

HP VERTICAL MARKETING KIT:

# Healthcare and Pharmaceutical



# INTRODUCTION

---

## A PRESCRIPTION FOR SALES

When it comes to numbers, talking healthcare, pharmaceutical and medical industry statistics can be mind-boggling. Pharmaceuticals is a \$650 billion industry. Healthcare is more than twice that. Any HP Indigo service provider that isn't talking about these industries is passing up a massive opportunity.

Pharmaceutical companies represent one of the largest buyers of print—spending \$8.1 billion in the United States alone according to recent figures. Healthcare companies invest an equally impressive \$4.6 billion in print. With the “Age of the Aging Baby Boomer” sending medical needs soaring, and the increasing demand for digitization and personalization in medical printing, the HP Indigo Press is the solution that many print buyers don't even know they need—yet.

## OUTSTANDING OPPORTUNITIES

Together, the healthcare and pharmaceutical industries comprise virtually limitless opportunities for digital printing and variable-data printing (VDP). And, together, we can provide a win-win proposition: HP Indigo goes far beyond high-quality printing to offer mass customization, digital print management, inventory management and other value-added benefits that are ideal for these specific industries.

Keep in mind that there are many other segments in the medical industry that also offer opportunities to HP Indigo owners, including companies that market over-the-counter (OTC) drugs, nutritional supplements and medical/surgical supplies. Each of these also use massive quantities of print materials, and sometimes have fewer regulations and barriers to entry. In this paper, we'll cover the largest segments—the pharmaceutical and healthcare industries.

## WHERE TO START

In marketing to the healthcare and pharmaceutical fields, it's important to know the market and its unique nuances and challenges. This is an industry that has been, and still is, changing. Certain sectors are increasing spending while others are in decline—and the advent of digital printing has further revolutionized the playing field. On top of that, the regulations related to printed materials are both stringent and evolving. With so much in flux, it is imperative that valid market data guide your sales strategy.

This paper will provide resources and tips on how to break into both of these highly profitable markets with the HP Indigo Press.

---

# TABLE OF CONTENTS

---

<b>THE HEALTH CARE INDUSTRY AND THE HP INDIGO PRESS</b> .....	<b>4</b>
Market Overview. ....	5
Market Opportunity. ....	8
Market Strategy. ....	13
Market Plan—Next Steps .....	17
Healthcare Industry Resources .....	18
<b>THE PHARMACEUTICAL INDUSTRY AND THE HP INDIGO PRESS</b> .....	<b>35</b>
Market Overview. ....	36
Market Opportunity. ....	39
Market Strategy. ....	42
Market Plan .....	44
Pharmaceutical Industry Resources .....	45

# THE HEALTHCARE INDUSTRY AND THE HP INDIGO PRESS



# HEALTH CARE—MARKET OVERVIEW

**Let's start with a look at the overall healthcare industry—** a \$1.6 trillion business that spans all types of patient care, from throat cultures to brain surgery and everything in between. This broad industry is made up of organizations that provide healthcare and social assistance services, through managed-care organizations, clinics, hospitals, or networks.

The potential here for HP Indigo printing is enormous. The latest figures suggest that, in all, the healthcare industry spends \$4.6 billion on printing.

## I. HEALTHCARE MARKET STRUCTURE

*To begin, it's helpful to look at the basic structure of the healthcare industry in America. Understanding the business and challenges of healthcare professionals is central to winning their trust—and business.*

The healthcare industry comprises several overall categories:

- **Personal healthcare**—consists of therapeutic services rendered to treat or prevent a specific disease or condition in a specific person.
- **Government public healthcare**—involves organizing and delivering health services to prevent or control health problems.
- **Healthcare program administration**—involves covering the costs for administering various government healthcare programs, as well as the net cost of private health insurance (the difference between premiums earned by insurers and the claims or losses incurred for which insurers become liable).

Within the personal healthcare segment, there are several basic vehicles for delivering care:

### **HMOs/MANAGED CARE NETWORKS.**

One of the most rapidly growing elements in healthcare is managed care, which places the emphasis on prevention, early intervention and outpatient care vs. more-expensive, crisis-oriented medicine. An increasing number of independent physicians are joining managed-care networks, such as HMOs. There are three types of networks:

- Health Maintenance Organizations (HMOs)
- Preferred Provider Organizations (PPOs)
- Point of Service (POS) plans

See the glossary at the end of this document for more information on each of these. In this document we will primarily focus on HMOs.

### **HOSPITALS.**

Hospitals provide medicines, surgeries and in-patient/outpatient procedures for sick or injured patients.

### **INTEGRATED DELIVERY NETWORKS (IDNs).**

Recently IDNs, networks of hospitals, clinics, etc. that provide a continuum of care to localized geographic areas, have been growing in importance. The research for this paper did not specifically address IDNs, but keep them in mind as an important target with significant purchasing power.

## II. THE STATE OF THE HEALTHCARE INDUSTRY AND EMERGING TRENDS

*Healthcare is an increasingly competitive industry, making effective marketing and clear communication with patients and other stakeholders imperative.*

Currently the industry is experiencing:

### **SKYROCKETING HEALTHCARE NEEDS.**

With the aging of the U.S. population and the increased rates of obesity, expenditures on health services have more than doubled in the last decade.

#### ◆ **HP INDIGO BOTTOM LINE:**

*This is a fast-growing market that doesn't show signs of slowing down.*

### **EVOLVING INDUSTRY STRUCTURE.**

The healthcare industry has been in a state of flux for the past several years. The consolidation that was extensive in the mid-1990s has slowed dramatically, but the healthcare industry is still evolving.

#### ◆ **HP INDIGO BOTTOM LINE:**

*Understanding the shifting dynamics is key.*

### **RISING COST OF PRIVACY COMPLIANCE.**

Complex privacy laws, such as HIPAA, create greater restrictions on patient privacy. The costs that HMOs, hospitals and IDNs incur to ensure compliance do not result in any perceived improvement of service, so patients are not willing to assume any price increases necessary to sustain them.

#### ◆ **HP INDIGO BOTTOM LINE:**

*Healthcare providers are looking for ways to cut costs without cutting corners on the regulations.*

### INCREASING RISK.

The nature of the business exposes HMOs, hospitals and IDNs to significant litigation risks. When malpractice cases are filed, everyone (doctors, hospitals, nurses, etc.) is named. Providers are realizing their insurance coverage may not be sufficient to cover the costs of litigation.

◆ **HP INDIGO BOTTOM LINE:**

*Liability is a pervasive concern. Accuracy is critical.*

### EVOLVING STATE OF MEDICARE AND GOVERNMENT PLANS.

Medicare is a large part of the managed-care/HMO market. This segment is even more heavily regulated, receives extensive media coverage, and is under scrutiny by the government. As far as its impact on printing, CAP Ventures reports that Medicare alone accounts for an estimated 130,000 pages of printing per hour.

◆ **HP INDIGO BOTTOM LINE:**

*Medicare provides tremendous print opportunities. It's important to understand its role.*

### INCREASING USE OF TECHNOLOGY FOR COST CUTTING.

Many hospitals say they are losing money. Hospitals and health maintenance organizations are turning to technology to help cut their costs. Two prime examples are the acceptance of claims online and the publishing of information on the Web rather than through print. In time, it is expected that more healthcare facilities will move to electronic forms because of the cost savings. However, stringent industry regulations—and the fact that not all patients have access to computers—essentially ensure that paper documents will continue to be needed. A single lawsuit due to an error in an electronic system could slow the progress for years—and quickly undo any savings.

◆ **HP INDIGO BOTTOM LINE:**

*HP Indigo can help cut costs by converting electronic records into printed documents when needed, and by increasing productivity and reducing waste with the publication and distribution of information. Also, studies show that forms printed on demand can save, on average, 25–45% of the total costs incurred using offset.*

### INCREASING USE OF TECHNOLOGY FOR COMPLIANCE.

In 2004, President Bush set the goal for every American to have an electronic medical record instead of a manila folder within 10 years. Because of programs such as Medicare and Medicaid, and also because it is a major employer that provides healthcare benefits, the U.S. government pays for more than one-third of all U.S. healthcare. Some estimates indicate the U.S. could save \$140 billion a year by using more technology.

Ironically, governmental compliance documents, although increasingly transmitted electronically, constitute a significant share of the document workflow within the healthcare field. Also, fewer than 20% of U.S. primary-care physicians are connected electronically, and much of the healthcare industry still relies on hard-copy printed materials. HMOs are more likely than hospitals and physician offices to move to electronic communication.

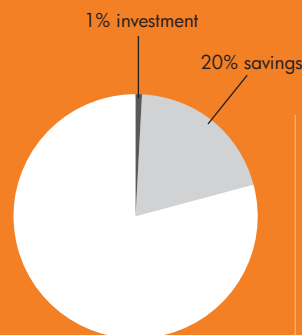
◆ **HP INDIGO BOTTOM LINE:**

*HP Indigo can help meet compliance needs by supporting both electronic documents and paper documents.*

### INCREASING USE OF TECHNOLOGY FOR COMPETITIVE ADVANTAGE.

Today's healthcare firms are competing hard for market share, and many are actively seeking new technologies to improve access to information and better meet government standards. However, this trend is slowed by the very-traditional, change-averse nature of HMOs and hospitals, and is further hampered by regulatory requirements and liability fears. These factors will slow widespread movement

A think tank on health care policy told lawmakers that 1% of federal health care spending, or \$7.9 billion, should go to technology, predicting 20% savings. The HP Indigo Press helps to fulfill this mandate. Some estimates indicate the U.S. could save \$140 billion a year by using more technology.



