

## 2012 HEALTHCARE RESEARCH REVIEW



**HLC068D**  
**December 2012**

Various Analysts  
***Project Analyst***

ISBN: 0-89336-490-8

**bcc** | Research  
Market Forecasting

**BCC Research**  
**49 Walnut Park, Building 2**  
**Wellesley, MA 02481**  
**866-285-7215, 781-489-7301**  
**www.bccresearch.com**  
**Custom Reports: carol.laverty@bccresearch.com**

**TABLE OF CONTENTS**

<b>TOPIC</b>	<b>PAGE NO.</b>
CHAPTER 1 FOREWORD	1
CHAPTER 2 CONTINUOUS GLUCOSE MONITORING (CGM): TECHNOLOGIES AND GLOBAL MARKETS (REPORT HLC102A)	3
INTRODUCTION	3
STUDY GOALS AND OBJECTIVES	3
REASONS FOR DOING THIS STUDY	3
CONTRIBUTIONS TO THE STUDY AND INTENDED AUDIENCE	3
SCOPE AND FORMAT	3
METHODOLOGY AND INFORMATION SOURCES	4
ANALYST CREDENTIALS	4
RELATED BCC REPORTS	4
BCC ONLINE SERVICES	4
DISCLAIMER	5
SUMMARY	5
<i>TABLE 1 GLOBAL CONTINUOUS GLUCOSE MONITORING SYSTEMS BY PRODUCT CATEGORY, THROUGH 2016 (\$ MILLIONS)</i>	5
<i>FIGURE 1 GLOBAL CONTINUOUS GLUCOSE MONITORING SYSTEMS BY PRODUCT CATEGORY, 2009-2016 (\$ MILLIONS)</i>	5
MARKET DYNAMICS	6
DRIVERS	6
CGM Technology is an Improvement over SMBG	7
CGM Can Detect the Hypo and Hyperglycemic Events Much More Efficiently	7
CGM Can be Used Across All Age Groups	7
BARRIERS FOR CGM ADOPTION	8
Critical FDA Approval for Accuracy Remains Elusive for CGMs	8
Administrative and Reimbursement Challenges	8
Clinician Adoption Challenges	8
Need for Patient Involvement and Education	8
OPPORTUNITY AND GAP ANALYSIS	9
Restricted Use	9
Cost	9
Noncompliance with CGM Use	9
Limited or No Reimbursement under Insurance Cover	9
MARKET OVERVIEW	9
CONTINUOUS GLUCOSE MONITORS	10
CGM TERMINOLOGY: A DISCUSSION	11
CGM COMPONENTS AND TECHNOLOGIES	12
CONTINUOUS GLUCOSE MONITORS	12
NON/MINIMALLY INVASIVE	12
HG1-C	12
NEAR-INFRARED DETECTION	13
ULTRASOUND	13
DIELECTRIC SPECTROSCOPY	13
PROFESSIONAL CGM IN THE FUTURE	14
HYPOGLYCEMIA IN DIABETES	14

