GLOBAL AUTOMATED EXTERNAL DEFIBRILLATOR MARKET (TRENDS, TECHNOLOGY & END-USERS) (2012 – 2017)
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1 MARKET OVERVIEW

1.1 SCOPE

In this report, the AED market has been segmented on the basis of product type, end-users, and geography.

FIGURE 1

AUTOMATED EXTERNAL DEFIBRILLATORS MARKET SEGMENTATION

Source: Annual Reports, SEC Filings, World Heart Federation, American Heart Association, European Resuscitation Council, Asian EMS Council, Expert Interviews, MnM Analysis
The second major player in the global and U.S. AED market is Cardiac Science Corporation; it commanded a share of XX% and XX% respectively in 2011. The company has a broad portfolio of AEDs and is the only company among the top three players to offer fully automatic AEDs that are being considered for PAD. Cardiac Science has a strong presence in the U.S. and European markets. However in Japan, the termination of a distribution agreement with Nihon Kohden in 2010 resulted in decreased revenue from Japan. The distribution of AEDs in Japan resumed in July 2011, when the company entered into an exclusive distribution agreement with Omron Healthcare.

ZOLL Medical Corporation is the third major player, as it accounted for XX% of the global AED market and XX% of U.S. AED market in 2011. The company offers quality products catering to various customers across EMS, hospital, public safety, alternate care, military, and government/homeland security. AEDs of the company offer novel features such as Real CPR Help, and See-Thru CPR, which make them easy-to-use. The company has a strong presence in the U.S. and European AED market and launched AED Plus in Japan in April 2011. This will help the company enhance its presence in the Japanese AED market, and thereby increase worldwide market share.
2 MARKET DYNAMICS

2.1 DRIVERS

2.1.1 GOVERNMENT REGULATIONS REGARDING PUBLIC ACCESS DEFIBRILLATION TO DRIVE THE MARKET

Various legislations requiring installation of public access defibrillators have been passed in the U.S., Japan, and certain European countries. In U.S., all XX states have enacted the law regarding the installation of AEDs in public places. The Japanese Ministry of Health, Labor and Welfare authorized the use of AEDs by non-medical persons in 2004. European countries such as Italy and France passed such laws in 2001 and 2007, respectively, authorizing the use of AED by a layperson. As a result of these laws and nationwide defibrillation programs undertaken by various local and national governments, a large numbers of AEDs have been installed at public places such as shopping centers, airports, offices, government buildings, schools, health and sports clubs, transportation centers, daycare centers, and casinos. Thus, the increasing installation of public access AEDs is boosting the growth of this market.

2.1.2 INCREASING INCIDENCES OF CARDIOVASCULAR DISEASES TO SPUR NEED FOR AED DEVICES

Growth in the AED market is primarily driven by increasing incidences of cardiovascular diseases (CVD) and sudden cardiac arrest (SCA). CVD is the major cause of mortality worldwide, currently translating to around XX% of all deaths. According to estimates, XX million people across the globe died of CVD in 2008 and around XX million are estimated to die as a result of the same by 2030. Sudden cardiac arrest is the foremost cause of death among U.S. adults aged XX years and above. According to the Centre for Disease Control and Prevention (CDC), approximately XX people die every year in the U.S. from SCA, while in Europe the condition claims over XX lives every year. Among European countries, the U.K. has the high incidence of out-of-hospital SCA cases (XX per XX inhabitants), followed by Germany (XX per XX inhabitants).
3 TRENDS

3.1 INTRODUCTION

Automated external defibrillators market is witnessing a strong competition, although there are few players manufacturing AEDs. To combat this competition, companies are striving to improve the performance of their AED devices and consumables. Companies have come up with home AED, rechargeable batteries, CPR assistance devices and AEDs supporting wireless data transmission.

3.2 HOME DEFIBRILLATORS

Nearly XX% of sudden cardiac arrests (SCA) occur at home; therefore, it becomes necessary that, besides public places, defibrillators should also be placed at home. A home defibrillator is purchased by a family having members with known risk of cardiac problems or elderly members who have had suffered cardiac arrest in the past. There is no evidence suggesting that home AEDs save more lives; however, they can definitely benefit people living in remote areas, where quick emergency response is unlikely.

