Patient Monitoring Systems

US Industry Study with Forecasts for 2012 & 2017

Study #2323 | April 2008 | $4600 | 346 pages
**Table of Contents**

**EXECUTIVE SUMMARY**

**MARKET ENVIRONMENT**
- General ............................................. 4
- Macroeconomic Trends ......................... 5
- Demographic Patterns ........................ 8
- Health Care Trends ............................. 10
- Health Insurance ................................ 11
- Medical Conditions ............................ 13
  - Acute Conditions .............................. 13
  - Chronic Conditions .......................... 15
- National Health Expenditures .............. 19
- Medical Providers ............................. 23
  - Outpatient Clinics ............................ 24
  - Skilled Nursing Homes ....................... 25
  - Acute Care Hospitals ......................... 25
  - Physicians ..................................... 26
- Patient Activity ............................... 27
  - Acute Care Hospital Admissions .......... 28
  - Surgical Procedures .......................... 29
  - Outpatient Visits ............................... 29
  - Home Health Care ...................... 30
- Medical Product Markets .................... 32
  - Surgical Appliances & Supplies .......... 33
  - Surgical & Medical Instruments .......... 34
  - Electromedical Equipment ................. 34
  - In Vitro Diagnostic Products ............. 35
  - Analytical Instruments ..................... 35
  - Dental Supplies & Equipment ............. 36
  - Ophthalmic Goods ............................ 36
  - Lab Apparatus & Furniture ................. 36
  - Patient Monitoring Systems Overview ... 37
    - Technology ................................ 37
    - Regulation ................................ 40
    - Historical Demand Patterns ............. 42
  - US Trade ...................................... 44
  - International Markets ..................... 47

**PRODUCTS**
- General ............................................. 50
- Patient Monitoring Equipment .............. 52
  - Multi-Parameter Monitors ................. 55
    - Network Multi-Parameter Monitors .... 57
    - Fixed & Transportable Network ......... 57
    - Multi-Parameter Monitors ............... 59
    - Patient-Worn Telemetry Monitors .... 61
    - Central Patient Monitoring Stations ... 63
  - Remote Patient Monitors .................. 66
  - Standalone Multi-Parameter .............. 68

**MARKETS**
- General ............................................. 183
- Home Health Care ........................... 186
- Blood Glucose Monitoring Products ....... 187
- Other Home Patient Monitoring Products .. 189
- Hospitals ........................................ 191
  - Market Overview ............................. 193
  - Patient Monitoring Systems Demand .... 194
  - Outpatient Facilities ...................... 197
- Ambulatory Surgery Centers .............. 198
- Urgent Care Centers & General Medical Clinics .................. 200
  - Other Outpatient Facilities ............. 201
  - Physicians’ Offices ......................... 202
  - Nursing Homes ............................... 204
  - Other Markets ............................... 206

**INDUSTRY STRUCTURE**
- General ............................................. 210
- Market Share .................................... 213
- Competitive Strategies ...................... 215
  - Philips Healthcare .......................... 216
  - Johnson & Johnson .......................... 216
  - GE Healthcare ............................... 217
  - Roche ........................................ 217
  - Medtronic .................................. 218
  - Abbott Laboratories ......................... 218
  - Bayer ........................................ 219
  - Covidien .................................... 219
  - Becton Dickinson ............................ 220
  - Welch Allyn ................................. 220
  - Other Competitors .......................... 220
  - Mergers & Acquisitions .................... 223
  - Licensing & Related Agreements .......... 227
  - Research & Development ................... 232
  - Marketing & Distribution ................. 233
  - Manufacturing .............................. 236
  
(continued on next page)
Table of Contents

(continued from previous page)

COMPANY PROFILES

Abbott Laboratories .................................. 238
ARKRAY Incorporated .................................. 240
Aspect Medical Systems ............................ 242
Bayer AG .............................................. 245
Becton, Dickinson and Company ..................... 249
Bio-Med Devices ..................................... 251
Bionotics plc ......................................... 252
Biotek Incorporat ed ................................. 253
Cooper Companies ................................... 256
Covidien Limited ..................................... 258
Datascope Corporation ............................... 262
Draegerwerk AG ..................................... 265
Fukuda Denshi ....................................... 269
General Electric ...................................... 271
Hospira Incorporat ed ................................. 276
Johnson & Johnson ................................... 278
Masimo Corporation .................................. 282
Medtronic Incorporat ed ............................. 285
Mennen Medical ....................................... 291
Midmark Corporation ................................ 294
OMRON Corporation .................................. 300
OSI Systems .......................................... 304
Roche Holding ....................................... 309
Royal Philips Electronics ............................. 313
Schiller AG ............................................ 321
Transoma Medical ................................... 323
Welch Allyn .......................................... 325
Other Companies Mentioned in Study .............. 330

