Japan, Revenue (\$m), 2003 - 2010 .....	46
Table 33:	Cardiac Assist Devices Market, Japan, Revenue (\$m), 2010 - 2017 .....	47
Table 34:	Cardiac Assist Devices Market, China, Revenue (\$m), 2003 - 2010 .....	48
Table 35:	Cardiac Assist Devices Market, China, Revenue (\$m), 2010 - 2017 .....	49
Table 36:	Cardiac Assist Devices Market, India, Revenue (\$m), 2003 - 2010.....	50
Table 37:	Cardiac Assist Devices Market, India, Revenue (\$m), 2010 - 2017 .....	51
Table 38:	Cardiac Assist Devices Market, Australia, Revenue (\$m), 2003 - 2010.....	52
Table 39:	Cardiac Assist Devices Market, Australia, Revenue (\$m), 2010 - 2017.....	53
Table 40:	Cardiac Assist Devices Market, Brazil, Revenue (\$m), 2003 - 2010.....	54
Table 41:	Cardiac Assist Devices Market, Brazil, Revenue (\$m), 2010 - 2017.....	55
Table 42:	Thoratec Corporation, Cardiac Assist Devices, Key Marketed Products, 2010 .....	56
Table 43:	MAQUET GmbH, Key Products, Cardiac Assist Devices, Global, 2010.....	58
Table 44:	Teleflex Incorporated, Key Products, Cardiac Assist Devices, Global, 2010.....	59
Table 45:	ABIOMED, Inc., Key Products, Cardiac Assist Devices, Global, 2010.....	63
Table 46:	Ventricular Assist Devices, Pipeline Assessment, by Development Stage.....	67
Table 47:	Left Ventricular Assist Devices, Pipeline Products.....	68
Table 48:	External Ventricular Assist Devices, Pipeline Products.....	70
Table 49:	Biventricular Assist Devices, Pipeline Products.....	70
Table 50:	Total Artificial Heart, Pipeline Products.....	72
Table 51:	Cardiac Assist Devices Market, Number of Deals, Global, 2005 – 2010.....	73
Table 52:	Cardiac Assist Devices Market, Number of Deals, Global, 2005 - 2010 .....	74