<b>TOPIC</b>	<b>PAGE NO.</b>
FREQUENCY IN T1DM	15
FREQUENCY IN T2DM	15
TREATMENT	15
HYPOGLYCEMIA UNAWARENESS	16
CGM AND INSURANCE	17
MARKET EVOLUTION	17
CONTINUOUS GLUCOSE MONITORS ARE IN THE EVOLVING MODE	17
CONTINUOUS IMPROVEMENT IN THE WORKING OF CGMS WILL LEAD TO FASTER COMMERCIALIZATION	18
HUGE MARKET POTENTIAL FOR CGM DEVICES	18
PREVALENCE AND INCIDENCE OF DIABETES AND HEALTHCARE SPENDING	18
THE ECONOMIC BURDEN OF DIABETES	19
CHALLENGES IN MEASURING INTERSTITIAL GLUCOSE LEVELS ACCURATELY	19
ACCURACY IS A CONCERN	19
SAFETY RISKS	19
APPREHENSION OF CLINICIANS AND PATIENTS	20
COMPETITIVE AND LONG-TERM ALTERNATIVES	20
FOREIGN BODY RESPONSE	20
IN VIVO GLUCOSE SENSING	20
FLUORESCENT GLUCOSE BIOSENSORS	20
MICRODIALYSIS	21
CHAPTER 3 TISSUE ENGINEERING AND REGENERATION: TECHNOLOGIES AND GLOBAL MARKETS (REPORT HLC101A)	23
INTRODUCTION	23
STUDY GOALS AND OBJECTIVES	23
REASONS FOR DOING THIS STUDY	23
SCOPE AND FORMAT	23
METHODOLOGY AND INFORMATION SOURCES	24
INTENDED AUDIENCE	24
ANALYST CREDENTIALS	24
RELATED BCC REPORTS	24
SUMMARY	25
<i>TABLE 2 GLOBAL MARKET FOR TISSUE ENGINEERING AND REGENERATION PRODUCTS, THROUGH 2016 (\$ MILLIONS)</i>	25
<i>FIGURE 2 GLOBAL MARKET FOR TISSUE ENGINEERING AND REGENERATION PRODUCTS, 2009-2016 (\$ MILLIONS)</i>	25
INTRODUCTION TO TISSUE ENGINEERING AND REGENERATION INDUSTRY	26
OVERVIEW	26
OVERVIEW OF TISSUE ENGINEERING PRODUCTS	27
CELLULAR PRODUCTS	27
Autologous Cells	28
Allogeneic Cells	28
Xenogeneic Cells	28
SCAFFOLDS AND BIOMATERIALS	28
Nanofiber Self-Assembly	29
Solvent Casting and Particulate Leaching (SCPL)	29
Gas Foaming	29

<b>TOPIC</b>	<b>PAGE NO.</b>
Emulsification/Freeze-drying	30
Thermally Induced Phase Separation (TIPS)	30
Electrospinning	30
ASPECTS OF TISSUE CULTURES	30
SECTORS AND SUBMARKETS IN THE TISSUE ENGINEERING INDUSTRY	31
TRENDS AND MARKETS AFFECTING DEVELOPMENT OF THE TISSUE ENGINEERING INDUSTRY	31
Stem Cell Research	31
<i>TABLE 3 GLOBAL MARKET RELATED TO STEM CELL RESEARCH, THROUGH 2016 (\$ BILLIONS)</i>	31
Biomaterials Industry	32
<i>TABLE 4 GLOBAL MARKET FOR BIOMATERIALS, THROUGH 2016 (\$ BILLIONS)</i>	32
Cosmetics and Rejuvenating (Anti-aging) Industry	32
Legislation, Research Policies and Public Opinion	32
New, Breakthrough Technologies	33
MARKET PARTICIPANTS	33
Overview	33
Geographical Distribution of the Tissue Engineering Market	33
Regulatory Differences	33
<i>TABLE 5 DIFFERENCES IN REGULATORY APPROVAL: U.S. VS. EUROPE</i>	34
Impact of Healthcare System on Tissue Engineering Market Development	34
<i>TABLE 6 HEALTHCARE SYSTEMS OF DIFFERENT EUROPEAN AND REST OF WORLD COUNTRIES</i>	35
Patenting in Europe vs. the U.S.	35
ROW vs. U.S. and Europe	36
SUMMARY OF GLOBAL MARKET FOR TISSUE ENGINEERING AND REGENERATION	37
<i>TABLE 7 GLOBAL MARKET FOR TISSUE ENGINEERING AND REGENERATION PRODUCTS, THROUGH 2016 (\$ MILLIONS)</i>	37
<i>FIGURE 3 GLOBAL MARKET FOR TISSUE ENGINEERING AND REGENERATION PRODUCTS, 2009-2016 (\$ MILLIONS)</i>	38
<i>TABLE 8 EXAMPLES OF MAIN MARKET PARTICIPANTS IN THE TISSUE ENGINEERING INDUSTRY</i>	38
CHAPTER 4 GLOBAL MARKETS AND TECHNOLOGIES FOR MEDICAL LASERS (REPORT HLC072B)	45
INTRODUCTION	45
STUDY BACKGROUND	45
GOALS AND OBJECTIVES	45
INTENDED AUDIENCE	46
SCOPE AND FORMAT	46
METHODOLOGY	46
AUTHOR CREDENTIALS	47
RELATED BCC RESEARCH	47
SUMMARY	47
<i>TABLE 9 GLOBAL MARKET FOR MEDICAL LASERS BY END USE, THROUGH 2016 (\$ MILLIONS)</i>	48
<i>FIGURE 4 GLOBAL MARKET FOR MEDICAL LASERS BY END USE, THROUGH 2016 (\$ MILLIONS)</i>	48
OVERVIEW OF MEDICAL LASERS	49