List of Tables/Charts

EXECUTIVE SUMMARY

1 Summary Table ....................................... 3

MARKET ENVIRONMENT

1 Macroeconomic Indicators .......................... 7
2 Population by Age Group ........................... 10
3 Acute Conditions by Type ......................... 15
4 Chronic Conditions by Type ....................... 18
5 National Health Expenditures by Type ........... 22
6 Medical Providers by Type ........................ 24
7 Patient Activity by Type ............................ 28
8 Home Health Care Activity ......................... 31
9 Medical Product Demand ........................... 33
10 Patient Monitoring Systems Demand, 1997-2007 .. 44
11 US Trade in Patient Monitoring Systems ....... 46
12 World Patient Monitoring System Demand .... 49

PRODUCTS

1 Patient Monitoring Systems Demand by Product Group .......... 51
2 Patient Monitoring Equipment Demand .............. 54
Cht. Patient Monitoring Equipment Demand by Type, 2007 .......... 55
3 Multi-Parameter Patient Monitor Demand .......... 56
4 Network Multi-Parameter Patient Monitor Demand .......... 58
5 Fixed & Transportable Network Monitor Demand .............. 61
6 Patient-Worn (P-W) Telemetry Monitor Demand .......... 63
7 Central Patient Monitoring Station Demand ............... 66
8 Remote Patient Monitor Demand .................... 68
9 Standalone Multi-Parameter Patient Monitor Demand .......... 71
10 Cardiac Monitor Demand ........................... 72
11 ECG Monitor Demand ................................ 73
12 Holter Monitor Demand ............................ 77
13 Heart Rate Meter Demand .......................... 80
14 Cardiac Output Monitor Demand .................... 83
15 Respiratory & Anesthesia Monitor Demand .......... 86
16 Respiratory Monitor Demand ....................... 87
17 Peak Flow Meter Demand .......................... 90
18 Spirometer Demand ................................ 92
19 Capnograph Demand ................................ 96
20 Pulmonary Function Analysis (PFA) Equipment Demand ...... 99

MARKETS

1 Patient Monitoring Systems Demand by Market ............. 185
Cht. Patient Monitoring Systems Demand by Market, 2007 .... 185
2 Home Health Care - Patient Monitoring Systems Demand .... 187
3 Hospitals - Patient Monitoring Systems Demand ............. 193
4 Outpatient Facilities - Patient Monitoring Systems Demand .... 198
5 Physicians' Offices - Patient Monitoring Systems Demand .... 204
6 Nursing Homes - Patient Monitoring Systems Demand ........ 206
7 Other Markets - Patient Monitoring Systems Demand .......... 209

INDUSTRY STRUCTURE

1 US Patient Monitoring Sales by Company, 2007 ............ 211
2 Selected Acquisitions & Divestitures ..................... 224
3 Selected Cooperative Agreements ..................... 229

Click here to purchase online

Order now, click here!
Blood glucose testing strips will claim nearly half of all accessories sales by 2012 based on a growing prevalence of diabetes and greater efforts to reduce the number of undiagnosed cases.

US demand to grow 5.9% annually through 2012

US demand for patient monitoring systems will increase 5.9 percent annually to $12 billion in 2012. Advances in wireless and sensor technologies will bolster growth by leading to the introduction of new equipment and accessories with enhanced performance capabilities. Patient monitoring procedures will increase throughout the primary health care sector based on contributions to improved therapeutic outcomes and efficiencies. The market for self-monitoring activities will also expand as chronic care patients, especially persons with diabetes, heart disorders and asthma, are encouraged by medical groups to focus more on preventive care.

Blood glucose test strips to drive accessories market

Demand for patient monitoring accessories will increase 7.1 percent annually to $6.6 billion in 2012. Blood glucose testing strips will account for close to half of all sales based on upward trends in the prevalence of diabetes and enhanced efforts by the health care sector to reduce the number of undiagnosed cases. The expansion of diabetes education programs will encourage diabetic patients to follow established guidelines for self-testing and periodic professional examinations. As a result, demand for diabetes monitoring supplies is projected to increase at a strong pace and reach $4 billion in 2012. The best opportunities will emerge in electrochemical blood glucose test strips, which require less blood and yield faster and more accurate results than older photometer reflectance test strips. The expansion of ECG and other vital signs monitoring activities in hospitals and outpatient centers, coupled with the development of advanced generation products based on microchips, will boost sales of patient monitoring catheters, electrodes and sensors.

