

CHAPTER ONE: INTRODUCTION.....	1
STUDY BACKGROUND	1
STUDY GOALS AND OBJECTIVES.....	1
INTENDED AUDIENCE.....	2
SCOPE OF REPORT	2
METHODOLOGY AND INFORMATION SOURCES.....	3
ANALYST CREDENTIALS.....	3
RELATED BCC RESEARCH	4
BCC ONLINE SERVICES.....	4
DISCLAIMER	5
 CHAPTER TWO: EXECUTIVE SUMMARY.....	 6
<i>SUMMARY TABLE GLOBAL SALES OF HOME MEDICAL</i> <i>EQUIPMENT, THROUGH 2015 (\$ MILLIONS)</i>	 6
<i>SUMMARY FIGURE GLOBAL SALES OF HOME MEDICAL</i> <i>EQUIPMENT BY REGION, 2009-2015 (%)</i>	 7
 CHAPTER THREE: OVERVIEW	 8
GENERAL DESCRIPTION	8
DEFINITIONS	8
PRODUCT SEGMENTS	8
ASSISTIVE DEVICES	9
Wheelchairs and Scooters	9
Wheelchairs.....	9
Scooters	10
Home Care Beds	11
INFUSION PRODUCTS.....	11
Insulin Pumps.....	12
RESPIRATORY THERAPY PRODUCTS	12
Inhalers.....	13
Metered Dose Inhalers.....	13
Dry Powder Inhalers.....	13
Nebulizers	13
Oxygen Concentrators	14
Gaseous Oxygen System	15
Continuous Positive Airway Pressure (CPAP) Devices	15
Home Ventilators.....	16
Suction Machines.....	17
DIALYSIS EQUIPMENT.....	17
Hemodialysis.....	17
Dialysis Machine.....	18
Peritoneal Dialysis	18
CCPD Cyclers	19
HOME DEFIBRILLATORS	19
MONITORS AND SENSORS	20

Blood Pressure Monitors	21
Aneroid Monitors	21
Digital Blood Pressure Monitors	22
Peak Flow Meters	22
Glucose Monitors	22
Glucose Monitors (Continued)	23
Glucose Monitors (Continued)	24
Apnea and SIDS Monitors.....	25
Cholesterol Monitors	26
Fetal Monitors	26
Home Cardiac Monitors	26
New Home Monitoring Technologies	27
Embedded Monitors	27
Elderly Walkers	28
Wearable Monitors.....	28
Wearable Monitors (Continued)	29
TELEMETRY DEVICES.....	30
Telehomecare	30
Mobile Phone-Based Technologies	31
Bluetooth	31
Zigbee	32
Signal Transmission via Human Skin.....	32
MISCELLANEOUS TYPES OF HME	33
Lymphedema Pumps	33
HEALTH CONDITIONS THAT AFFECT MARKET FOR HME	34
MOBILITY IMPAIRMENTS	34
Types of Mobility Impairment	34
Paralysis.....	35
Arthritis.....	35
Osteoporosis	35
Age-Related Loss of Strength/Balance/Coordination	36
Surgical Recovery and Rehabilitation.....	36
Neuromuscular Disorders.....	36
HME Used to Increase Mobility.....	37
Prevalence of Mobility Impairments.....	37
<i>FIGURE 1 LEADING CONDITIONS ASSOCIATED WITH</i> <i>WHEELCHAIR/SCOOTER USE (PERCENTAGE OF TOTAL</i> <i>WHEELCHAIR USERS)</i>	<i>38</i>
<i>TABLE 1 GLOBAL PREVALENCE OF MOTION IMPAIRMENTS</i> <i>REQUIRING THE USE OF A WHEELCHAIR OR SCOOTER,</i> <i>THROUGH 2015 (MILLION PEOPLE).....</i>	<i>39</i>
<i>TABLE 2 TRENDS IN PREVALENCE OF MOTION IMPAIRMENTS</i> <i>REQUIRING A WHEELCHAIR OR SCOOTER, BY GEOGRAPHICAL</i> <i>MARKET, THROUGH 2015 (MILLION PEOPLE).....</i>	<i>40</i>