7.9 billion dollars are targeted for technology, predicting 20% savings. HP Indigo Press is a key part of this strategy.

to electronic-only records in the healthcare industry, which is a positive reality for the print industry.

◆ *HP INDIGO BOTTOM LINE:*  
*HP Indigo can position itself as part of this technology revolution—filling the gap between electronic and paper documents, easily converting digital documents to print when needed.*

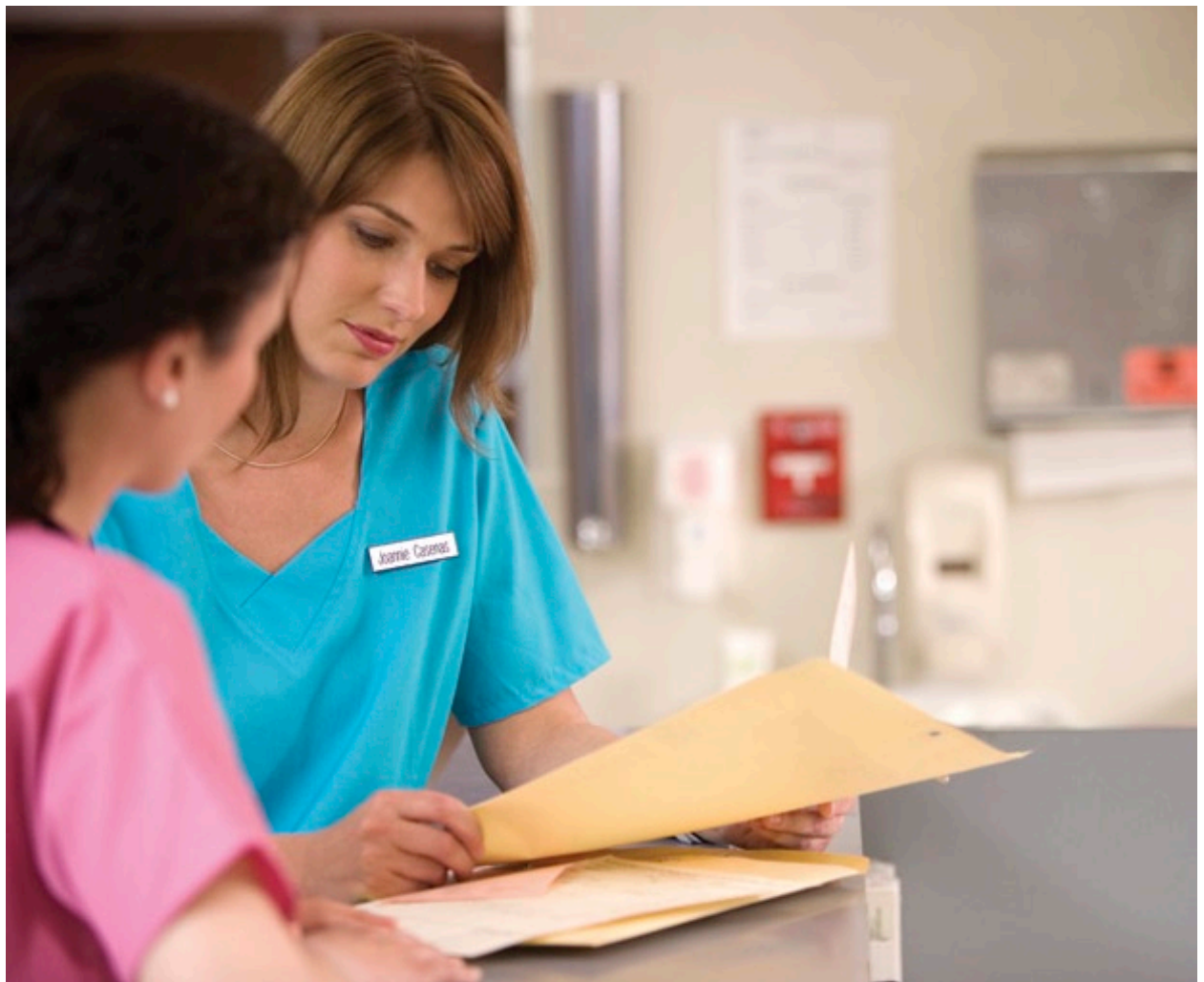
**INTENSIFYING COMPETITION.**

As healthcare costs grow, providers must find ways to remain profitable. At the same time, they must provide high-quality medical services or their customers will go elsewhere. There is intense competition among HMOs in many markets, and often customers can move between competitors on an annual basis.

◆ *HP INDIGO BOTTOM LINE:*  
*This industry is ripe for the potential of targeted, personalized marketing that addresses the needs of specific recipients and thereby improves marketing results.*

**SUMMARY**

Many of these trends within the healthcare industry open the door for digital printing with the HP Indigo Press. Later in this paper, we will address how to capitalize on these developments and help solve key challenges for players in the healthcare industry.



# HEALTH CARE MARKET OPPORTUNITY

## I. OVERVIEW OF PRINTING NEEDS IN HEALTHCARE

*With more than \$4.6 billion and 100 billion pages of printing per year, the healthcare industry represents a massive opportunity for HP Indigo Press owners.*

Following is a birds-eye look at the current and potential print needs in healthcare.

### TYPES OF PRINTING.

Most print in the healthcare market is used for one of these purposes:

- *Promotion*—soliciting new members and employees
- *Information*—communicating with members, patients and staff
- *Process*—recordkeeping, forms, etc.

This industry relies heavily on paper, due to the sheer volume required by healthcare regulations. As a result, the most common types of documents produced by are forms (in run lengths of 1,500 to 5,000). Behind that are manuals and directories; medical booklets and brochures; newsletters, bulletins and flyers; patient-specific materials; billing statements, payroll and claims; and mailroom and business correspondence products. According to CAP Ventures, about 75% of these documents (in a hospital setting) are primarily black-and-white forms.

Here is the breakdown:

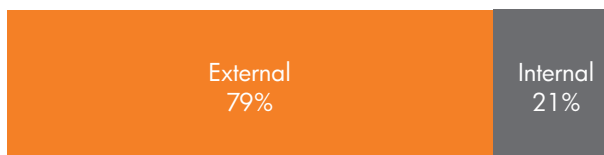
- Financial/transactional documents \$0.8 billion
- Directories \$0.8 billion
- Direct mail \$0.8 billion
- Periodicals \$0.6 billion
- Ad collateral \$0.6 billion
- Stationery \$0.2 billion
- Internal \$0.2 billion
- Misc. healthcare \$0.2 billion
- Technical documentation \$0.1 billion
- Packaging labels \$0.1 billion

**TOTAL \$4.6 BILLION**

### OUTSOURCING TREND.

Most HMOs and hospitals have in-plant copying and printing operations, but a growing percentage are outsourcing document production. Of all print used in this industry segment, here's how it breaks down:

- Printed internally: 21% (about \$1.0 billion in revenue)
- Printed externally: 79% (about \$3.4 billion in revenue)



Almost all color and complex printing is outsourced.

## II. SPECIFIC HEALTHCARE PRINTING OPPORTUNITIES

The following sections discuss each of the major areas of printing in healthcare and how the HP Indigo Press could meet these needs.

### ADVERTISING/MARKETING CAMPAIGNS.

*Brochures, TV and radio, newspaper ad inserts, flyers, posters, data sheets, booklets, folders, etc.*

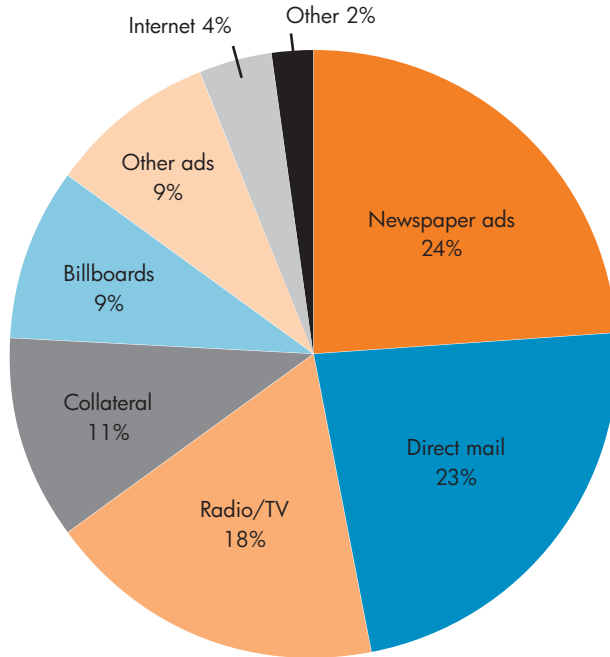
This category makes up a large percentage of the printing done by HMOs, hospitals and IDNs, although this was not always the case, perhaps due to the perception that it was not professional to advertise medical care, or because there were not so many choices in healthcare. Today, however, healthcare is a competitive industry where HMOs compete for customers, hospitals vie for elective cases, specialty hospitals advertise for “boutique” surgeries, and they all compete for qualified staff.