Equipment market to grow 4.5% annually

The market for patient monitoring equipment will increase 4.5 percent annually to $5.4 billion in 2012. Based on contributions to health care quality, productivity and cost efficiency, wireless multi-parameter network monitors will remain the top-selling product group. Remote monitors that transmit data via the Internet or telephone will see the fastest growth as they hold promising potential to save health care costs by reducing the need for hospitalizations and outpatient episodes. Blood pressure monitors will provide mixed growth prospects. Devices for home use will post strong gains as consumers assume more personal responsibility for their own health care. By contrast, cost containment pressures and relatively saturated markets will keep sales of professional blood pressure monitors growing slowly at best.
PRODUCTS

Network Multi-Parameter Monitors -- Network multi-parameter monitors include all devices and equipment linked together to form integrated monitoring systems that extend to all or most patient care areas in hospitals. Included in this product group are bedside, portable and stationary monitors and modules; centralized monitoring stations; and patient-worn telemetry devices. Additionally, remote recorders that transmit patient vital signs information to medical providers via the Internet and cell phones are classified as network multi-parameter monitors. In total, this product group is forecast to realize demand of $1.1 billion in 2012, up 4.9 percent annually from 2007.

The size of the market and the extent of growth opportunities for network multi-parameter monitors are determined primarily by new and replacement installations in hospitals. Over the next several years, the majority of hospitals are expected to upgrade patient monitoring capabilities to incorporate advanced technologies that improve patient outcomes and enhance operating efficiencies. This trend will especially benefit demand for wireless telemetry devices and systems. Less favorably, cost containment pressures will continue to limit overall hospital demand for network multi-parameter monitors. Only devices and systems that contribute to faster patient recovery, shorter institutional stays and reduced inpatient mortality will command strong growth in this market segment.

Based on cost-saving and convenience advantages, multi-parameter remote network monitors are well-positioned for growth in the medical community. These devices enable physicians to assess the general health status of chronic care patients regularly without the need for in-office or in-clinic visits. Multi-parameter remote network monitors will also build up sizeable demand in hospitals as institutions seek to minimize the length of inpatient stays by expanding post-release patient follow-up capabilities.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Care Hospitals</td>
<td>57,240</td>
<td>54,990</td>
<td>54,410</td>
<td>55,600</td>
<td>56,000</td>
</tr>
<tr>
<td>000$ network m-p monitors/hospital</td>
<td>83</td>
<td>125</td>
<td>162</td>
<td>201</td>
<td>250</td>
</tr>
<tr>
<td>Network M-P Monitor Demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed &amp; Transportable Monitors</td>
<td>357</td>
<td>422</td>
<td>488</td>
<td>560</td>
<td>630</td>
</tr>
<tr>
<td>Patient-Worn Telemetry Monitors</td>
<td>20</td>
<td>132</td>
<td>197</td>
<td>250</td>
<td>285</td>
</tr>
<tr>
<td>Central Monitoring Stations</td>
<td>93</td>
<td>110</td>
<td>122</td>
<td>132</td>
<td>140</td>
</tr>
<tr>
<td>Remote Monitors</td>
<td>7</td>
<td>24</td>
<td>73</td>
<td>178</td>
<td>345</td>
</tr>
<tr>
<td>% network monitors</td>
<td>73.6</td>
<td>80.9</td>
<td>85.4</td>
<td>88.9</td>
<td>90.9</td>
</tr>
<tr>
<td>Multi-Parameter Patient Monitors</td>
<td>648</td>
<td>850</td>
<td>1030</td>
<td>1260</td>
<td>1540</td>
</tr>
</tbody>
</table>
Masimo Corporation
40 Parker
Irvine, CA 92618
949-297-7000
http://www.masimo.com

Revenues: $256 million (2007)

Key Products: pulse oximeters, oximeter sensors, network-linked wired and wireless multiple patient floor monitoring systems, and related software

Masimo is a developer, manufacturer and marketer of noninvasive blood constituent patient monitoring products. The Company held an initial public offering in August 2007.

Masimo’s products are available through three main lines: Patient Monitoring Solutions, Remote Alarm and Monitoring Solutions, and Software. Products include pulse oximeters, oximeter sensors, network-linked wired and wireless multiple patient floor monitoring systems, and related software.