<i>TABLE 2 (CONTINUED)</i>	41
OBESITY	41
HME Used in the Management of Obesity.....	41
Prevalence of Obesity	41
<i>TABLE 3 OBESITY LEVELS IN SELECTED COUNTRIES, BY GENDER (% OF ADULT POPULATION)</i>	42
HYPERTENSION	43
Types of HME Used in Treatment of Hypertension.....	43
Prevalence of Hypertension	43
<i>TABLE 4 TRENDS IN PREVALENCE OF HYPERTENSION, THROUGH 2015 (MILLION CASES)</i>	44
CARDIOVASCULAR DISEASE	44
Arrhythmia	45
Tachyarrhythmia	45
Brachycardia	46
HME Used in the Treatment of Arrhythmia.....	46
Prevalence of Arrhythmia	47
<i>TABLE 5 TRENDS IN PREVALENCE OF ARRHYTHMIA, THROUGH 2015 (MILLION CASES)</i>	47
<i>TABLE 5 (CONTINUED)</i>	48
DIABETES	48
Types of Diabetes.....	48
HME Used to Treat Diabetes.....	49
Prevalence of Diabetes and Future Trends	49
<i>TABLE 6 TRENDS IN PREVALENCE OF DIABETES, THROUGH 2015 (MILLION CASES)</i>	50
HIGH CHOLESTEROL LEVELS	50
HME Used in the Management of High Cholesterol Levels.....	51
Prevalence of High Cholesterol Levels	51
SLEEP DISORDERS	51
Types of Sleep Disorders	52
HME Used in the Treatment or Management of Sleep Disorders.....	52
Prevalence of Sleep Disorders and Future Trends.....	53
FETAL DISORDERS	53
HME Used in the Treatment or Management of Fetal Disorders.....	53
Prevalence of Fetal Disorders and Future Trends.....	53
<i>FIGURE 2 MISCARRIAGES AND STILLBIRTHS IN THE UNITED STATES, 2009 (% OF TOTAL CONFIRMED PREGNANCIES)</i>	54
ASTHMA.....	55
HME Used in the Treatment or Management of Asthma	55
Prevalence of Asthma and Future Trends.....	55

<i>TABLE 7 TRENDS IN PREVALENCE OF ASTHMA, THROUGH 2015</i> <i>(MILLION CASES)</i>	56
CHRONIC OBSTRUCTIVE PULMONARY DISEASE.....	57
HME Used in the Treatment or Management of COPD.....	57
Prevalence of COPD and Future Trends.....	57
KIDNEY FAILURE.....	58
HME Used in the Treatment of Kidney Failure.....	59
Prevalence of Kidney Failure and Future Trends.....	59
<i>TABLE 8 TRENDS IN DIALYSIS PATIENT POPULATION, THROUGH</i> <i>2015 (THOUSAND PEOPLE)</i>	59
<i>TABLE 8 (CONTINUED)</i>	60
<i>FIGURE 3 GLOBAL DIALYSIS PATIENT POPULATION TREND, 2009-</i> <i>2015 (MILLION PATIENTS)</i>	60
<i>FIGURE 3 (CONTINUED)</i>	61
LYMPHEDEMA.....	61
Types of Lymphedema.....	61
Primary Lymphedema.....	62
Secondary Lymphedema.....	62
HME Used in the Management of Lymphedema.....	62
Prevalence of Lymphedema.....	62
DEMOGRAPHICS AND ECONOMICS.....	62
TOTAL POPULATION.....	63
<i>TABLE 9 TRENDS IN TOTAL POPULATION, BY COUNTRY, 2009-2015</i> <i>(MILLION)</i>	63
<i>FIGURE 4 GLOBAL POPULATION TRENDS, 2009-2015 (BILLION</i> <i>PEOPLE)</i>	64
<i>FIGURE 5 G-20 POPULATION AS PERCENTAGE OF TOTAL WORLD</i> <i>POPULATION, 2009 AND 2015 (%)</i>	65
ELDERLY PEOPLE.....	65
<i>TABLE 10 TRENDS IN POPULATION 65 YEARS AND OLDER, BY</i> <i>COUNTRY, THROUGH 2015 (MILLION)</i>	66
<i>FIGURE 6 TRENDS IN THE GLOBAL POPULATION AGED 65 YEARS</i> <i>AND OLDER, 2009-2015 (MILLION PEOPLE)</i>	67
<i>FIGURE 7 G-20 POPULATION AS PERCENTAGE OF WORLD</i> <i>POPULATION 65 AND OLDER, 2009 AND 2015 (%)</i>	68
OLDER PEOPLE LIVING IN OWN HOMES OR WITH CHILDREN.....	68
<i>FIGURE 8 PERCENTAGE OF PEOPLE 65 AND OLDER LIVING IN</i> <i>OWN HOMES OR WITH CHILDREN, 2002 (%)</i>	69
<i>FIGURE 8 (CONTINUED)</i>	70
<i>FIGURE 9 TRENDS IN THE PERCENTAGE OF AMERICANS 65 AND</i> <i>OLDER REMAINING IN THEIR HOMES, 1985-2005 (%)</i>	71
HOUSEHOLD INCOME.....	72