<b>TOPIC</b>	<b>PAGE NO.</b>
BASIC CONCEPTS	49
LASER PRINCIPLES	49
COMPONENTS OF LASERS	49
Energy Source	49
Lasing Medium	50
Optical Resonator	50
LASER OPERATION	51
Continuous Wave Operation	51
Pulsed Operation	51
Q-Switching	51
Mode Locking	51
Pulsed Pumping	51
HISTORY OF MEDICAL LASERS	52
EFFECTS OF LASERS ON HUMAN TISSUE	53
MEDICAL TREATMENTS USING LASERS	54
<i>TABLE 10 COMMON TYPES OF MEDICAL LASER TREATMENTS</i>	55
INTELLECTUAL PROPERTY	56
<i>FIGURE 5 U.S. MEDICAL LASER PATENTS ISSUED SINCE 1976 AND PATENT APPLICATIONS PENDING AS OF 10/29/2011 (%)</i>	56
<i>FIGURE 6 U.S. MEDICAL LASER PATENT TRENDS OVER TIME, &lt;2007-2011 (NO. OF PATENTS)</i>	57
<i>FIGURE 7 U.S. MEDICAL LASER PATENT APPLICATION TRENDS OVER TIME, &lt;2007-2011 (NO. OF PATENTS)</i>	58
<i>FIGURE 8 MAJOR U.S. PATENT PORTFOLIOS RELATING TO MEDICAL LASERS (%)</i>	59
<i>FIGURE 9 U.S. MEDICAL LASER PATENTS BY INVENTOR/ASSIGNEE'S COUNTRY (%)</i>	60
CHAPTER 5 NANOTECHNOLOGY IN MEDICAL APPLICATIONS: THE GLOBAL MARKET (REPORT HLC069B)	62
INTRODUCTION	62
STUDY GOALS AND OBJECTIVES	62
REASONS FOR DOING THE STUDY	62
SCOPE OF REPORT	62
MARKET ANALYSES AND FORECASTS	62
METHODOLOGY	62
INTENDED AUDIENCE	63
INFORMATION SOURCES	63
ANALYST CREDENTIALS	63
RELATED BCC REPORTS	63
SUMMARY	63
DEFINITION	63
RESEARCH AND COMMERCIALIZATION	64
APPLICATIONS	64
Drug Delivery	64
Drugs and Therapy	64
In Vivo Imaging	64
In Vitro Diagnostics	64
Biomaterials	64
Active Implants	65

<b>TOPIC</b>	<b>PAGE NO.</b>
MARKET	65
<i>TABLE 11 NANOMEDICAL GLOBAL SALES BY THERAPEUTIC AREA, THROUGH 2016 (\$ BILLIONS)</i>	65
<i>FIGURE 10 NANOMEDICAL GLOBAL SALES BY THERAPEUTIC AREA, 2009-2016 (\$ BILLIONS)</i>	66
OVERVIEW	66
MEDICAL NANOTECHNOLOGY: NANOMEDICINE	67
FUTURE POSSIBILITIES	67
MARKET POTENTIAL	67
ABOUT NANOTECHNOLOGY	67
THE MANY USES OF NANOTECHNOLOGY	69
MEDICAL APPLICATIONS	69
ENVIRONMENTAL APPLICATIONS	69
MILITARY APPLICATIONS	69
COSMETICS	69
APPLICATIONS IN DEVELOPMENT	69
THE TOOLS OF NANOTECHNOLOGY	70
C60/FULLERENES	70
CARBON NANOTUBES	70
NANOPARTICLES	70
NANOWIRES	71
MOLECULAR NANOTECHNOLOGY	71
RISKS OF NANOTECHNOLOGY	71
POISON/TOXICITY	71
NANOTECHNOLOGY IN THE MARKETPLACE	72
NANOMEDICINE	73
DEVELOPMENT OF NANOMEDICAL TECHNOLOGIES	73
<i>TABLE 12 NANOMEDICINE TIMESCALE</i>	74
<i>TABLE 13 MAIN NANOTECHNOLOGIES USED IN MEDICINE WITH APPLICATIONS</i>	74
LIPOSOMES	75
<i>TABLE 14 MARKETED LIPOSOME NANOPHARMACEUTICALS</i>	76
DENDRIMERS	76
NANOCRYSTALS	76
<i>TABLE 15 NANOCRYSTAL PHARMACEUTICALS</i>	77
MICELLES	77
<i>TABLE 16 MARKETED AND DEVELOPMENTAL PRODUCTS IN MICELLE FORM</i>	78
FULLERENES	78
POLYMERIC NANOPARTICLES	78
NANOPARTICLE-DRUG CONJUGATES	79
LEGEND-TARGETED NANOPARTICLES	79
CERAMIC NANOPARTICLES	79
VIROSOME NANOPARTICLES	79
THERAPEUTIC USES OF NANOMEDICINE	79
CANCER DIAGNOSTICS AND THERAPY	80
Silica Nanospheres	80
Nanoscale Hydrogel Shells	80
Carbon Nanoparticles	80
Photodynamic Therapy and Gold	81
Dendrimer Conjugates	81