## 1.2 List of Figures

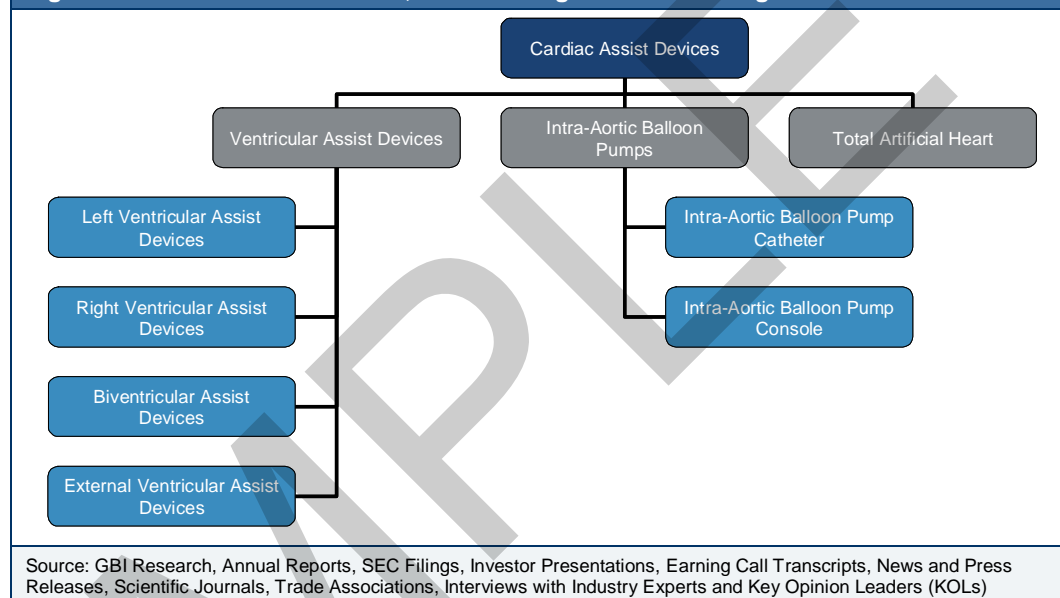
Figure 1: Cardiac Assist Devices, Market Categorization and Segmentation .....	8
Figure 2: Cardiac Assist Devices Market, Global, Revenue (\$m), 2003 - 2010 .....	10
Figure 3: Cardiac Assist Devices Market, Global, Revenue (\$m), 2010 - 2017 .....	11
Figure 4: Cardiac Assist Devices, Market Dynamics.....	13
Figure 5: Incidence of Cardiovascular Disease (per 1000), US, 2008.....	14
Figure 6: Population Aged 65 and Above (million), Global, 2004-2010.....	15
Figure 7: Cardiac Assist Devices Market, Global, Company Share (%), 2010.....	18
Figure 8: Ventricular Assist Devices Market, Global, Revenue (\$m), 2003 - 2010.....	20
Figure 9: Ventricular Assist Devices Market, Global, Revenue (\$m), 2010 - 2017.....	21
Figure 10: Intra-Aortic Balloon Pumps Market, Global, Revenue (\$m), 2003 - 2010.....	25
Figure 11: Intra-Aortic Balloon Pumps Market, Global, Revenue (\$m), 2010 - 2017.....	26
Figure 12: Intra-Aortic Balloon Pumps, No. of Procedures, Global, (2006 - 2016) .....	27
Figure 13: Total Artificial Heart Market, Global, Revenue (\$m), 2003 - 2010.....	29
Figure 14: Total Artificial Heart Market, Global, Revenue (\$m), 2010 - 2017.....	30
Figure 15: Cardiac Assist Devices Market, US, Revenue (\$m), 2003 - 2010.....	32
Figure 16: Cardiac Assist Devices Market, US, Revenue (\$m), 2010 - 2017.....	33
Figure 17: Cardiac Assist Devices Market, Canada, Revenue (\$m), 2003 - 2010 .....	34
Figure 18: Cardiac Assist Devices Market, Canada, Revenue (\$m), 2010 - 2017 .....	35
Figure 19: Cardiac Assist Devices Market, UK, Revenue (\$m), 2003 - 2010.....	36
Figure 20: Cardiac Assist Devices Market, UK, Revenue (\$m), 2010 - 2017.....	37
Figure 21: Cardiac Assist Devices Market, Germany, Revenue (\$m), 2003 - 2010 .....	38
Figure 22: Cardiac Assist Devices Market, Germany, Revenue (\$m), 2010 - 2017 .....	39
Figure 23: Cardiac Assist Devices Market, France, Revenue (\$m), 2003 - 2010.....	40
Figure 24: Cardiac Assist Devices Market, France, Revenue (\$m), 2010 - 2017.....	41
Figure 25: Cardiac Assist Devices Market, Italy, Revenue (\$m), 2003 - 2010.....	42