<i>FIGURE 10 TRENDS IN MEDIAN INCOME OF U.S. ELDERLY HOUSEHOLDS, 2002-2008 (\$)</i>	72
<i>FIGURE 11 DISTRIBUTION OF U.S. ELDERLY HOUSEHOLDS BY INCOME LEVEL, 2000 AND 2008 (% OF TOTAL ELDERLY HOUSEHOLDS)</i>	73
EXPENDITURES ON HOME HEALTH CARE	74
<i>FIGURE 12 TRENDS IN U.S. EXPENDITURES ON HOME HEALTH CARE, 2002-2008 (\$ BILLION)</i>	74
OTHER FACTORS DRIVING HME MARKET	74
PHYSICIAN ATTITUDES TOWARD HOME CARE	74
<i>FIGURE 13 TREND IN NUMBER OF MEDICARE-PAID PHYSICIAN HOUSE CALLS, 2000 AND 2007 (MILLION HOUSE CALLS)</i>	75
HOSPITAL/NURSING HOME COSTS.....	75
<i>FIGURE 14 TRENDS IN U.S. HOSPITAL AND NURSING HOME COSTS SINCE 2000 (\$)</i>	76
REGULATORY AND LEGISLATIVE ISSUES	76
United States	76
New Devices	77
New Devices (Continued)	78
Existing Devices.....	79
European Union.....	80
European Union (Continued)	81
Japan.....	82
HEALTH INSURANCE	83
United States	83
Medicare and Medicaid.....	83
Types of HME Covered.....	84
Recent Legislation.....	84
Medicare Prescription Drug, Improvement, and Modernization Act of 2003	85
Changes in Reimbursement	85
Competitive Bidding	85
Accreditation Requirement.....	86
Deficit Reduction Act of 2005.....	86
Challenges	86
Medicare Improvements for Patients and Providers Act of 2008	87
Reimbursement for Home Dialysis	87
2010 Healthcare Reforms	88
2010 Healthcare ...(Continued).....	89
Other Countries	90
<i>FIGURE 15 PER CAPITA EXPENDITURES ON HME, 2009 (\$)</i>	90
<i>FIGURE 15 (CONTINUED)</i>	91

CHAPTER FOUR: HME MARKETS.....	92
SUMMARY.....	92
GLOBAL MARKET TRENDS	92
<i>TABLE 11 GLOBAL HME SALES BY TYPE OF EQUIPMENT,</i> <i>THROUGH 2015 (\$ MILLIONS)</i>	92
<i>FIGURE 16 TRENDS IN THE GLOBAL HME MARKET, 2009-2015 (\$</i> <i>BILLIONS)</i>	93
MARKET BY HME SEGMENT.....	93
<i>FIGURE 17 HME MARKET BY TYPE OF HME, 2009 AND 2015 (%)</i>	94
<i>FIGURE 17 (CONTINUED)</i>	95
MARKET BY DISEASE/CONDITION TREATED.....	95
<i>TABLE 12 HME MARKET BY TYPE OF DISEASE/CONDITION</i> <i>TREATED, THROUGH 2015 (\$ MILLIONS)</i>	96
<i>FIGURE 18 HME MARKET BY TYPE OF DISEASE/CONDITION</i> <i>TREATED, 2009 AND 2015 (%)</i>	97
<i>FIGURE 18 (CONTINUED)</i>	98
MARKET BY GEOGRAPHICAL SEGMENT	98
<i>TABLE 13 MAJOR GEOGRAPHICAL MARKETS FOR HME, THROUGH</i> <i>2015 (\$ MILLIONS)</i>	99
<i>FIGURE 19 HME MARKET BY TYPE OF REGION, 2009 AND 2015 (%)</i>	99
<i>FIGURE 19 (CONTINUED)</i>	100
DETAILED MARKET ANALYSIS.....	101
ASSISTIVE DEVICES	101
<i>TABLE 14 MARKET FOR HME ASSISTIVE DEVICES, THROUGH</i> <i>2015 (\$ MILLIONS)</i>	101
Wheelchairs and Scooters	101
<i>TABLE 15 GLOBAL WHEELCHAIR AND SCOOTER SALES, 2009</i> <i>(MILLION UNITS/\$ MILLIONS)</i>	102
<i>FIGURE 20 GLOBAL WHEELCHAIR AND SCOOTER MARKET</i> <i>SHARES BY TYPE OF EQUIPMENT, 2009 (%)</i>	102
<i>FIGURE 20 (CONTINUED)</i>	103
<i>TABLE 16 GLOBAL MARKET FOR WHEELCHAIRS AND SCOOTERS</i> <i>USED IN THE HOME, BY GEOGRAPHICAL MARKET, THROUGH</i> <i>2015 (\$ MILLIONS)</i>	104
Home Care Beds	104
<i>TABLE 17 GLOBAL MARKET FOR HOME CARE BEDS, BY</i> <i>GEOGRAPHICAL MARKET, THROUGH 2015 (\$ MILLIONS)</i>	105
INFUSION PRODUCTS.....	106
Insulin Pumps.....	106
<i>TABLE 18 INSULIN PUMP SALES, THROUGH 2015 (NUMBER OF</i> <i>PUMPS/\$ MILLIONS)</i>	106
<i>TABLE 19 PROJECTED SALES OF INSULIN PUMPS, THROUGH 2015</i> <i>(\$ MILLIONS)</i>	107
RESPIRATORY THERAPY PRODUCTS	108