The messages in HMO/hospital advertising are typically persuasive, feel-good advertising, which cultivates interest but does not offer specific details about the entity. Effective advertising for HMOs and hospitals focuses on:

- The importance of making the best decision about which HMO/ hospital is right for the patient
- The quality of the hospital and/or the coverage of the HMO
- The empathy between the HMO or the hospital and the consumer



When marketing to gain new memberships, here is how an average HMO budget breaks down:



Of these, ad inserts, direct mail and collateral are the primary types of printed documents. In addition to brochures that market an organization itself, collateral brochures are common throughout hospitals, doctor's offices, and HMO healthcare facilities. Some are informational, encouraging informed choices the treatment of disease or injury. Others raise awareness about available tests and evaluations. Many have complex designs and graphics, are printed on quality paper, and are four-color.

◆ **HP Indigo Press OPPORTUNITY:**

According to the Digital Printing Council, the major printing opportunity in healthcare exists in marketing campaigns, which can include direct mail, brochures, linked websites, and related collateral material. These elements usually involve:

- Shorter runs
- Variable-data printing opportunities
- On-demand printing

Full-color, high-quality brochures and inserts are where the HP Indigo Press can shine—in quality, personalization, convenience, cost and waste reduction.

During annual open-enrollment periods, HMOs promote the merits of membership. With variable-data printing, this information can be tailored for each employer and even for each individual recipient.

## DIRECT MAIL MARKETING.

*Printed solicitations for information, commerce, or contributions mailed directly to individuals or companies*

Healthcare organizations use direct mail heavily. Hospitals primarily advertise procedures where patients have a higher level of choice. For example, many postcards are sent to women of childbearing ages, telling them about the superior quality of care provided at a particular hospital. A "boutique" hospital that specializes in outpatient surgery may send direct mail to attract patients. HMOs use direct mail heavily during open-enrollment when large companies/unions allow their employees/members to select a carrier for the following year.

As mailing lists continue to include more email addresses, it is expected that this type of direct mail will move more to an electronic delivery system, with live links to a website.

◆ **HP Indigo Press OPPORTUNITY:**

As you know, digital printing presents none of the costly, time-consuming make-ready, films, plates, or chemicals of offset printing, which means you can delight HMOs and hospitals with the quality and pricing they want. They can print only the quantity they need at the time they need it—eliminating costly waste and obsolete materials—and refill requests can be turned around in a day or less.

Best of all, you can offer healthcare customers something they probably haven't had before: affordable, full-color, personalized direct mail with VDP (variable data printing). With the ability to change out images and text—beyond just the name and address—on every imprint, HMOs and hospitals can target specific audiences, or even specific people, with exactly the information that would be most persuasive and effective. This is a particularly valuable benefit with direct mail that is proven to increase response. Variable data print and web-to-print solutions such as HP Smart Stream Director will enable these organizations to create cost-efficient, highly effective, personalized communications.

In addition, the HP Indigo Press can utilize database lists so that only relevant information is sent to each recipient. For example, recipients can be targeted based on which health care providers would meet their specific needs, which are located nearby, etc.

## DIRECTORIES.

*Reference information about a healthcare provider that is usually compiled alphabetically or by category for easy reference.*

- **Provider/Staff Directories**—This is a large chunk of the healthcare print market. Providers want to promote their practitioners and typically release new directories annually, after staff contracts are renewed and/or during an open-enrollment period. Usually this information is on the Web as well, but because of customer demand, printed copies continue to be needed.

- *Formulary Directories*—A formulary is a list of the drugs a hospital uses or an HMO will pay for. Often more than one drug can be used for the same purpose but an organization may only pay for a particular drug. If news breaks that a prescription is having problems—or when a new drug hits the market—organizations will switch the prescription immediately and must be able to update the directory quickly. For this reason, many formularies have been moved online, but practitioners often want these documents readily available in print, and hard copies are still needed.

◆ *HP Indigo Press OPPORTUNITY:*

*The greatest challenge healthcare organizations face with directories is trying to keep the information current. For HMOs and hospitals, timely information is critical—for member/patient welfare, company liability and customer service. Here is where the HP Indigo Press is an ideal solution. Instead of printing large runs, which may be obsolete within a week or two, HMOs and hospitals can do small runs—economically—and update information as often as needed.*

*Typically, these directories are primarily black-and-white. There is an opportunity to point out the advantage of color, particularly to highlight important changes to the directories.*

**FINANCIAL AND LEGAL DOCUMENTS.**

*Transactional materials that support financial, legal and insurance needs*

This is another massive printing requirement for the healthcare industry, and includes:

- Forms and paperwork to support all standard billing functions—both for insurance premiums and for patient care
- Annual and quarterly reports, as well as 10-Ks
- Prospectuses, IPOs and investor notices (for HMOs/hospitals that have investors)
- Explanation of Benefits (EOB) forms—sent by insurance companies to the practitioner and the patient each time they pay or refuse a claim. In some states, such as Ohio, these EOBs must be in hard copy.

Some organizations are converting much of this material to electronic formats, and only printing those required by law to be exchanged in hard copy. However, the Digital Printing Council estimates that up to 80% of customers will continue to want hard copies of their invoices.

◆ *HP Indigo Press OPPORTUNITY:*

*Again, an advantage of digital printing here is the on-demand capabilities. Instead of printing massive piles of forms that consume valuable space and run the risk of becoming outdated, HMOs, hospitals or IDNs can print small runs as they are needed.*

*Another opportunity in this arena is to help healthcare*

*organizations begin multi-purposing their financial documents, such as invoices, and begin to include promotional content as well. With VDP, the content can be specifically targeted to each individual patient's needs.*

*And, finally, as changing governmental regulations require ongoing updates to compliance documents, these materials lend themselves well to electronic storage and print-on-demand technology.*

**FORMS AND INTERNAL COMMUNICATIONS.**

*Flat and multipart forms that require variable data, single-sheet forms that often contain legal information, memos, reports, budgets and project-management internal publications*

Forms that capture patient information are the essential tools in the day-to-day operations of the healthcare industry. From admitting, to charting, to release, a series of forms will shadow a patient throughout his/her hospital stay. The accuracy and clarity of forms is essential. Litigation—or worse, loss of life—may result if forms are not correctly prepared and easily understood.

The primary uses for forms are:

1. *Member enrollment*—Entering new customers into the system
2. *Member services*—Keeping customers informed and providing healthcare services
3. *Internal processes*—Admissions and record keeping

Typical types of forms are:

- Accident and incident reports
- Activity and volunteer forms
- Admission forms
- Discharge and transfer forms



- Authorization forms
- Bodily functions forms
- Care plans and assessments
- Census/consultant reports
- Charge/credit slips
- Daily, weekly, monthly reports
- Dietary forms
- Employee forms and schedules
- Housekeeping/maintenance forms
- Management and administration forms
- Medical history forms
- Medicine cards/medication forms
- Nurse notes
- Physician orders
- Progress notes
- Rehabilitation and therapy reports
- Resident rights, funds, personal property forms

◆ **HP Indigo Press OPPORTUNITY:**  
*Because of sheer volume, forms and financial/transactional documents represent the largest print opportunity within the healthcare industry. Working in favor of the HP Indigo Press is that forms production has experienced a dramatic shift during the past few years—migrating from offset printing to print-on-demand applications.*

*The versatile HP Indigo Press can print office forms and documents of any color or size with ease, and is especially ideal for cost-effective production of one- and two-color office documents, matching corporate spot colors with accuracy. And, again, the ability to print on demand without needing to store large inventories of forms—and to make fast revisions or updates—are key advantages to digital printing vs. traditional offset methods.*

## GROUP PLAN BOOKLETS.

*Pages of materials that describe specific benefit packages*

HMOs distribute these booklets annually for either reference or enrollment purposes. Some booklets outline complete coverage for each individual participant. Others detail various insurance, medical and financial plan options. Because plan availability can involve a long list of variables—including how long a person has been an employee, where they live, whether or not they are married and how many dependents they have—an HMO may need to print hundreds of possible versions of these booklets.

◆ **HP Indigo Press OPPORTUNITY:**  
*The HP Indigo Press is ideal for short runs of multiple versions. Another option—one that could decrease production costs, reduce waste and improve communication—would be to tailor each booklet using VDP to include only the information each employee requests. In addition, the photo-realistic print quality of the HP Indigo Press is ideal for producing healthy flesh tones and vibrant colors in images of people.*

## PACKAGING.

*Labels, cartons, boxes, displays, signage, tags, CD/DVD covers or inserts, book covers, etc.*

Prescription drug labels account for the greatest part of the packaging segment here. Hospitals and the HMOs print their labels internally, usually with personalized content and direction information for each prescription. This type of printing may grow as the population ages and requires more prescriptions.



◆ **HP Indigo Press OPPORTUNITY:**

HP Indigo's label presses are ideal for drug labels. The superb print quality accurately produces barcodes that can be used in security and anti-counterfeiting systems, and the ability to produce short- to mid-length runs without the make-ready costs of traditional print methods helps improve cost efficiency.

**PERIODICALS/NEWSLETTERS.**

*Publications consisting of multiple pages, bound as a unit, and published on a scheduled basis with a fixed interval between issues. These may include magazines, journals and reprints or preprints, but the most common is newsletters.*

Many healthcare providers publish custom newsletters that offer their constituents a steady supply of tips, insight and the latest research into common health issues. Often these publications are focused on prevention and wellness, and can range from four pages to a 16-page spread.

Although medical research journals are not considered a part of the healthcare industry, some hospitals do publish periodicals honoring their donors. This is typically a four-color piece with lots of photos that highlights any accomplishments and/or awards achieved by the hospital throughout the year. Donors are listed—often by their category of giving. This often is an annual publication but occasionally may be issued semiannually.

Interestingly, Evanston Northwestern Healthcare, a hospital that has gone “paperless” for much of its operational functions, publishes a magazine, The Pilot, semiannually. Its other annual reports are available in PDF format on the Web.