Figure 26: Cardiac Assist Devices Market, Italy, Revenue (\$m), 2010 - 2017 .....	43
Figure 27: Cardiac Assist Devices Market, Spain, Revenue (\$m), 2003 - 2010.....	44
Figure 28: Cardiac Assist Devices Market, Spain, Revenue (\$m), 2010 - 2017.....	45
Figure 29: Cardiac Assist Devices Market, Japan, Revenue (\$m), 2003 - 2010.....	46
Figure 30: Cardiac Assist Devices Market, Japan, Revenue (\$m), 2010 - 2017 .....	47
Figure 31: Cardiac Assist Devices Market, China, Revenue (\$m), 2003 - 2010 .....	48
Figure 32: Cardiac Assist Devices Market, China, Revenue (\$m), 2010 - 2017 .....	49
Figure 33: Cardiac Assist Devices Market, India, Revenue (\$m), 2003 - 2010.....	50
Figure 34: Cardiac Assist Devices Market, India, Revenue (\$m), 2010 - 2017 .....	51
Figure 35: Cardiac Assist Devices Market, Australia, Revenue (\$m), 2003 - 2010.....	52
Figure 36: Cardiac Assist Devices Market, Australia, Revenue (\$m), 2010 - 2017.....	53
Figure 37: Cardiac Assist Devices Market, Brazil, Revenue (\$m), 2003 - 2010.....	54
Figure 38: Cardiac Assist Devices Market, Brazil, Revenue (\$m), 2010 - 2017.....	55
Figure 39: Cardiac Assist Devices, Competitive Assessment, 2010 .....	56
Figure 40: Thoratec Corporation, SWOT Analysis, Cardiac Assist Devices, Global, 2010 .....	57
Figure 41: MAQUET GmbH, SWOT Analysis, Cardiac Assist Devices, Global, 2010.....	58
Figure 42: Teleflex Incorporated, SWOT Analysis, Cardiac Assist Devices, Global, 2010 .....	59
Figure 43: HeartWare International, Inc., SWOT Analysis, Cardiac Assist Devices, Global, 2010..	61
Figure 44: Berlin Heart GmbH, SWOT Analysis, Cardiac Assist Devices, Global, 2010.....	62
Figure 45: ABIOMED, Inc., SWOT Analysis, Cardiac Assist Devices, Global, 2010.....	64
Figure 46: SynCardia Systems, Inc., SWOT Analysis, Cardiac Assist Devices, Global, 2010.....	65
Figure 47: Cardiac Assist Devices, Pipeline Products, By Segment .....	66
Figure 48: Ventricular Assist Devices, Pipeline Assessment, by Development Stage.....	67
Figure 49: Cardiac Assist Devices Market, Number of Deals, Global, 2005 – 2010.....	73