<b>TOPIC</b>	<b>PAGE NO.</b>
Ligand-targeted Emulsion Technologies	82
Linear Cyclodextrin-containing Polymers	82
Smart Lipid-based Nanocarriers	82
Thermotherapy Using Magnetic Nanoparticles	83
Targeted Cell Destruction	83
Nanoshells	83
DRUG DELIVERY	84
<i>TABLE 17 MARKETED PRODUCTS WITH NANO-ENHANCED DELIVERY</i>	84
CHAPTER 6 POINT OF CARE DIAGNOSTICS (REPORT HLC043C)	88
INTRODUCTION	88
STUDY GOALS AND OBJECTIVES	88
REASONS FOR DOING THE STUDY	88
SCOPE OF REPORT	88
DEFINING POC	89
METHODOLOGY	89
ANALYST CREDENTIALS	89
RELATED REPORTS	89
SUMMARY	90
OVERVIEW	90
MAJOR FINDINGS	90
<i>TABLE 18 FORECAST OF THE GLOBAL POC MARKET BY TEST TYPE, THROUGH 2016 (\$ MILLIONS)</i>	91
<i>FIGURE 11 FORECAST OF THE GLOBAL POC MARKET BY TEST TYPE, 2009-2016 (\$ MILLIONS)</i>	92
INDUSTRY OVERVIEW	92
WHAT IS POC TESTING?	92
OVERVIEW OF POC MARKET	92
POC AS PART OF CLINICAL DIAGNOSTICS INDUSTRY STRUCTURE	93
MEDICAL BENEFITS DERIVED FROM IMMEDIATE DIAGNOSTIC TESTING	93
POC TESTING SITES	94
<i>TABLE 19 SELECTED KEY STATISTICS FOR POC TESTING SITES</i>	94
HOME USE/SELF-CARE	95
EMERGENCY ROOMS (ER)	95
CRITICAL-CARE UNITS (CCU)	95
BEDSIDE TESTING	95
<i>TABLE 20 NUMBER OF HOSPITALS FOR SELECTED COUNTRIES, 2009</i>	96
OPERATING ROOMS (OR)/PROCEDURE ROOMS (PR)	96
PHYSICIANS OFFICES/CLINICS/TREATMENT CENTERS/OTHER NONCRITICAL-CARE SITES	96
<i>TABLE 21 NUMBER OF U.S. HEALTHCARE FACILITIES BY TYPE, 2009*</i>	97
POC PRODUCT SEGMENTS	97
POC CLINICAL ASSAY CATEGORIES	97
Blood Chemistry and Electrolytes	97
Cardiac Marker	97
Cholesterol Testing/Monitoring	98
Drug and Alcohol Screening	98
Glucose Testing and Monitoring	98