◆ **HP Indigo Press OPPORTUNITY:**

The HP Indigo Press is ideal for short- or long-run, print-on-demand newsletters, periodicals and magazines. The efficient digital process can eliminate slow, expensive conventional impositions, as well as the multiple rounds of proofing and correcting. The four-color capabilities and ultra-high photo quality produce a impressively finished piece.

**PRESCRIPTION DRUG PADS.**

*Serialized and bar-coded pads that physicians use to provide prescriptions.*

These pads are needed in high quantities and are used regularly by healthcare providers. The integrity of the bar codes and serialization is critical to maintaining safety and integrity with prescription orders.

◆ **HP Indigo Press OPPORTUNITY:**

These pads are a wonderful products for the HP Indigo Press, especially for the ease of printing customized bar codes and serial numbers.

**STATIONERY.**

*Letterhead, envelopes, business cards, appointment cards, etc.*

Every facility has its own stock, and sometimes its own customized design. The need for stationery items should stay about the same into the near future.

◆ **HP Indigo Press OPPORTUNITY:**

Business cards are a particular area where healthcare facilities would most likely appreciate an improvement. Cards are often printed in large quantities, to get quantity breaks and avoid shortages, but if an employee's job title, cell phone number, email address—anything—changes, the reprint is costly and the unused cards are wasteful. The HP Indigo Press is not only ideal for short runs with variable names, addresses, etc., it's also capable of printing on many different paper stocks and precisely matching corporate spot colors with extremely high quality.

**TECHNICAL DOCUMENTATION.**

*Manuals, guides, instructions, etc.*

Training manuals are an integral component in the healthcare industry, as employees and healthcare professionals regularly attend continuing education courses.

Also, in nearly all healthcare facilities, patients are given notes and instructions—mostly handwritten. However, because post-surgical techniques are the same for many types of surgeries, having these instructions available in a preprinted form would be optimal. Physicians could then scribble any customized thoughts or notes for each patient. This is an area of printing that is expected to grow in the future.

◆ **HP Indigo Press OPPORTUNITY:**

**Manuals:** The HP Indigo Press is an economical, high-quality source for versioned manuals, handbooks and guides. This opens a new opportunity for healthcare organizations. If they want to customize a procedure/policy manual for a specific audience, they now can—affordably. And, as with other types of documents, the HP Indigo Press allows healthcare providers to print only as many technical documents as are needed, with fast reruns available on demand.

Course materials and training handbooks are ideally suited to print-on-demand, enabling production of materials as they are needed and ensuring timely and accurate content.

**Patient Instructions:** The content on a pre- or post-surgical care instruction sheet changes often enough, and is specialized enough, to make this document an excellent candidate for digital printing.

---

# HEALTH CARE MARKET STRATEGY

---

## I. STRATEGY OVERVIEW

---

There are many opportunities for digital and variable-data printing within the healthcare industry. It is a huge, fragmented industry with 700,000 doctors and 5,000-plus hospitals, and the key to winning business for the HP Indigo Press is to know the market, know your product, know your competition and know your strategy.

Let's talk strategy.

The Digital Printing Council and InfoTrends/CAPV have compiled lists of key benefits for digital printing providers to emphasize in selling to the healthcare industry. Based on their research, we have customized a list for you.

The HP Indigo Press can help healthcare providers meet many goals at once. Be sure to promote these specific advantages to this market. The HP Indigo Press can:

- Reduce the cost of document printing and management
- Increase the effectiveness of marketing materials through personalized VDP
- Target specific markets with customized information
- Improve the management, storage and distribution of forms
- Simplify updates and revisions
- Enhance the ability to distribute timely information
- Provide greater control over information and content
- Securely manage confidential printing in compliance with HIPAA regulations
- Electronically manage rapidly changing documents
- Prevent obsolete print inventories
- Standardize work processes, which in turn reduces costs and increases return on investment
- Produce time-critical materials in long or short runs—for mass distribution or on-demand needs



## II. STRATEGY SPECIFICS

### PRESENT CREATIVE IDEAS.

When it comes to marketing, the healthcare industry has been fairly traditional. On their own, HMOs, hospitals and IDNs may not think of the potential opportunities that variable-data printing can provide. Printers who can devise and propose innovative ideas will be successful.

An example: Since marriage licenses are a matter of public records, healthcare providers can send personalized informational packets to newlyweds about OB services. Similarly, birth records are public and providers may send pediatrician information to new parents.

### TALK ABOUT TARGETING.

Patient- or customer-specific materials represent another important document focus in the healthcare market. You can use general VDP research and results to emphasize the improved effectiveness of targeted marketing materials.

Healthcare organizations have access to a wealth of data from a variety of sources, including:

- Member/patient databases
- Medicare information
- AARP memberships
- Residential zip code lists

Other lists can be purchased or generated as well. Think ahead on specific ways these lists can be used and/or combined most effectively for VDP applications within the healthcare industry.

### FOCUS ON TIMING.

Some of the standard reasons that healthcare organizations use printed materials with customers, staff and patients are to communicate:

- Program changes
- Benefit usage
- Legal notices
- Health advisories

In this era of increasing competition, another key motivator is advertising and marketing. While hospitals or IDNs may launch campaigns at any time, for HMOs, the greatest intensity will be during the open-enrollment periods of the employers and organizations they serve. With variable-data printing, the HMO can directly target the specific benefits it offers each employer and, if deemed cost-effective, even each potential customer.

In selling print to HMOs, it would be valuable to learn the timing of the benefit cycles for the area's most desirable employers—particularly their open-enrollment periods—so you can estimate when HMOs would be preparing their marketing materials and time your contacts accordingly.

### PROPOSE MULTI-PURPOSE CONCEPTS.

Because digital printing enables short runs and variable printing, another opportunity in this arena is to help healthcare organizations begin multi-purposing their financial documents, like invoices. Using the HP Indigo Press, these documents—which are a consistent point of contact with patients and customers—could be customized to include full-color promotional content, and could even be specifically targeted to each patient's individual healthcare



needs. The same concept could extend to other forms and materials.

A benefit here is that the healthcare organizations can get more “bang for their buck” out of each printed piece.

**KNOW THE BEST APPLICATIONS FOR DIGITAL PRINTING.**

Ideal print products for digital printing in the healthcare industry include:

- Marketing collateral—versioned, customized materials
- Special forms and transaction documents—with color, personalization and marketing tidbits added
- Serialized or bar-coded security documents, like prescription pads

**KNOW THE BEST APPLICATIONS FOR PRINT-ON-DEMAND.**

Healthcare materials that would especially benefit from short runs and fast turnarounds are:

- Forms
- Training materials, produced as-needed with timely content
- Marketing materials such as brochures, newsletters, manuals, and solicitation materials to promote services and specialties, raise healthcare awareness, and grow market share
- Reports and presentations for both business administration and marketing requirements
- Stationery, letterhead, and envelopes needed for business communications
- Volunteer and staff handbooks
- Group plan booklets—versioned documents

**KNOW THE BEST APPLICATIONS FOR SHORT RUNS.**

These time-sensitive materials are especially good choices for digital printing.

- Formulary directories
- Healthcare provider directories
- Direct mail—including member/patient solicitations, changes in programs, reminders, advisories
- Open-enrollment advertisements
- Customer bills
- Prescription packaging
- Patient instructions
- Signage

**HIGHLIGHT THE SAVINGS.**

According to the Digital Printing Council, it is estimated that forms printed on demand can save, on average, 25–45% of the total costs incurred using offset. The ability to create, revise, update, order, input, distribute, and print forms electronically offers the healthcare industry significant cost and productivity improvement opportunities.

You may also choose to provide printing quotes on your prospective customer’s existing materials—so they can see the cost savings.

**INFLUENCE THE INFLUENCERS.**

To sell printing to the healthcare market, there are two points of contact:

- Procurement/purchasing
- Marketing/communications

Most of the printing handled by procurement/purchasing tends to be of the three-bid type, and includes primarily black-and-white forms, directories, lists, etc. Almost all “creative” print is managed through the marketing departments, and is generally of a higher value for printing companies.

Department	Percent of jobs	Percent of revenue
Procurement/purchasing	61%	42%
Marketing/communications	39%	58%

The most important influencers for value-added print buying—digital color, variable data, etc.—are the marketing managers, sometimes called “product managers.” The marketing/communications departments prefer to work with solutions providers—printers who have new ideas in terms of direct mail formats, cross-media programs, or even innovative marketing approaches. This fits the profile of most HP Indigo Press owners perfectly.

**JUMP ON THE TECHNOLOGY BANDWAGON.**

Although the trend to go digital with printed documents may not seem to be a profitable development for printers, the HP Indigo Press is actually part of the industry’s move toward technology and can be promoted that way to healthcare decision makers. A few anecdotal pieces of information help to paint a picture of how the healthcare industry is moving toward more technology in their operations:

- WellPoint (WLP), the nation’s No. 2 insurer, has invested \$40 million to help 19,000 doctors buy technology products.
- Blue Cross Blue Shield of Massachusetts put up \$50 million to fund a pilot project to electronically connect doctors, hospitals, insurers, and patients in one community so records easily follow patients.
- Bridges to Excellence, an employer coalition including General Electric and Ford Motor Company, formed last year, is paying eligible doctors \$50 per year per patient to use technology to improve care.
- The Leapfrog Group, founded in 2000, surveys hospitals on technology that can be used to be more efficient, offer better care, and attract more patients. Leapfrog’s coalition includes 150 employers, including General Motors, GE, and Verizon, covering 35 million people.