## 2 Introduction

Cardiac assist devices are mechanical pumps that work in conjunction with the heart to improve its pumping efficiency, increase cardiac output and restore normal blood circulation. These are typically used in patients suffering from end-stage heart failure, where the chances of survival through the use of oral medications are minimal. The cardiac assist devices market comprises Intra-Aortic Balloon Pumps (IABP), Total Artificial Heart (TAH) and Ventricular Assist Devices (VAD). A VAD can be used in the treatment of heart failure as a bridge-to-transplantation (BTT), bridge-to-recovery and destination therapy depending on the severity of heart failure in the patient. TAH is also used in destination therapies for patients with end-stage heart failure.

**Figure 1: Cardiac Assist Devices, Market Categorization and Segmentation**



The growing aging population, increase of heart disease and lack of donor organs will drive the demand for cardiac assist devices. Also, advances in device miniaturization, making implantation minimally invasive, have improved the reach of cardiac assist devices and increased their effectiveness. Innovative devices introduced by established organizations will lead to an increase in demand for cardiac assist procedures. The cardiac assist devices market is dominated by players such as Thoratec Corporation, Maquet GmbH & Co., and Teleflex Incorporated.

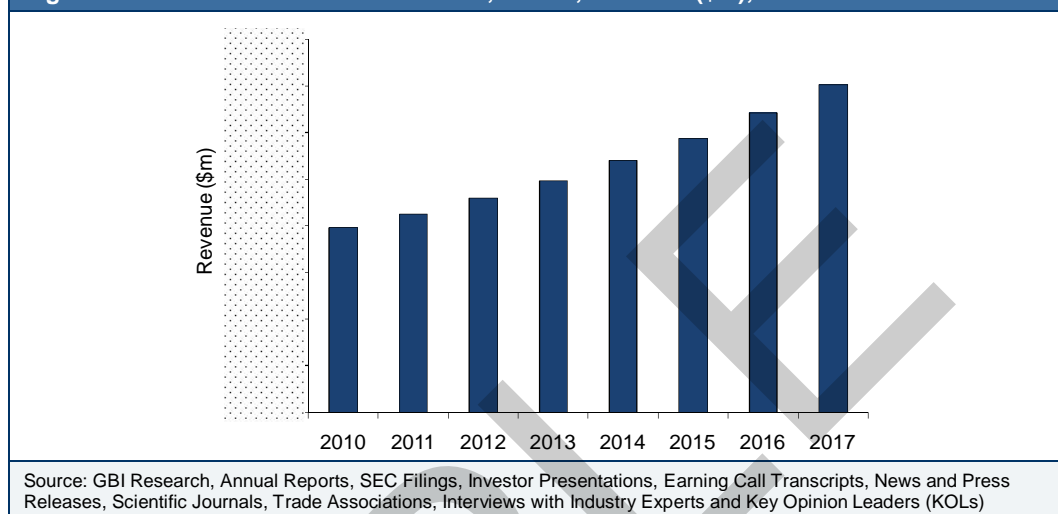
## 2.1 GBI Research Guidance

The report comprises an executive summary capturing the key points in the global cardiac assist devices market. Competition in the industry and geographical regions, and market categories driving the market are also outlined.

- The “Introduction” chapter provides an introduction to the cardiac assist devices market, as well as giving an overview of the market.
- Chapter three, “Global Market Characterization” provides information on market size for the historic period 2003 to 2010, and for the forecast period 2010 to 2017. It also contains information relating to the cardiac assist devices market trends and dynamics. In the market dynamics section, comprehensive information is provided on market drivers and restraints. The competitive landscape for the overall cardiac assist devices market is also provided.
- In chapter four, “Category Analysis and Forecasts” the cardiac assist devices market categories - which include intra-aortic balloon pumps, ventricular assist devices and total artificial heart - are discussed. Market size information for the historic (2003 to 2010) and the forecast (2010 to 2017) periods are discussed for each category, along with market dynamics and competition.
- Chapter five on “Country Analysis And Forecasts” includes cardiac assist devices market size information, along with the categories for the historic (2003 to 2010) and the forecast (2010 to 2017) periods for the US, Canada, UK, Germany, France, Italy, Spain, Japan, China, India, Australia and Brazil.
- Chapter six, entitled “Competitive Assessment”, discusses the market opportunities and risk evaluation for the seven cardiac assist devices categories. Profiles of the leading surgical equipment companies are also provided. Leading companies’ products, features and benefits are also discussed.
- Chapter seven is titled “Product Pipeline Analysis”, and covers the products in the pipeline for some of the various cardiac assist devices categories. Product approval and expected launch dates are provided for some products.
- The last chapter, chapter eight, entitled “Consolidation Landscape”, includes the total number of deals that took place during the 2005 to 2010 period, with the key major deals that took place during that time discussed in detail.

## 3.2 Global Cardiac Assist Devices Market, Revenue Forecast (\$m), 2010 - 2017

**Figure 3: Cardiac Assist Devices Market, Global, Revenue (\$m), 2010 - 2017**



**Table 2: Cardiac Assist Devices Market, Global, Revenue (\$m), 2010 - 2017**

Category	2010	2011	2012	2013	2014	2015	2016	2017	CAGR 2010 - 2017
Global Cardiac Assist Devices Market	100	110	120	130	140	150	160	170	7.7%