<b>TOPIC</b>	<b>PAGE NO.</b>
Infectious Disease Testing	98
Pregnancy and Fertility Testing	98
Hemoglobin and Hemostasis	99
Tumor Marker	99
Urinalysis/Urine Chemistry	99
COMMONLY PERFORMED POC TESTS	100
<i>TABLE 22 SELECTED POC TESTS: CLIA WAIVED</i>	100
SIGNIFICANCE OF CLIA IN THE UNITED STATES	101
OTHER REGULATORY AGENCIES	102
FDA	102
Good Manufacturing Practice (GMP)	103
<i>TABLE 23 PERTINENT PARAMETERS OF GMP REGULATIONS AFFECTING IN VITRO DIAGNOSTICS</i>	103
INITIATIVE FOR HIV/AIDS TESTING	103
DRIVING FORCES OF THE POC MARKET	104
COST CONTAINMENT	104
Rising Healthcare Costs	104
<i>TABLE 24 HEALTH EXPENDITURES AS PERCENTAGE OF GDP BY COUNTRY, 1980-2008</i>	104
<i>FIGURE 12 HEALTH EXPENDITURES AS PERCENT OF GDP BY COUNTRY, 1980-2008</i>	104
Average Length of Stay	105
<i>TABLE 25 HOSPITAL USAGE STATISTICS, AVERAGE, 2000-2010 (DAYS)</i>	106
<i>FIGURE 13 HOSPITAL USAGE STATISTICS (DAYS)</i>	106
PUBLIC HEALTHCARE SYSTEMS AROUND THE WORLD	106
<i>TABLE 26 WORLD HEALTH ORGANIZATION RANKING OF HEALTHCARE SYSTEMS, TOP 50, 2000</i>	107
CHAPTER 7 GLOBAL MARKETS FOR TELEMEDICINE TECHNOLOGIES (REPORT HLC014E)	110
INTRODUCTION	110
STUDY GOALS AND OBJECTIVES	110
REASONS FOR THE STUDY	110
INTENDED AUDIENCE	111
Telemedicine Hardware Manufacturers	111
Telemedicine Software Providers	111
Telecom and Networking Companies	111
Telemedicine Service Providers	111
Healthcare Companies	111
Health Insurance Companies	111
SCOPE AND FORMAT	112
METHODOLOGY AND INFORMATION SOURCES	112
ANALYST CREDENTIALS	112
RELATED BCC PUBLICATIONS	113
SUMMARY	113
<i>TABLE 27 FORECAST FOR THE GLOBAL TELEHOME AND TELEHOSPITAL MARKET, THROUGH 2016 (\$ MILLIONS)*</i>	113
<i>FIGURE 14 FORECAST FOR THE GLOBAL TELEHOME AND TELEHOSPITAL SERVICE MARKET, 2011-2016 (\$ MILLIONS)</i>	114
TELEMEDICINE OVERVIEW	114
STRUCTURE	114



<b>TOPIC</b>	<b>PAGE NO.</b>
<i>FIGURE 15 STRUCTURE OF A TELEMEDICINE NETWORK</i>	114
KEY PLAYING FIELDS IN TELEMEDICINE	116
<i>FIGURE 16 WINNING IMPERATIVES FOR TELEMEDICINE: TELEHOME CARE, TELEHOSPITAL B2B, TELEHOSPITAL B2C</i>	117
MARKET DRIVERS	117
<i>FIGURE 17 TELEMEDICINE MARKET DRIVERS</i>	117
<i>CHANGING HEALTHCARE PARADIGM: INEVITABLE NEED FOR TELEMEDICINE</i>	118
Increasing Chronic Diseases	118
Complexity of the Healthcare Network	118
<i>FIGURE 18 TELEMEDICINE: KEY TO E-HEALTHCARE</i>	118
Rising Cost of Home Care	119
Increasing Number of Aging Patients Requiring Daily Care	119
Higher Spending on IT	119
Moving From Treatment to Early Intervention	119
Shortages of Healthcare Personnel and Increasing Workloads	120
Need for Better Clinical Outcomes	120
Growing Investments in Telemedicine	120
Telemedicine Driven by the Rising E-Healthcare Market	121
Increasing Focus of Companies on Telemedicine as a Key Market Differentiator	121
Improved Technology Infrastructure Spurring Growth in Telemedicine	121
Entry of Tier I Players Expanding Market Scope	121
Centralized EHR and EMR are Driving the Need for Telemedicine	121
Increasing Acceptance of Telemedicine by Patients	122
<i>FIGURE 19 INCREASING ACCEPTANCE OF TELEMEDICINE BY PATIENTS</i>	122
KEY CHALLENGES	122
<i>FIGURE 20 MAJOR CHALLENGES FACED BY TELEMEDICINE PROGRAMS (%)</i>	123
<i>FIGURE 21 CHALLENGES IN TELEMEDICINE: ECONOMICS VERSUS CLINICAL OUTCOME</i>	123
TECHNICAL	124
FINANCIAL	124
Reimbursement	124
Government Funding for Telemedicine Programs	126
Companies Afraid of Lower Returns from Telemedicine	126
OPERATIONAL AND SOCIAL ISSUES	127
Training and Accreditation	127
Availability of Telecommunications Bandwidth	127
Market Awareness	128
LEGAL AND REGULATORY ISSUES	128
Device Safety and Effectiveness	128
Privacy	129
Practitioner and Facility Licensure	129
Medical Liability and Malpractice Issues	131
STANDARDS	131
TELEMEDICINE: MOVING UP IN THE VALUE CHAIN	131
<i>FIGURE 22 TELEMEDICINE: MOVING UP IN THE VALUE CHAIN</i>	131
TELEMEDICINE MARKET STRUCTURE OVERVIEW	132
<i>FIGURE 23 TELEMEDICINE MARKET STRUCTURE</i>	132
GLOBAL TELEMEDICINE MARKET	133
Telehome vs. Telehospital/Clinic Segments	133