HP Indigo Press fits in line with organizations who realize that technology can improve service and reduce costs. Speak to this point when targeting tech-savvy organizations.

#### **KNOW THE INDUSTRY.**

The healthcare industry is in a constant state of flux, continually reacting to the demands of its competing constituents. These demands include:

- Ensuring quality of care for patients
- Managing the business concerns of the organization
- Overseeing the expectations and performance of the caregivers
- Meeting the requirements of the health insurance industry
- Monitoring the moral, ethical, and economic ramifications of new technologies
- Complying with the regulatory demands of the government

This number of pressures could lead to chaos—but it also provides excellent business potential for digital service providers. As healthcare organizations attempt to stay focused on their primary business (healthcare) and delegate non-core functions to outsource firms, a motivated HP Indigo Press print service provider will find an open window of opportunity.

#### **KNOW THE COMPETITION.**

Certainly you will not be the only digital printer targeting this industry. It pays to stay aware of what the competition is doing. For example, FedEx Kinko's had this copy on its website:

*"A simpler, more cost-effective way to produce medical documents and forms: We understand that healthcare organizations are always looking for ways to control spending and re-invest that capital in what really matters to them—patient care. One way for healthcare organizations to do this is through document outsourcing with FedEx Kinko's healthcare solutions. Traditional offset printing solutions cost time, space, and money—whether healthcare organizations are producing documents themselves or working with outside vendors. Print overruns, obsolete documents, facilities management, warehousing, and fulfillment are all hidden costs that eat away at an institution's bottom line."*

#### **OFFER SOLUTIONS.**

One printer that has kept up with changes in this market has been Standard Register. The company launched a software solution to keep hospital admissions fully operational in the event of a network failure or natural disaster.

The company's Network Optional Downtime Module produces a form or kit of forms for patient admissions and identification using a local PC and printer. What differentiates the Network Optional Downtime Module is that it can be used whether a healthcare facility's network is operational. Admissions and nursing staffs are able to produce printed labels, wristbands, consent forms, and other documents on a locally connected printer with legible patient demographic information and barcodes, as long as the healthcare facility has access to power through normal sources or generators.

Developing complete solutions integrated with the HP Indigo Press's extensive capabilities will be a key entry point into the healthcare market. Sample solution opportunities include:

- Total direct mail services, from creation to fulfillment
- Integration with Web-based channels
- Creative direct mail programs





---

# HEALTH CARE

## MARKET PLAN—NEXT STEPS

---

So where should you start? here are a few suggestions:

### **TRACK DOWN YOUR TARGETS.**

It will involve persistence to find and reach the marketing managers who are key to winning profitable projects. There are not many opportunities to make personal contact at meetings or conferences, and their names do not typically appear on organization websites. Here are a few approaches for finding these decision makers:

1. Ask the print buyers in purchasing/procurement.
2. Ask the in-plant printing manager who tends to know everything that is going on in the organization.
3. Contact the senior executive from Section III.2 or the annual report/10-K, and ask his or her administrative assistant.

Once you have found the marketing managers, use direct mail to contact them, at least at first. These print-savvy professionals tend to look at the direct mail they receive in terms of how it might apply to their own campaigns. Be sure to use variable data printing, full color and other HP Indigo features to show your capabilities and generate leads.

### **ACCOUNT FOR SEASONAL CONSIDERATIONS.**

- *Fiscal Year:* Your prime time to sell is anytime, but many outsourcing decisions within HMOs and healthcare organizations may come at the end of the fiscal year, which varies from organization to organization. Find out what financial calendar your potential customer uses and emphasize getting commitments and contracts signed during the last quarter.
- *Open-Enrollment Periods:* As mentioned previously, find out the open-enrollment periods for major employers in your area that HMOs will want to target. Contact the HMOs when they may be planning their marketing materials.

### **CALL AS A CONSUMER AND/OR PATIENT.**

Gather all the communications materials you can from a hospital or HMO so that you can better determine their needs and how the HP Indigo Press can meet them. Look for problems they may have with communication.

### **GET A HOSPITAL, HMO OR IDN DIRECTORY.**

A directory will provide you with important contact names, titles, and phone numbers. (Ask for referrals, too.)

### **MAKE THE MATERIALS MANAGEMENT STAFF A PRIORITY.**

Once known as Purchasing, the Materials Management department makes major decisions regarding outsourcing a variety of services, including document production. Building relationships here will be important. Once you have made contact, ask Materials Management for referrals to other departments.

### **CREATE YOUR OWN PROMOTIONAL MATERIALS.**

Develop an innovative direct mail piece and also a leave-behind piece that target HMOs and/or hospitals. Make sure it is customizable, it showcases the capabilities of the HP Indigo, and it addresses the specific needs of the healthcare industry. Have them ready to go so you can respond quickly to leads.

Although print buyers in this industry have “regular” suppliers, they are looking for new services. To get their attention, you must present them with fresh ideas and approaches.

### **LISTEN.**

A primary strength of the HP Indigo Press is its ability to adapt to various needs. Remember that you can not “sell” the healthcare industry; you must help them solve a problem.

---

# HEALTH CARE

# INDUSTRY RESOURCES

---

## I. HEALTHCARE INDUSTRY TERMINOLOGY

---

This is a list of terminology that is common to this industry.

### **ADMINISTRATIVE SERVICES CONTRACT (ASC)**

An employer-funded basis where the plan sponsor under an administrative services contract, and not the company, assumes all or a majority of the financial risk for healthcare costs.

### **BAD DEBT**

Cost of services for which provider anticipated but did not receive payment.

### **CAPITATION/CAPITATED PAYMENTS**

A dollar amount established to cover the cost of healthcare services delivered to a person during a specified length of time. The term usually refers to a negotiated per-capita rate to be paid to a healthcare provider by a managed care organization. The provider is then responsible for delivering or arranging the delivery of all health services required by the covered person under the conditions of the provider contract.

### **CAPITATED CONTRACT**

A contract involving capitated payments. Capitated payments can be for a full or limited range of services.

### **CENTERS FOR MEDICARE AND MEDICAID SERVICES (CMS)**

The agency within the U.S. Department of Health and Human Services that has responsibility for administering Medicare, Medicaid, the State Children's Health Insurance Program, and other programs. Prior to July 1, 2001, CMS was called the Healthcare Financing Administration (HCFA).

### **CHARITY CARE**

Cost of services for which the provider neither received, nor expected to receive, payment because it had determined the patient's inability to pay.

### **CHIP**

Children's Health Insurance Program.

### **CMS**

Centers for Medicare and Medicaid Services.

### **COMMUNITY RATING BY CLASS**

A plan that establishes premium rates based on its revenue requirements for broad classes of membership distinguished by factors such as age and gender.

### **CONVENTIONAL FEE-FOR-SERVICE (FFS) PLAN**

A payment system by which doctors, hospitals, and other providers bill and are reimbursed a specific amount or percentage for each service performed, after the services have been received.

### **COPAYMENT**

A cost-sharing arrangement where a health plan enrollee pays a specified charge for a specified service (e.g., \$30 for an office visit). The enrollee is usually responsible for payment at the time the service is rendered.

### **DEDUCTIBLE**

A specified amount of money that a health plan enrollee must pay before insurance benefits begin, usually expressed in terms of an annual amount.

### **DIMA**

Medicare Prescription Drug, Improvement, and Modernization Act.

### **EXPERIENCE-RATED PLANS**

Plans in which premium rates generally give consideration to the individual plan sponsor's historical and anticipated claim experience. With regard to smaller employer groups, however, the group may not be large enough for the use of experience rating to be appropriate, and another rating method is used.

### **FEE-FOR-SERVICE**

Network physicians are paid for healthcare services provided to the member based upon a fee schedule.

### **GROUP MODEL HMO**

HMO contracts with one large multispecialty medical group, which receives a monthly fixed fee for each HMO member (capitation), regardless of the medical services provided to each member.

### **GROUP PURCHASING ORGANIZATION (GPO)**

An organization that represents a collection of healthcare entities and provides them with increased purchasing power. The GPO negotiates contracts with vendors on behalf of its members.

### **GROUP SPECIFIC COMMUNITY RATING**

A plan that establishes premium rates based in part on its revenue requirements for providing services to the group. State laws, in some of the states in which the company operates plans, require the filing with and approval by the state of plan premium rates. In addition to reviewing anticipated medical costs, some states also review anticipated administrative costs as part of the approval process. Future results of the company could be adversely affected if the premium rates requested by the company are not approved or are adjusted downward by state regulators.

### **HIPAA**

Health Insurance Portability and Accountability Act of 1996. Title I of HIPAA enables employees to maintain health coverage when they change or lose their jobs. Title II of HIPAA, or the Administrative Simplification (AS) provisions, helped establish national standards for electronic healthcare transactions and ensures that personal information is kept private.

### **HEALTH MAINTENANCE ORGANIZATION (HMO)**

A health delivery system that offers comprehensive health coverage for a prepaid, fixed fee. HMOs contract with or directly employ participating healthcare providers (i.e., hospitals, physicians, and other health professionals) and HMO enrollees choose from among those providers for all healthcare services.