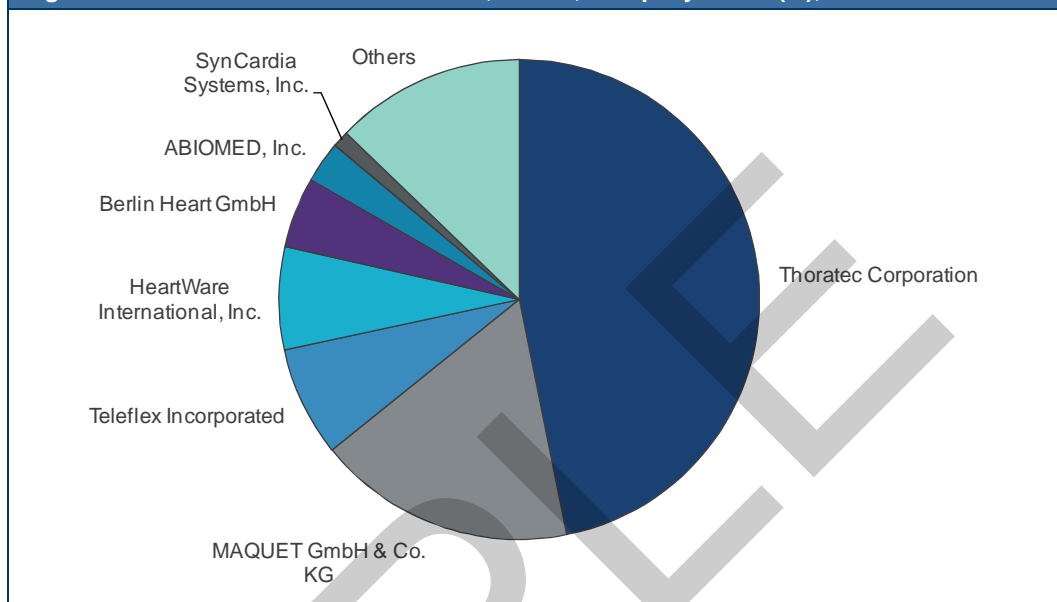
Source: GBI Research, Annual Reports, SEC Filings, Investor Presentations, Earning Call Transcripts, News and Press Releases, Scientific Journals, Trade Associations, Interviews with Industry Experts and Key Opinion Leaders (KOLs)

The global market for cardiac assist devices was valued at \$100m in 2010, and is forecast to grow at a CAGR of 7.7% to reach \$170m in 2017. The market is expected to be driven by the introduction and adoption of technologically advanced devices, which are expected to be smaller and more efficient. The increased susceptibility of the aging population to conditions requiring cardiac assist devices is expected to further increase the demand.



### 3.5 Global Cardiac Assist Devices Market, Key Company Share (%), 2010

Figure 7: Cardiac Assist Devices Market, Global, Company Share (%), 2010



Source: GBI Research, Annual Reports, SEC Filings, Investor Presentations, Earning Call Transcripts, News and Press Releases, Scientific Journals, Trade Associations, Interviews with Industry Experts and Key Opinion Leaders (KOLs)

Table 7: Cardiac Assist Devices Market, Global, Key Company Revenues (\$m), 2010

Company Name	Revenue (\$m)
Thoratec Corporation	
MAQUET GmbH & Co. KG	
Teleflex Incorporated	
HeartWare International, Inc.	
Berlin Heart GmbH	
ABIOMED, Inc.	
SynCardia Systems, Inc.	
Others	

Source: GBI Research, Annual Reports, SEC Filings, Investor Presentations, Earning Call Transcripts, News and Press Releases, Scientific Journals, Trade Associations, Interviews with Industry Experts and Key Opinion Leaders (KOLs)

In 2010, the Thoratec Corporation had a XX% share and was the dominant player in the global cardiac assist devices market. MAQUET GmbH, a subsidiary of Getinge AB, had XX% of the market share. These were followed by Teleflex Incorporated (XX%), HeartWare International, Inc. (XX%), Berlin Heart (XX%) and ABIOMED (XX%) which also had considerable shares in the market.

Thoratec Corporation, Berlin Heart and HeartWare International are major players in the VAD segment. Companies such as MAQUET and Teleflex are major players in the IABP market segment. SynCardia is the only company to offer the FDA approved TAH.