<b>TOPIC</b>	<b>PAGE NO.</b>
<i>TABLE 28 FORECAST FOR THE GLOBAL TELEHOME AND TELEHOSPITAL MARKET, THROUGH 2016 (\$ MILLIONS)*</i>	134
Major Geographical Segments	134
<i>TABLE 29 FORECAST FOR TELEMEDICINE MARKET BY GEOGRAPHY, THROUGH 2016 (\$ MILLIONS)*</i>	134

**LIST OF TABLES**

<b>TABLE HEADING</b>	<b>PAGE NO.</b>
TABLE 1 GLOBAL CONTINUOUS GLUCOSE MONITORING SYSTEMS BY PRODUCT CATEGORY, THROUGH 2016 (\$ MILLIONS)	5
TABLE 2 GLOBAL MARKET FOR TISSUE ENGINEERING AND REGENERATION PRODUCTS, THROUGH 2016 (\$ MILLIONS)	25
TABLE 3 GLOBAL MARKET RELATED TO STEM CELL RESEARCH, THROUGH 2016 (\$ BILLIONS)	31
TABLE 4 GLOBAL MARKET FOR BIOMATERIALS, THROUGH 2016 (\$ BILLIONS)	32
TABLE 5 DIFFERENCES IN REGULATORY APPROVAL: U.S. VS. EUROPE	34
TABLE 6 HEALTHCARE SYSTEMS OF DIFFERENT EUROPEAN AND REST OF WORLD COUNTRIES	35
TABLE 7 GLOBAL MARKET FOR TISSUE ENGINEERING AND REGENERATION PRODUCTS, THROUGH 2016 (\$ MILLIONS)	37
TABLE 8 EXAMPLES OF MAIN MARKET PARTICIPANTS IN THE TISSUE ENGINEERING INDUSTRY	38
TABLE 9 GLOBAL MARKET FOR MEDICAL LASERS BY END USE, THROUGH 2016 (\$ MILLIONS)	48
TABLE 10 COMMON TYPES OF MEDICAL LASER TREATMENTS	55
TABLE 11 NANOMEDICAL GLOBAL SALES BY THERAPEUTIC AREA, THROUGH 2016 (\$ BILLIONS)	65
TABLE 12 NANOMEDICINE TIMESCALE	74
TABLE 13 MAIN NANOTECHNOLOGIES USED IN MEDICINE WITH APPLICATIONS	74
TABLE 14 MARKETED LIPOSOME NANOPHARMACEUTICALS	76
TABLE 15 NANOCRYSTAL PHARMACEUTICALS	77
TABLE 16 MARKETED AND DEVELOPMENTAL PRODUCTS IN MICELLE FORM	78
TABLE 17 MARKETED PRODUCTS WITH NANO-ENHANCED DELIVERY	84
TABLE 18 FORECAST OF THE GLOBAL POC MARKET BY TEST TYPE, THROUGH 2016 (\$ MILLIONS)	91
TABLE 19 SELECTED KEY STATISTICS FOR POC TESTING SITES	94
TABLE 20 NUMBER OF HOSPITALS FOR SELECTED COUNTRIES, 2009	96
TABLE 21 NUMBER OF U.S. HEALTHCARE FACILITIES BY TYPE, 2009*	97
TABLE 22 SELECTED POC TESTS: CLIA WAIVED	100
TABLE 23 PERTINENT PARAMETERS OF GMP REGULATIONS AFFECTING IN VITRO DIAGNOSTICS	103
TABLE 24 HEALTH EXPENDITURES AS PERCENTAGE OF GDP BY COUNTRY, 1980-2008	104
TABLE 25 HOSPITAL USAGE STATISTICS, AVERAGE, 2000-2010 (DAYS)	106
TABLE 26 WORLD HEALTH ORGANIZATION RANKING OF HEALTHCARE SYSTEMS, TOP 50, 2000	107
TABLE 27 FORECAST FOR THE GLOBAL TELEHOME AND TELEHOSPITAL MARKET, THROUGH 2016 (\$ MILLIONS)*	113
TABLE 28 FORECAST FOR THE GLOBAL TELEHOME AND TELEHOSPITAL MARKET, THROUGH 2016 (\$ MILLIONS)*	134
TABLE 29 FORECAST FOR TELEMEDICINE MARKET BY GEOGRAPHY, THROUGH 2016 (\$ MILLIONS)*	134