There are four basic HMO model types:

- **STAFF-MODEL HMOs** employ healthcare providers directly. The providers are employees of the HMO and provide care exclusively to HMO enrollees.
- **GROUP-MODEL HMOs** contract with one or more group practices to provide healthcare services, and each group primarily treats the HMO's enrollees.
- **NETWORK-MODEL HMOs** contract with one or more group practices and/or Independent Practice Associations (IPAs) to provide healthcare services. The network may or may not provide care exclusively for the HMO's enrollees.
- **INDEPENDENT PRACTICE ASSOCIATION (IPA) MODEL HMOs** contract with physicians in solo practice, or with associations of physicians that in turn contract with their enrollee physicians, to provide healthcare services to enrollees. Solo-practice physicians in IPA model HMOs may have a significant number of patients who are not HMO enrollees.

Some HMOs combine two or more of the four basic model types, such that some of their enrollees are in options or components that function as one model type (for example, a group model) and others are in plans that function as another model type (for example, a network model), although all belong to the same HMO. These are often called "mixed model" HMOs.

### **INDEMNITY AND INDEMNITY BENEFIT PRODUCTS**

Plans that offer the member the ability to select any healthcare provider for covered services. Some care management features may be included in these plans, such as inpatient pre-certification, disease management programs, and benefits for preventive services. Coverage typically is subject to deductibles and coinsurance. In these plans, as with the company's other health plans, member cost sharing for covered services generally is limited by out-of-pocket maximums.

### **INDEPENDENT PRACTICE ASSOCIATION (IPA)**

The HMO contracts with independent physicians and hospitals to provide services to members. IPA models typically cover wide geographic areas and have low fixed costs. They rely on cost-effective contracts with providers and appropriate medical cost and utilization management to deliver quality medical care at an appropriate cost.

### **INTEGRATED DELIVERY NETWORK (IDN)**

A network of healthcare providers that partner together to serve a localized region. This may include hospitals, physicians, clinics, radiologists, pharmacies, home health and more. Working together, these entities can share services, equipment and costs, and can also provide a more complete continuum of care to patients.

### **JOINT COMMISSION (FORMERLY THE JOINT COMMISSION ON ACCREDITATION OF HEALTHCARE ORGANIZATIONS [JCAHO])**

An independent, non-profit organization that accredits and certifies more than 16,000 healthcare organizations and programs in the United States, according to its own website. In the U.S., Joint Commission accreditation and certification is recognized as a symbol of quality and is also required for Medicare reimbursement.

### **MANAGED CARE**

A general term for a healthcare system that manages healthcare delivery in order to improve quality and control costs.

### **MANAGED CARE CONTRACT**

A contract between a provider and any managed care organization, including HMOs, PPOs, and POS plans. These contracts do not necessarily use capitated payments.

### **MANAGED CARE ORGANIZATION (MCO)**

A healthcare plan that integrates financing and management with the delivery of healthcare services to an enrolled population. It employs or contracts with an organized system of providers that delivers services and frequently shares financial risk, typically relying on a primary care physician to act as gatekeeper for specialty services.

### **MEDICAL EXPENSE RATIO (MER)**

Total medical expenses as a percentage of premium revenues.

## **NAIC**

National Association of Insurance Commissioners.

## **NATIONAL COMMITTEE FOR QUALITY ASSURANCE (NCQA)**

A national organization established to review the quality and medical management systems of HMOs and certain other healthcare plans. NCQA accreditation is a nationally recognized standard.

## **NETWORK MODEL HMO**

The HMO contracts with many physician groups generally through capitation.

## **NON-ELDERLY**

Persons aged 0 to 64.

## **OPEN-ACCESS HMO**

A product that offers the member an HMO network of providers without the requirement of a referral from the primary care physician in order to have services provided by a participating specialist or medical facility covered under the member's plan.

## **PMPM**

Per member, per month.

## **POINT-OF-SERVICE (POS) PLAN**

A health services delivery arrangement (either prepaid or fee-for-service) that allows its enrollees to choose to receive a service from a participating or a non-participating provider. Generally, the level of coverage is reduced (or cost-sharing is increased) for services associated with the use of non-participating providers.

## **PREFERRED PROVIDER ORGANIZATION (PPO)**

A fee-for-service health plan that contracts with providers of medical care to provide services at discounted fees to enrollees. Enrollees may seek care from non-participating providers but generally are financially penalized for doing so by the loss of the discount and subjection to co-payments and deductibles.

## **PREMIUM**

Money paid in advance for insurance coverage.

## **PRIMARY CARE PHYSICIAN (PCP)**

Generally family practitioners, internists, general practitioners, or pediatricians who provide necessary preventive and primary medical care, and are generally responsible for coordinating other necessary healthcare, including making referrals to participating network specialists.

## **PRIMARY CARE PROVIDER (PCP)**

The provider that serves as the initial interface between the plan enrollee and the medical care system. The PCP is usually a physician, selected by the enrollee upon

enrollment, who is trained in one of the primary care specialties and who treats and is responsible for coordinating the treatment of enrollees assigned to the plan.

## **PROSPECTIVE RATING**

A fixed premium rate that is determined at the beginning of the policy period. Unanticipated increases in medical costs cannot be recovered in the current policy year; however, prior experience for a product in the aggregate may be considered, among other factors, in determining premium rates for future periods. Where required by law, the company establishes premium rates prior to contract inception without regard to actual utilization of services incurred by individual members, using one of three approved community rating methods. These rates may vary from account to account to reflect projected family size and contract mix, benefit levels, renewal date, and other factors.

## **RETROSPECTIVE RATING**

A premium rate determined at the beginning of the policy period that takes into account any deficits incurred in the preceding policy period. After the policy period has ended, the actual experience is reviewed. If the experience is positive (i.e., actual claim costs and other expenses are less than those expected), then a refund may be credited to the policy. If the experience is negative, then the resulting deficit may, in certain instances, be recovered through contractual provisions; otherwise the deficit is considered in setting future premium levels. If a customer elects to terminate coverage, these deficits generally cannot be recovered. Retrospective rating is often used for employer-funded POS, PPO, and indemnity plans that cover more than 300 enrollees.

## **RISK BASIS**

Insurance plan where the selling company assumes all or a majority of the financial risk for healthcare costs.

## **RISK-BASED CAPITAL (RBC)**

A method of measuring the minimum amount of capital deemed appropriate for a managed care organization to support its overall business operations with consideration for its size and risk profile. This calculation, approved by the NAIC, incorporates asset risk, underwriting risk, credit risk, and business risk components. The company's health plans are required to submit an RBC report to the NAIC and their domiciled state's department of insurance with their annual filing.

## **SPECIALTY CARE PHYSICIAN**

A physician who is certified to practice in a specific field, not in general or family practice.

## **STAFF MODEL HMO**

Physicians and certain other providers who are employees of the medical HMO; physicians receive a salary (and

sometimes a bonus) based on the performance of the HMO.

#### TPA

Third-party administrator

#### TOTAL MEDICAL LOSS RATIO

Medical costs as a percentage of managed care premiums.

#### TRADITIONAL COMMUNITY RATING

A plan that establishes premium rates based on its revenue requirements for its entire enrollment in a given community.

## II. TOP HEALTHCARE ORGANIZATIONS

### A. SIZE RANKINGS OF TOP HEALTHCARE ORGANIZATIONS

(based on 2005 data)

#### HMOs

The largest health maintenance organizations by enrollment are:

- Kaiser Permanente
- UnitedHealth Group (merged with Pacificare Health Systems in July 2005)
- Aetna
- WellPoint Health Networks, which has recently purchased Anthem as well
- PacificCare Health Systems (merged with UnitedHealth Group in July 2005)
- CIGNA
- Health Care Service Corporation
- Humana
- Coventry Health Care
- Blue Cross Blue Shield

#### HOSPITALS

The size of hospitals can be measured in a variety of ways, such as patient revenues or number of beds. Since all lists at least included the number of beds, this information as well as other collated information was used to measure the largest hospitals:

- Rush Presbyterian/St. Luke's Medical Center (Chicago, IL)
- Advocate Christ Medical Center (Oak Lawn, IL)
- Northwestern Memorial Hospital (Chicago, IL)
- Medical Center of Vermont (Burlington, VT)
- University of Chicago Hospitals (Chicago, IL)
- Inova Fairfax Hospital (Fairfax, VA)
- University of Virginia Health Systems (Charlottesville, VA)
- Los Angeles County/USC Medical Centers (Los Angeles, CA)
- Cedars Sinai Medical Center (Los Angeles, CA)
- UCLA Medical Center (Los Angeles, CA)

### OVERALL STATISTICS ON THE LARGEST HMOs

Valid as of July 2005.

HMO	Employees	Customers	Revenue
Kaiser Permanente	128,000	8.2 million	\$28 billion
UnitedHealth Group	33,000	52 million	\$37.2 billion
Aetna	27,600	19.2 million	n/a
WellPoint Health Networks	38,000	28 million	\$37 billion
PacificCare Health Systems	7,700	2.9 million	n/a
CIGNA	32,700	11.5 million	\$18.8 billion
Healthcare Service Corp.	13,000	9.8 million	\$8.1 billion
Humana	13,700	6.7 million	\$12.2 billion
Coventry Healthcare	4,203	2.4 million	\$4.5 billion
Blue Cross Blue Shield	150,000	88 million	n/a

### B. OVERVIEW OF TOP HEALTHCARE ORGANIZATIONS

Valid as of July 2005.

#### KAISER PERMANENTE

Kaiser Permanente, headquartered in Oakland, California, serves nine states and Washington, D.C. Kaiser Permanente has three major segments: Kaiser Foundation Health Plan, Inc., Kaiser Foundation Hospitals, and the Permanente Medical Groups. In addition, it has an affiliation with Group Health Cooperative, which is based in Seattle, Washington.