HeartStart Home is the only FDA-approved AED available for home use, although other AEDs are promoted for off-label use at home. HeartStart Home supplied by Philips Healthcare was first approved by the FDA for sale with a prescription in 2002; later in 2004, it was approved for over the counter (OTC) sale. Although untrained rescuers can use the device, training is recommended for efficient use. The cost of the device is available for as low as $XX, and is expected to decline further.

The home AED market in 2012 is worth $XX million and is poised to grow at a CAGR of XX% in the coming years, owing to increasing awareness and reducing cost of the device.
4 AUTOMATED EXTERNAL DEFIBRILLATOR MARKET, BY PRODUCT TYPE

4.1 FULLY-AUTOMATED

**TABLE 1**

GLOBAL AUTOMATED EXTERNAL DEFIBRILLATORS MARKET, BY PRODUCT TYPE, 2010 - 2017 ($MILLION)

<table>
<thead>
<tr>
<th>Product Type</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2017</th>
<th>CAGR% (2012-2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-automated</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Fully-automated</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Total</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
</tbody>
</table>

Source: Annual Reports, SEC Filings, World Heart Federation, American Heart Association, European Resuscitation Council, Asian EMS Council, Expert Interviews, MnM Analysis

Semi-automated defibrillators are preferred in hospital and pre-hospital settings for use by healthcare providers, emergency response personnel, and other first responders. Hence, they form the major part of the market, accounting for nearly XX% in 2011.

Fully automatic defibrillators are mainly used at public places. Public Access Defibrillation (PAD) programs are either not initiated or only partially implemented in most European and Asian countries. Therefore, this segment contributes less to the global AED market. Increasing installations of AED at public places will increase the share of this segment in the future, with market value estimated to reach $XX million by 2017.
5 END-USER ANALYSIS

5.1 HOME

FIGURE 3

NORTH AMERICA: AUTOMATED EXTERNAL DEFIBRILLATORS MARKET SHARE ANALYSIS, BY END-USER, 2012 & 2017

The North American market is dominated by the pre-hospital segment, followed by the public access segment in 2012. These segments jointly account for XX% of the total market. Various laws regarding public access defibrillation have been passed in the U.S. and Canada, which have stimulated the growth of the public access market. Therefore, the contribution of the public access segment to the total market is expected to increase by 2017, reaching XX% from XX % in 2012.

Source: Annual Reports, SEC Filings, World Heart Federation, American Heart Association, European Resuscitation Council, Asian EMS Council, Expert Interviews, MnM Analysis
6 GEOGRAPHIC ANALYSIS

6.1 EUROPE

### TABLE 2

**EUROPE: AUTOMATED EXTERNAL DEFIBRILLATORS MARKET, BY COUNTRY, 2010 - 2017 ($MILLION)**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>U.K.</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
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<td>XX</td>
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<tr>
<td>Germany</td>
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<tr>
<td>France</td>
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<td>Italy</td>
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<tr>
<td>Spain</td>
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<td>RoE</td>
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<td>XX</td>
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<tr>
<td>Total</td>
<td>XX</td>
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Source: Annual Reports, SEC Filings, World Heart Federation, American Heart Association, European Resuscitation Council, Asian EMS Council, Expert Interviews, MnM Analysis

France is the largest and the fastest-growing European market for AED devices, accounting for XX% in 2011. The growth of France market is stimulated by a law passed in 2007 authorizing the use of AEDs by layperson. Germany and U.K. are other big markets for AED devices, contributing XX% and XX% to the European market in 2011. Rising incidence of SCA and increasing awareness about SCA and AEDs will be the major driving factors for growth of the AED market in these countries.
### 6.2 ASIA

#### 6.2.1 CHINA

China has been the engine for Asia’s growth in the recent past and will continue to do so. The country has shown a considerable increase in the per capita national income from $XX in the year XX to $XX in 2008. It is estimated that this figure will touch $XX by 2030. Moreover, China being the most populous country in the world and with a one-child policy, the population in the country will age rapidly in the future. Aging population also means growth in the incidence rates of various disorders, including those concerned with the heart. To add to this, the government of China is offering tax rebates to those investing in R&D in the country, thus luring companies to set base.

Riding on these positive growth factors, the Chinese AED market will grow at a healthy CAGR of XX% in the forecast period to cross $XX million by 2017.