### LIST OF FIGURES

FIGURE TITLE	PAGE NO.
FIGURE 1 GLOBAL CONTINUOUS GLUCOSE MONITORING SYSTEMS BY PRODUCT CATEGORY, 2009-2016 (\$ MILLIONS)	5
FIGURE 2 GLOBAL MARKET FOR TISSUE ENGINEERING AND REGENERATION PRODUCTS, 2009-2016 (\$ MILLIONS)	25
FIGURE 3 GLOBAL MARKET FOR TISSUE ENGINEERING AND REGENERATION PRODUCTS, 2009-2016 (\$ MILLIONS)	38
FIGURE 4 GLOBAL MARKET FOR MEDICAL LASERS BY END USE, THROUGH 2016 (\$ MILLIONS)	48
FIGURE 5 U.S. MEDICAL LASER PATENTS ISSUED SINCE 1976 AND PATENT APPLICATIONS PENDING AS OF 10/29/2011 (%)	56
FIGURE 6 U.S. MEDICAL LASER PATENT TRENDS OVER TIME, <2007-2011 (NO. OF PATENTS)	57
FIGURE 7 U.S. MEDICAL LASER PATENT APPLICATION TRENDS OVER TIME, <2007-2011 (NO. OF PATENTS)	58
FIGURE 8 MAJOR U.S. PATENT PORTFOLIOS RELATING TO MEDICAL LASERS (%)	59
FIGURE 9 U.S. MEDICAL LASER PATENTS BY INVENTOR/ASSIGNEE'S COUNTRY (%)	60
FIGURE 10 NANOMEDICAL GLOBAL SALES BY THERAPEUTIC AREA, 2009-2016 (\$ BILLIONS)	66
FIGURE 11 FORECAST OF THE GLOBAL POC MARKET BY TEST TYPE, 2009-2016 (\$ MILLIONS)	92
FIGURE 12 HEALTH EXPENDITURES AS PERCENT OF GDP BY COUNTRY, 1980-2008	104
FIGURE 13 HOSPITAL USAGE STATISTICS (DAYS)	106
FIGURE 14 FORECAST FOR THE GLOBAL TELEHOME AND TELEHOSPITAL SERVICE MARKET, 2011-2016 (\$ MILLIONS)	114
FIGURE 15 STRUCTURE OF A TELEMEDICINE NETWORK	114
FIGURE 16 WINNING IMPERATIVES FOR TELEMEDICINE: TELEHOME CARE, TELEHOSPITAL B2B, TELEHOSPITAL B2C	117
FIGURE 17 TELEMEDICINE MARKET DRIVERS	117
FIGURE 18 TELEMEDICINE: KEY TO E-HEALTHCARE	118
FIGURE 19 INCREASING ACCEPTANCE OF TELEMEDICINE BY PATIENTS	122
FIGURE 20 MAJOR CHALLENGES FACED BY TELEMEDICINE PROGRAMS (%)	123
FIGURE 21 CHALLENGES IN TELEMEDICINE: ECONOMICS VERSUS CLINICAL OUTCOME	123
FIGURE 22 TELEMEDICINE: MOVING UP IN THE VALUE CHAIN	131
FIGURE 23 TELEMEDICINE MARKET STRUCTURE	132