<i>TABLE 20 MARKET FOR RESPIRATORY HME, THROUGH 2015 (\$ MILLIONS)</i>	108
<i>TABLE 21 POSITIVE AIR PRESSURE DEVICES MARKET, THROUGH 2015 (\$ MILLIONS)</i>	109
<i>FIGURE 21 TRENDS IN RESPIRATORY HME MARKET SHARES BY TYPE OF EQUIPMENT, 2009-2015 (% OF TOTAL RESPIRATORY HME SALES)</i>	110
<i>FIGURE 22 TRENDS IN RESPIRATORY HME MARKET SHARES BY GEOGRAPHICAL MARKET, 2009-2015 (% OF TOTAL RESPIRATORY HME SALES)</i>	111
CPAP and Other Positive Airway Pressure Devices.....	111
Ventilators	112
<i>TABLE 22 GLOBAL HOME VENTILATOR MARKET, THROUGH 2015 (\$ MILLIONS)</i>	113
Nebulizers	113
<i>TABLE 23 GLOBAL NEBULIZER MARKET, THROUGH 2015 (\$ MILLIONS)</i>	114
Oxygen Concentrators	115
<i>TABLE 24 GLOBAL HOME OXYGEN CONCENTRATOR MARKET, THROUGH 2015 (\$ MILLIONS)</i>	115
Gaseous Oxygen Systems.....	115
<i>TABLE 25 GLOBAL MARKET FOR HOME GASEOUS OXYGEN SYSTEMS, THROUGH 2015 (\$ MILLIONS)</i>	116
Airway Suction Machines.....	116
<i>TABLE 26 GLOBAL HOME SUCTION MACHINE MARKET, THROUGH 2015 (\$ MILLIONS)</i>	116
DIALYSIS EQUIPMENT.....	117
<i>FIGURE 23 HOME DIALYSIS MACHINE MARKET SHARES, 2009 (%)</i>	117
<i>TABLE 27 GLOBAL MARKET FOR HOME DIALYSIS MACHINES, 2009 (NUMBER OF MACHINES/\$)</i>	118
<i>TABLE 28 HOME DIALYSIS MACHINE MARKET, THROUGH 2015 (\$ MILLIONS)</i>	118
<i>TABLE 28 (CONTINUED)</i>	119
HOME DEFIBRILLATORS	119
<i>TABLE 29 GLOBAL HOME DEFIBRILLATOR MARKET, THROUGH 2015 (\$ MILLIONS)</i>	120
MONITORS AND SENSORS	120
<i>TABLE 30 MARKET FOR HOME MONITORING DEVICES, THROUGH 2015 (\$ MILLIONS)</i>	120
<i>FIGURE 24 TRENDS IN HOME MONITORING EQUIPMENT SHARES BY TYPE OF EQUIPMENT, THROUGH 2015 (% OF TOTAL RESPIRATORY HME SALES)</i>	121