The Kaiser Foundation Health Plans are nonprofit, public-benefit corporations that contract with individuals and groups to arrange comprehensive medical and hospital services. Not surprisingly, Kaiser Foundation Health Plans contract with Kaiser Foundation Hospitals and medical groups to provide services.

Kaiser Foundation Hospitals is a nonprofit, public-benefit corporation that owns and operates community hospitals in California, Oregon, and Hawaii. It owns outpatient facilities in several states; provides or arranges hospital service; and sponsors charitable, educational, and research activities.

The Permanente Medical Groups are partnerships or professional corporations of physicians. Each region has its own Permanente Medical Group. These groups assume full responsibility for providing and arranging necessary medical care in each region.

Kaiser Permanente has defined the following regions and related membership (in parentheses):

- California (6,218,714): East Bay, Fresno, Golden Gate, North East Bay, South Bay, Stanislaus County, Valley, Coachella Valley, Inland Empire, Kern County, metropolitan Los Angeles/West Los Angeles, Orange County, San Diego County, The Valleys, Tri-Central, western Ventura County
- Colorado (409,141): Denver, Boulder, Colorado Springs
- Georgia (269,585): Atlanta
- Hawaii (235,192): Oahu, Hawaii, Kauai, Maui
- Mid-Atlantic States (503,363): Washington, D.C., suburban Maryland, northern Virginia, Baltimore
- Ohio (145,767): Cleveland, Akron
- Oregon/Washington (435,174): Portland (includes Salem/Longview)

#### UNITEDHEALTH GROUP

UnitedHealth Group is a leader in the health and well-being industry, serving more than 48 million Americans. Revenues come from premiums on risk-based products; fees from management, administrative, and consulting services; and investment and other income. Its business segments are Uniprise, Healthcare Services (which includes UnitedHealthcare, Ovations, and AmeriChoice), Specialized Care Services, and Ingenix. Uniprise serves the employee benefit needs of large organizations by developing cost-effective healthcare access and benefit strategies and programs, technology, and service-driven solutions tailored to the specific needs of each corporate customer. Uniprise offers consumers access to a wide spectrum of health and well-being products and services. Uniprise's core business provides comprehensive, integrated health benefit services to multi-location employers with more than 5,000 employees.

The Healthcare Services segment consists of UnitedHealthcare (which merged with PacificCare Health Systems in July 2005), Ovations, and AmeriChoice businesses.

- **UNITEDHEALTHCARE**

UnitedHealthcare coordinates health and well-being services on behalf of local employers and consumers nationwide.

UnitedHealthcare's products are primarily marketed to small and mid-size employers with up to 5,000 employees. With its risk-based product offerings, UnitedHealthcare assumes the risk of both medical and administrative costs for its customers in return for a monthly premium, which is typically at a fixed rate for a one-year period.

UnitedHealthcare also provides administrative and other management services to customers that self-insure the medical costs of their employees and their

dependents, for which they receive a fee. These customers retain the risk of financing medical benefits for their employees, and UnitedHealthcare administers the payment of customer funds to physicians and other healthcare providers from customer-funded bank accounts.

UnitedHealthcare offers its products through affiliates that are usually licensed as insurance companies or as health maintenance organizations, depending upon a variety of factors, including state regulations.

UnitedHealth has built a reputation as a cost-conscious, efficiency-minded insurer. It has pressed doctors to shift to electronic billing, and has experimented with giving patients financial incentives to use cheaper doctors. Investors have rewarded the company. In the early 2000s, its shares climbed from a split-adjusted \$10 a share to more than \$50.

- **OVATIONS**

Ovations provides health and well-being services for Americans age 50 and older, addressing their unique needs for preventive and acute healthcare services, for services dealing with chronic disease, and for responding to specialized issues relating to their overall well-being. Ovations is one of the few enterprises fully dedicated to this market segment, providing products and services in all 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands through licensed affiliates.

In January 1998, Ovations initiated a 10-year contract with AARP, the nation's largest organization for older Americans, to offer a range of products and services to AARP members, and it has expanded the scope of services and programs offered over the past several years.

Ovations operates the nation's largest Medicare supplement business, providing Medicare supplement and hospital indemnity insurance to more than 3.6-million AARP members. Ovations' services also include AARP Eye Health Services, which offers affordable eye exams, complimentary glaucoma screenings, and discounts on eyewear to AARP members. They also have an expanded AARP Nurse Health Line Service to cover beneficiaries of all AARP Medicare products, providing 24-hour access to health information from nurses.

Ovations addresses one of the most significant cost problems facing older Americans—prescription drug costs. Ovations offers the nation's largest pharmacy discount program, with approximately 1.6 million users, a mail order discount drug program, and a complimentary health and well-being catalog. These

services offer cost savings and greater access to prescription drugs and health and well-being products for older Americans. They may lose some of their competitive edge when the government starts to provide drug benefits to senior citizens.

- **AMERICHoice**

AmeriChoice Corporation is a leading healthcare organization engaged in facilitating healthcare benefits and services for state Medicaid programs and their beneficiaries.

Specialized Care Services is a portfolio of specialized health and well-being companies, each serving a specific market need with a unique blend of benefits, provider networks, services and resources. Specialized Care Services provides comprehensive products and services that are focused on highly specialized healthcare needs, such as mental health and chemical dependency, employee assistance, organ transplants, vision and dental services, chiropractic services, health-related information, and other health and wellbeing services.

These offerings are sold directly to employers and consumers and indirectly through other UnitedHealth Group businesses, as well as through unrelated entities. Specialized Care Services' products and services include both risk-based products, in which Specialized Care Services assumes financial responsibility for healthcare costs, and products for which Specialized Care Services receives management and administrative fees.

Ingenix is a leader in the field of healthcare data and information, research, analysis and application. Ingenix serves multiple healthcare markets on a business-to-business basis, including pharmaceutical companies, health insurers and other payers, physicians and other healthcare providers, large employers, and government agencies.

Ingenix maintains two primary operating divisions: Ingenix Health Intelligence and Ingenix Pharmaceutical Services.

## **AETNA**

Aetna is one of the nation's largest health benefits companies. It has three business segments: Healthcare, Group Insurance, and Large Case Pensions. The Healthcare segment has health and dental benefit products that include health maintenance organizations, point-of-service products, preferred provider organization, and indemnity products.

The federal government is a significant customer of the Healthcare segment of Aetna. Their premiums and fees

accounted for approximately 10.6% of the Healthcare segment's revenue in 2003. Contracts for coverage of Medicare-eligible individuals accounted for 55.8% of these premiums and fees, and the rest was from federal employee-related benefit programs. No other individual customer in any of the organization's three segments accounted for 10% or more of Aetna's consolidated revenues in 2003.

Aetna has more than 600,100 healthcare providers participating in its networks nationwide. This includes more than 362,000 physicians and more than 3,600 hospitals. They had 27,600 domestic employees in 2003. Aetna has been losing customers in nearly all of its programs since 2001. Aetna's preferred provider organization (PPO) has grown from 4.1 million to 4.4 million. Its point of service (POS) membership has dropped from 3.0 million to 2.3 million. Indemnity membership has dropped from 1.9 million to 1.4 million. Dental membership has dropped from 13.5 million to 10.9 million.

## **WELLPOINT HEALTH NETWORKS**

WellPoint Health Networks Inc. is one of the nation's largest publicly traded managed healthcare companies. Through its subsidiaries WellPoint offers a broad spectrum of network-based managed care plans to the large and small employer, individual, Medicaid, and senior markets. Their products include preferred provider organizations, health maintenance organizations, point of service plans, other hybrid plans, and traditional indemnity plans.

In addition, WellPoint offers managed care services, including underwriting, actuarial services, network access, medical management, and claims processing. Finally, they provide pharmacy benefits management, dental, vision, life insurance, preventive care, disability insurance, behavioral health, COBRA, and flexible benefits account administration.

WellPoint's Blue Cross and Blue Shield companies' health benefits operations include Anthem Blue Cross and Blue Shield plans serving members in Colorado, Connecticut, Indiana, Kentucky, Maine, Nevada, New Hampshire, Ohio and Virginia; Blue Cross and Blue Shield plans serving members in Georgia, Missouri, and Wisconsin; and Blue Cross of California Specialty companies provide a full range of benefits and services to health plan customers, including pharmacy benefit management, group life and disability insurance benefits, dental, workers' compensation, and long-term care insurance.

Other subsidiaries provide a variety of products and services including administration of government health benefits programs.

## CIGNA

CIGNA Corporation constitutes one of the largest investor-owned employee benefits organizations in the United States. Its subsidiaries are major providers of employee benefits offered through the workplace, including healthcare products and services; group life, accident, and disability insurance; retirement products and services; and investment management.

Beginning in 2003, CIGNA modified its business segments in order to report its healthcare operations and its managed group disability and life insurance operations as two discrete segments. These segments were managed separately. The company segments are as follows:

Segment Name	Company Name
Healthcare	CIGNA HealthCare
Disability and Life	CIGNA Group Insurance
Retirement	CIGNA Retirement and Investment Services
International	CIGNA International

At year-end 2003, CIGNA was planning to sell its retirement business. This was to better position CIGNA for its new strategic focus on being a leading provider of healthcare and related benefits. This strategy builds on CIGNA's existing capabilities of medical, pharmacy, behavioral health, clinical information management, dental and vision benefits, case and disease management, and disability, life, and accident products.