#### TABLE 3

<table>
<thead>
<tr>
<th>Product Type</th>
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<td>XX</td>
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<td>XX</td>
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</tr>
<tr>
<td>Total</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
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<td>XX</td>
</tr>
</tbody>
</table>

Source: Annual Reports, SEC Filings, World Heart Federation, American Heart Association, European Resuscitation Council, Asian EMS Council, Expert Interviews, MnM Analysis

The Chinese AED market is dominated by semi-automated defibrillators, which will continue to dominate over the forecast period. The semi-automated defibrillators market is expected to grow at a CAGR of XX% to reach close to $XX million by 2017 from $XX million in 2012.
7 COMPETITIVE ANALYSIS

7.1 COMPETITIVE LANDSCAPE

7.1.1 NEW PRODUCT LAUNCH

**TABLE 4**

NEW PRODUCT LAUNCH, 2010 – 2012

<table>
<thead>
<tr>
<th>Date</th>
<th>Company</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 2012</td>
<td>HeartSine Technologies, Inc. (U.S.)</td>
<td>HeartSine Technologies, Inc. developed a Heart Trac program for its Automated External Defibrillator (AED) products. The Heart Trac program is an AED management program which provides tools to maintain, track, and serve AED units, helping clients manage the associated legal compliance and maintenance issues.</td>
</tr>
<tr>
<td>November 2011</td>
<td>HeartSine Technologies, Inc. (U.S.)</td>
<td>HeartSine Technologies, Inc. launched a new website <a href="http://www.heartsine.com">www.heartsine.com</a> that offers information and educational videos about Sudden Cardiac Arrest (SCA). The website streamlines navigation, and supports multiple languages.</td>
</tr>
<tr>
<td>November 2011</td>
<td>Philips Healthcare (The Netherlands)</td>
<td>Philips introduced HeartStart FR3 automated external defibrillator (AED) in the U.S. to treat victims of sudden cardiac arrest (SCA). This launch is expected to help the company to expand its AED portfolio and increase its market share.</td>
</tr>
<tr>
<td>May 2011</td>
<td>Mindray Medical International Limited (China)</td>
<td>Mindray introduced BeneHeart D3 and BeneHeart D6 portable defibrillators that integrate multiple functionalities including monitoring, manual defibrillation, pacing and AED. The device offer data storage and data management capability enabling caregivers to review ECG and other vital signs easily. The launch helped the company broaden its product pipeline of patient monitoring and life support segment.</td>
</tr>
<tr>
<td>Date</td>
<td>Company</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------</td>
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</tr>
<tr>
<td>May 2011</td>
<td>Physio-Control, Inc. (U.S.)</td>
<td>Physio-Control, Inc. introduced new solution for LIFEPAK 15 monitor/defibrillator to enhance patient care. This launch helped the company to deliver a novel cost-effective solution and enabled to offer greater options for cardiac patient monitoring.</td>
</tr>
<tr>
<td>April 2011</td>
<td>ZOLL Medical Corporation (U.S.)</td>
<td>ZOLL Medical initiated commercialization of its latest AED Plus, which is fully compliant with the new American Heart Association (AHA) and European Resuscitation Council (ERC) procedures. This launch helped the company to offer advanced AED with Real CPR Help feedback technology to automate the chest compressions, thus enhancing patient care.</td>
</tr>
</tbody>
</table>

Source: Press Releases
8 COMPANY PROFILES

8.1 CARDIAC SCIENCE CORPORATION

N7 W22025 Johnson Drive
Waukesha
WI 53186
U.S.
Tel: 1-262-9533-500
Fax: 1-425-4022-001
Website: www.cardiacscience.com

8.1.1 OVERVIEW

Founded in 1913 and headquartered at Washington, U.S., Cardiac Science Corporation is a company engaged in the development, manufacture and marketing of diagnostic and therapeutic cardiology products and services. The products offered by the company include electrocardiographs, cardiac stress testing systems, Holter monitors designed to identify heart diseases in early stages; and automated external defibrillators. It has about XX% share in the global AED market and XX% share in the U.S. AED devices market.

Opto Circuits (India), Ltd. acquired Cardiac Science Corporation in December 2010; the company currently operates as a wholly owned subsidiary.

The company markets its products in more than 100 countries and has operations in the U.S., Europe and Asia. The subsidiaries of the company include Cardiac Science Holdings (U.K.), Ltd., Cardiac Science International A/S (Denmark), Cardiac Science Deutschland GmbH (Germany), Cardiac Science Medical Device (Shanghai) Co., Ltd., and Cardiac Science France S.A.S.
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