<i>FIGURE 25 TRENDS IN HOME MONITORING DEVICES MARKET SHARES BY GEOGRAPHICAL MARKET, 2009-2015 (% OF TOTAL HOME MONITOR SALES)</i>	122
Glucose Monitors	123
<i>TABLE 31 MARKETS FOR GLUCOSE SELF-MONITORING DEVICES, THROUGH 2015 (\$ MILLIONS)</i>	123
<i>TABLE 31 (CONTINUED)</i>	124
Blood Pressure Monitors	124
<i>TABLE 32 MARKETS FOR HOME BLOOD PRESSURE MONITORS, THROUGH 2015 (\$ MILLIONS)</i>	125
<i>TABLE 32 (CONTINUED)</i>	126
Apnea and Other Types of Sleep Monitors	126
<i>TABLE 33 SLEEP APNEA MONITOR MARKET, THROUGH 2015 (\$ MILLIONS)</i>	127
Cholesterol Monitors	128
<i>TABLE 34 CHOLESTEROL MONITOR MARKET, THROUGH 2015 (\$ MILLIONS)</i>	128
Fetal Monitors	128
<i>TABLE 35 HOME FETAL MONITOR MARKET, THROUGH 2015 (\$ MILLIONS)</i>	129
Peak Flow (Asthma) Monitors	129
<i>TABLE 36 GLOBAL ASTHMA MONITOR MARKET, THROUGH 2015 (\$ MILLIONS)</i>	129
Home ECG Monitors	130
<i>TABLE 37 GLOBAL HOME ECG MONITOR MARKET, THROUGH 2015 (\$ MILLIONS)</i>	130
TELEMETRY DEVICES.....	130
<i>FIGURE 26 HOME TELEMETRY DEVICE SALES BY GEOGRAPHICAL MARKET, 2009 (% OF TOTAL SALES)</i>	131
<i>TABLE 38 GLOBAL MARKET FOR HOME TELEMETRY DEVICES, THROUGH 2015 (\$ MILLIONS)</i>	132
OTHER TYPES OF HME	132
<i>TABLE 39 GLOBAL MARKET FOR LYMPHEDEMA PUMPS, THROUGH 2015 (\$ MILLIONS)</i>	133
CHAPTER FIVE: PATENT ANALYSIS	134
<i>TABLE 40 U.S. HME PATENTS ISSUED SINCE 1975</i>	134
<i>FIGURE 27 U.S. HME PATENTS ISSUED SINCE 1975 (%)</i>	135
<i>FIGURE 28 LARGEST HME PATENT HOLDERS (% OF TOTAL HME PATENTS ISSUED THROUGH 3/25/2010)</i>	136
CHAPTER SIX: COMPANY PROFILES	137
A&D MEDICAL/LIFESOURCE	137
ABBOTT LABORATORIES, INC.....	137
ANALOGIC INC.	138

ARADIGM CORP.....	138
BAXTER INTERNATIONAL, INC.	139
CARD GUARD AG.....	139
ECHO THERAPEUTICS.....	140
ENERGY-LAB TECHNOLOGIES GMBH.....	140
FRESENIUS MEDICAL CARE AG & CO. KGAA	141
HEALTH FRONTIER, INC.....	141
HOME DIAGNOSTICS INC.....	142
HONEYWELL HOMMED	142
INVACARE CORP.	142
LIFESCAN, INC	143
MEDLINE INDUSTRIES, INC.....	143
MEDTRONIC MINIMED	143
MEDVITAL	143
NXSTAGE MEDICAL, INC.....	144
NIR DIAGNOSTICS INC	145
NONIN MEDICAL, INC.....	145
OMRON HEALTHCARE, INC.....	145
PARI PHARMA.....	146
PHILIPS MEDICAL SYSTEMS.....	146
POLYMER TECHNOLOGY SYSTEMS.....	146
PREMD INC.....	147
PRIDE MOBILITY PRODUCTS CORP.....	147
PULSE METRIC INC.	147
RESMED, INC.	148
ROCHE DIAGNOSTICS.....	148
RTX TELECOM A/S	148
SCOTTCARE CORP.	149
SENSATEX INC.	149
SENSITRON INC	150
SOLIANIS MONITORING AG.....	150
SUNRISE MEDICAL INC.....	151
T+ MEDICAL AMERICAS, INC.	151
VECTURA GROUP PLC	151
VIVOMETRICS INC.....	152