Products -- In 2007, the Patient Monitoring Solutions line generated revenues of $199 million. Products from this line consist of pulse oximeters and oximeter sensors. Masimo’s pulse oximeters employ the Company’s MASIMO SIGNAL EXTRACTION TECHNOLOGY (MASIMO SET) software platform, which utilizes five signal processing algorithms to deliver high precision, sensitivity and specificity in

---

“Outpatient facilities will continue to comprise a large, diverse market for patient monitoring systems, with total product demand advancing 4.7 percent annually to $1.6 billion in 2012. Growth will reflect increasing activities in same-day surgery, ambulatory cardiac testing, general and urgent care services, and diagnostic imaging. Similar to hospitals, outpatient facilities will provide sales opportunities for a wide variety of patient monitoring equipment and accessories. Among the products expected to fare well in the ambulatory sector are ...”

--Section IV, pg. 197
**Order Information**

**Five Convenient Ways to Order**

**ONLINE:** [www.freedoniagroup.com](http://www.freedoniagroup.com)

**MAIL:** Print out and complete the order form and send to The Freedonia Group (see address at the bottom of this form)

**PHONE:** Call toll free, 800.927.5900 (US) or +1 440.684.9600

**FAX:** +1 440.646.0484 (US)

**EMAIL:** info@freedoniagroup.com

---

**Patient Monitoring Systems** .................................. $4600

- Corporate Use License (add to study price) *
  - Additional Print Copies @ $500 each *
  - Total (including selected option) $__________________

- Enclosed is my check (5% discount) drawn on a US bank and payable to The Freedonia Group, Inc., in US funds (Ohio residents add 7.75% sales tax)

- Bill my company  [ ] American Express  [ ] MasterCard  [ ] Visa

- Credit Card #

- Expiration

- Signature ____________________________

---

**Corporate Use License**

Now every decision maker in your organization can act on the key intelligence found in all Freedonia studies. For an additional $2300, companies receive unlimited use of an electronic version (PDF) of the study. Place it on your intranet, e-mail it to coworkers around the world, or print it as many times as you like.

**Order Form**

Name __________________________________________

Title __________________________________________

Company ______________________________________

Division ______________________________________

Street ____________________________

City/State/Zip ____________________________

Country ____________________________

Phone ____________________________  Fax ____________________________

Email ____________________________

---

**Individual Use License Agreement**

The undersigned hereby represents that the above captioned study will be used by only ___ individual(s) who are employees of the company and that the study will not be loaded on a network for multiple users. In the event that usage of the study changes, the Company will promptly notify Freedonia of such change and will pay to Freedonia the appropriate fee based on Freedonia’s standard fee schedule then in effect. Note: Entire company corporate use license, add $2300; one additional user, add $500; two additional users, add $1000; three additional users, add $1500.

**Corporate Use License Agreement**

The above captioned study may be stored on the company’s intranet or shared directory, available to company employees. Copies of the study may be made, but the undersigned represents that distribution of the study will be limited to employees of the company.

**Address:** The Freedonia Group, Inc. 767 Beta Drive • Cleveland, OH • 44143-2326 • USA • [Web site: www.freedoniagroup.com](http://www.freedoniagroup.com)

**Tel US:** 800.927.5900 or +1 440.684.9600 • **Fax:** +1 440.646.0484 • **e-mail:** info@freedoniagroup.com
About The Freedonia Group

The Freedonia Group, Inc., is a leading international industry market research company that provides its clients with information and analysis needed to make informed strategic decisions for their businesses. Studies help clients identify business opportunities, develop strategies, make investment decisions and evaluate opportunities and threats. Freedonia research is designed to deliver unbiased views and reliable outlooks to assist clients in making the right decisions. Freedonia capitalizes on the resources of its proprietary in-house research team of experienced economists, professional analysts, industry researchers and editorial groups. Freedonia covers a diverse group of industries throughout the United States, the emerging China market, and other world markets. Industries analyzed by Freedonia include:

- Chemicals • Plastics • Life Sciences • Packaging • Building Materials • Security & Electronics • Industrial Components & Equipment • Automotive & Transportation Equipment • Household Goods • Energy/Power Equipment

Freedonia Custom Research

Freedonia Custom Research delivers the same high quality, thorough and unbiased assessment of an industry or market as an industry study. Since the research initiative is based upon a company’s specific needs, companies harness Freedonia’s research capabilities and resources to answer unique questions. When you leverage the results of a Freedonia Custom Research engagement, you are able to obtain important answers to specific questions and issues associated with: mergers and acquisitions, new product launches/development, geographic expansion, entry into new markets, strategic business planning, and investment and funding decisions.

Freedonia Custom Research is ideal for companies seeking to make a strategic difference in the status quo and focus on future business growth. Working side by side with clients, Freedonia’s team is able to define a research project that is custom-tailored to answer specific questions and provide the basis from which a company can make informed business decisions.