## 9 Appendix

### 9.1 Definitions

#### 9.1.1 Cardiac Assist Devices

Cardiac assist devices are used to support a failing heart that cannot be treated using standard medical therapy. The devices can be used for both short-term and long-term purposes, allowing the heart to rest for long enough that it can return to normal. Cardiac assist devices include Total Artificial Heart (TAH) devices, Ventricular Assist Devices (VAD) and Intra-Aortic Balloon Pumps (IABP).

##### 9.1.1.1 Intra-Aortic Balloon Pump

An Intra-Aortic Balloon Pump (IABP) is a mechanical device that is used to decrease myocardial oxygen demand, whilst simultaneously increasing cardiac output. By increasing cardiac output it also increases coronary blood flow, and therefore myocardial oxygen delivery. It consists of a cylindrical balloon that sits in the aorta and counter-pulsates. The devices are made up of intra-aortic balloon pump catheters and intra-aortic balloon pump consoles.

##### 9.1.1.2 Ventricular Assist Device

A Ventricular Assist Device (VAD) is a mechanical pump that helps a heart that is too weak to pump blood through the body. It is sometimes referred to as “a bridge to transplant” since it can help a patient survive until a heart transplant can be performed. These can be of four types which include Biventricular Assist Devices (BIVAD), Right Ventricular Assist Devices (RVAD), Left Ventricular Assist Devices (LVAD) and external ventricular assist devices.

##### 9.1.1.3 Total Artificial Heart

A Total Artificial Heart (TAH) is a prosthetic device that is implanted into the body to replace the biological heart. One unit refers to one TAH.

### 9.2 Acronyms

<b>AHA</b>	:	American Heart Association
<b>ARTG</b>	:	Australian Register of Therapeutic Goods
<b>AVWS</b>	:	Acquired Von Willebrand Syndrome
<b>BiVAD</b>	:	Biventricular Assist Device
<b>BTT</b>	:	Bridge-To-Transplantation
<b>CAGR</b>	:	Compounded Annual Growth Rate
<b>CAP</b>	:	Continued Access Protocol
<b>CHF</b>	:	Chronic Heart Failure
<b>CMS</b>	:	Centers for Medicare and Medicaid Services
<b>CSS</b>	:	Circulatory Support System
<b>CVD</b>	:	Cardiovascular Disease
<b>FDA</b>	:	Food and Drug Administration
<b>GPO</b>	:	Group Purchase Organizations
<b>HDE</b>	:	Humanitarian Device Exemption
<b>IABP</b>	:	Intra-Aortic Balloon Pump
<b>IDE</b>	:	Investigational Device Exemption
<b>MVAD</b>	:	Miniaturized Ventricular Assist Device
<b>PMA</b>	:	Pre-Market Approval
<b>R&amp;D</b>	:	Research and Development
<b>TAH</b>	:	Total Artificial Heart

<b>TGA</b>	:	Therapeutic Goods Administration
<b>UK</b>	:	United Kingdom
<b>US</b>	:	United States (of America)
<b>VAD</b>	:	Ventricular Assist Device

## 9.3 Research Methodology

GBI Research's dedicated Research and Analysis Teams consists of experienced professionals with a pedigree in marketing, market research, consulting background in the medical devices industry and advanced statistical expertise.

GBI Research adheres to the Codes of Practice of the Market Research Society ([www.mrs.org.uk](http://www.mrs.org.uk)) and the Society of Competitive Intelligence Professionals ([www.scip.org](http://www.scip.org)).

All GBI Research databases are continuously updated and revised. The following research methodology is followed for all databases and reports.

### 9.3.1 Secondary Research

The research process begins with exhaustive secondary research on internal and external sources being carried out to source qualitative and quantitative information relating to each market.

The secondary research sources that are typically referred to include, but are not limited to:

- Company websites, annual reports, financial reports, broker reports, investor presentations and SEC Filings.
- Industry trade journals, scientific journals and other technical literature.
- Internal and external proprietary databases.
- Relevant patent and regulatory databases.
- National government documents, statistical databases and market reports.
- Procedure registries.
- News articles, press releases and web-casts specific to the companies operating in the market.

### 9.3.2 Primary Research

GBI Research conducts hundreds of primary interviews a year with industry participants and commentators in order to validate its data and analysis. A typical research interview fulfills the following functions:

- It provides first-hand information on the market size, market trends, growth trends, competitive landscape, future outlook etc.
- Helps in validating and strengthening the secondary research findings.
- Further develops the Analysis Team's expertise and market understanding.

Primary research involves e-mail correspondence, telephone interviews as well as face-to-face interviews for each market, category, segment and sub-segment across geographies.

The participants who typically take part in such a process include, but are not limited to:

- Industry participants: CEOs, VPs, marketing/product managers, market intelligence managers and national sales managers.
- Hospital stores, laboratories, pharmacies, distributors and paramedics.
- Outside experts: investment bankers, valuation experts, research analysts specializing in specific medical equipment markets.
- Key opinion leaders: physicians and surgeons specializing in different therapeutic areas corresponding to different kinds of medical equipment.

## 9.3.3 Models

Where no hard data is available GBI Research uses modeling and estimates in order to produce comprehensive data sets. The following rigorous methodology is adopted:

Available hard data is cross referenced with the following data types to produce estimates:

- Demographic data: population, split by segment.
- Macro-economic indicators: GDP, inflation rate etc.
- Healthcare Indicators: health expenditure, physicians base, healthcare infrastructure and facilities.
- Selected epidemiological and procedure statistics.

Data is then cross checked by the expert panel.

All data and assumptions relating to modeling are stored and are available to clients on request.

## 9.3.4 Forecasts

GBI Research uses proprietary forecast models. The following four factors are utilized in the forecast models:

- Historic growth rates.
- Macro indicators such as population trends and healthcare spending.
- Forecast epidemiological data.
- Qualitative trend information and assumptions

Data is then cross checked by the Expert Panel.

## 9.3.5 Expert Panels

GBI Research uses a panel of experts to cross verify its databases and forecasts.

GBI Research's expert panel comprises marketing managers, product specialists, international sales managers from medical device companies; academics from research universities, KOLs from hospitals, consultants from venture capital funds and distributors/suppliers of medical equipment and supplies.

Historic data and forecasts are relayed to GBI Research's Expert Panel for feedback and adjusted in accordance with this feedback.

## 9.4 Contact Us

If you have any queries about this report or would like further information, please contact

- **North America** : +1 646 395 5477
- **Europe** : +44 (0) 207 406 6672,  
: +44 1204 543 533
- **Asia Pacific** : +91 40 6616 6767
- **Email** : [info@gbiresearch.com](mailto:info@gbiresearch.com)

## 9.5 Disclaimer

All Rights Reserved.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher, GBI Research.

The facts of this report are believed to be correct at the time of publication but cannot be guaranteed. Please note that the findings, conclusions and recommendations that GBI Research delivers will be based on information gathered in good faith from both primary and secondary sources, whose accuracy we are not always in a position to guarantee. As such GBI Research can accept no liability whatever for actions taken based on any information that may subsequently prove to be incorrect.

## 9.6 Sources

- ABIOMED, Inc.
- Company websites, annual reports, SEC filings
- American Heart Association (AHA)
- Berlin Heart GmbH
- British Heart Foundation
- Centers for Disease Control and Prevention (CDC)
- Clinicaltrials.gov
- Heart Failure Matters ([heartfailurematters.org](http://heartfailurematters.org))
- HeartWare International, Inc.
- International Society for Heart and Lung Transplantation (ISHLT)
- MAQUET GmbH & Co. KG
- MicroMed Cardiovascular, Inc.
- SynCardia Systems, Inc.
- Teleflex Incorporated
- Texas Heart Institute
- Thoratec Corporation
- [theheart.org](http://theheart.org)
- United States National Library of Medicine (NLM)
- US Food and Drug Administration
- World Health Organization
- World Heart Corporation
- World Heart Failure Society
- World Population Reference Bureau 2010