## HEALTHCARE SERVICE CORPORATION (HCSC)

Health Care Service Corporation, through its divisions and subsidiaries, offers a wide variety of health and life insurance products and related services.

- **BLUE CROSS AND BLUE SHIELD**  
Blue Cross and Blue Shield of Illinois, Texas, and New Mexico are divisions of Health Care Service Corporation, a Mutual Legal Reserve Company, an Independent Licensee of the Blue Cross and Blue Shield Association.
- **PREFERRED FINANCIAL GROUP**  
Preferred Financial Group consists of HCSC's life insurance subsidiaries: Fort Dearborn Life Insurance Company in Illinois and Colorado Bankers Life Insurance Company in Colorado.
- **DENTAL NETWORK OF AMERICA, INC.**  
Dental Network of America, Inc. (DNoA) functions as a third-party administrator for all HCSC dental programs. DNoA also offers a dental discount card program.
- **THE HEALTH INFORMATION NETWORK, INC.**  
The Health Information Network, Inc. (THIN) is an electronic claims and information network available to all providers and their billing agents in the healthcare community. THIN acts as a central clearinghouse for

physicians, hospitals, and other providers to file patient claims and other transactions electronically with all payers, commercial, and government.

- **HALLMARK SERVICES CORPORATION**  
Hallmark Services Corporation provides the direct markets divisions of Blue Cross and Blue Shield of Illinois and Blue Cross and Blue Shield of Texas with administration and claim adjudication services for individual policies.

## HUMANA

Humana is one of the nation's largest publicly traded health benefits companies with 2003 revenues of \$12.2 billion. It offers coordinated health insurance coverage through a variety of traditional and Internet-based plans for employer groups, government-sponsored programs, and individuals.

Humana considers their business to have two segments: commercial and government. The commercial segment consists of members enrolled in products marketed to employer groups and individuals, and includes three lines of business: fully insured medical, administrative services only (ASO), and specialty.

The government segment consists of members enrolled in government-sponsored programs, and includes three lines of business: Medicare+Choice, Medicaid, and TRICARE.

Humana has approximately 463,300 contracts with physicians, hospitals, dentists, and other providers to provide healthcare to its members.

In 2003, approximately 70% of Humana's premiums and administrative services fees came from members located in Florida, Illinois, Texas, Kentucky, and Ohio. In 2003, contracts with the federal government accounted for approximately 42% of their premiums and administrative services fees. Under two federal government contracts with the Department of Defense, Humana provided health insurance coverage to the TRICARE members, accounting for approximately 20% of its total premiums and administrative services fees. Under a federal government contract with the Centers for Medicare and Medicaid Services, Humana provides health insurance coverage to approximately 229,100 Medicare+Choice members in Florida, accounting for approximately 15% of its total premiums and administrative services fees.

Humana uses approximately 294,400 physicians, 3,300 hospitals, and 165,600 ancillary providers and dentists. Humana indicated in its 10-K that it continues to encounter regulation on healthcare claims payment practices at the state level. This legislation and possible future regulation and oversight could expose Humana to additional liability and penalties. Supplemental legislation includes, among



other provisions, claims submission content and electronic submission. This type of legislation could affect how much print Humana needs. If a given state said that all claims had to be physically signed, the organization may not be allowed to use the Web and may need more printed forms.

### **COVENTRY HEALTHCARE**

Coventry Healthcare is a leading publicly traded managed healthcare company with 2.4 million members. It operates a diversified portfolio of local market health plans serving 14 markets, primarily in the Mid-Atlantic, Midwest, and Southeast United States.

These plans are operated under the names Altius Health Plans, Carelink Health Plans, Coventry Healthcare, Coventry Health and Life, Group Health Plan, HealthAmerica, HealthAssurance, HealthCare USA, PersonalCare, SouthCare, Southern Health, and WellPath. Coventry's health plans generally are located in small- to mid-sized metropolitan areas.

Coventry Healthcare offers employer groups a broad range of commercial managed care products that vary with respect to the level of benefits provided, the costs paid by employers and members, and members' access to providers without referral or preauthorization requirements. It offers HMO products, preferred provider organizations (PPOs), and point of service (POS) plans. It also has defined contribution health plans. It will provide Medicaid programs and Medicare+Choice programs in selected markets where the company believes it can make a profit and grow. Reimbursement levels for healthcare professionals, provider costs, and the regulatory climate of a state affects Coventry's ability to be profitable in this market.

Coventry Healthcare operates four regional service centers that perform claims processing, premium billing and collection, enrollment, and customer service functions. These regional service centers enable Coventry to take advantage of economies of scale, implement standardized management practices, and capitalize on the benefits of an integrated information technology system. It centralizes the underwriting and product pricing functions for their health plans, which allows the company to utilize its underwriting expertise and a disciplined pricing strategy throughout the organization. With this philosophy, one would project that Coventry consolidates its print needs as well to minimize costs.

These centralizations allow the company to standardize transactions, increasing its ability to handle customers' claims electronically. In 2004, over 60% of the claims were filed electronically, leading to nearly 75% of all claims being adjudicated automatically. Over the last few years, Coventry has continued to invest and expand its e-commerce capability. Coventry is committed to delivering fully functional, secure, e-commerce transactions, services, and content across their member, employer groups, and broker and provider channels.

In 2003, Coventry saw large increases in the use of its Web functions:

- 57% increase in the number of visitors to its public websites
- 281% increase in provider transactions
- 46% increase in password-protected member self-service transactions

Coventry Healthcare increased its number of customers by 17% between 2002 and 2003. Most of the growth occurred in Illinois, Missouri, and Nebraska. Coventry's number of Medicare customers dropped by over 20%. One could surmise Coventry consciously chose to lose these customers based on its statement that it operates Medicaid and Medicare+Choice programs in locales where it can be profitable and grow. No single customer or commercial group makes up 10% or more of Coventry's managed care premiums.

Coventry Healthcare's revenue increased by 27% between 2002 and 2003. This growth was due to rate increases on renewals, acquisitions, and other membership growth. Rate increases on commercial plans averaged 13.5%.

In order to respond to market demand for all sizes of organizations, Coventry's health plans have expanded the number of lower-cost product options made available to employee group purchasers. These products also serve as the foundation for a consumer-driven strategy, Coventry FlexChoice. Coventry believes interest in this product type will continue to grow as increasing premiums encourage employers to seek out more cost-effective alternatives. The company intends to expand Coventry FlexChoice to take advantage of the new Internal Revenue Service guidelines recently promulgated concerning Health Savings Accounts.

### **BLUE CROSS BLUE SHIELD**

The 41 Blue Cross and Blue Shield Plans, the national and international interests of which are coordinated by Blue Cross and Blue Shield Association (BCBSA), are independent, locally operated companies. Together, the 41 independent Blue Plans and BCBSA comprise the Blue Cross and Blue Shield System, the nation's oldest and largest family of health benefits companies.

Blue Cross Plans were founded to cover hospital expenses, and Blue Shield Plans covered the costs of physician services. Today, the brands represent the full spectrum of healthcare coverage. Blue Cross and Blue Shield Plans collectively provide healthcare coverage for more than 88 million Americans:

- 43.3 million members in PPOs
- 19.7 million members in traditional, fee-for-service
- 16.6 million members in HMOs
- 6.8 million members in point-of-service (POS) products

Blue Cross and Blue Shield Plans also work with the federal government to process Medicare claims and payments. They do more Medicare work than any other company.

Blue Cross and Blue Shield also has the Federal Employee Program (FEP), the largest privately underwritten health insurance contract in the world. More than 4.1 million federal government employees, dependents, and retirees are enrolled in it.

Nationwide, more than 80% of hospitals and nearly 90% of physicians contract with Blue Cross and Blue Shield plans.

### C. ORGANIZATIONAL STRUCTURE FOR TOP HEALTHCARE ORGANIZATIONS

The Information provided in this section is current as of June 2005 and was compiled from annual reports and SEC Form 10-Ks.

#### KAISER PERMANENTE

- George C. Halvorsen  
*Chairman and Chief Executive Officer*
- Francis J. Crosson, M.D.  
*Executive Director, The Permanente Federation*
- Raymond J. Baxter, Ph.D.  
*Senior Vice President, Community Benefit*
- Robert E. Briggs  
*Senior Vice President and Chief Financial Officer*
- Robert M. Crane  
*Senior Vice President, Research and Policy Development*
- J. Clifford Dodd  
*Senior Vice President, CIO/Chief Administrative Officer*
- Louise L. Liang, M.D.  
*Senior Vice President, Quality and Clinical Systems Support*
- Leslie A. Margolin  
*Senior Vice President, Health Plan and Hospital Operations*
- Laurence G. O'Neil  
*Senior Vice President, Human Resources*
- Arthur M. Southam, M.D.  
*Senior Vice President, Product and Market Management*
- Bernard J. Tyson  
*Senior Vice President, Communications and External Relations*

- Steven Zarkin  
*Senior Vice President, Government Relations and Permanente Partnership Support*

#### UNITED HEALTHCARE GROUP

- William W. McGuire, M.D.  
*Chairman and Chief Executive Officer and Director*
- Stephen J. Hemsley  
*President, COO, and Director*
- Jeannine M. Rivet  
*Executive Vice President*
- Reed V. Tuckson, M.D.  
*Senior Vice President, Consumer Health and Medical Care Advancement*
- Patrick J. Erlandson  
*CFO*
- David J. Lubben  
*General Counsel and Secretary*
- L. Robert Dapper  
*Senior Vice President Human Capital*
- Lois E. Quan  
*CEO, Ovations*
- Robert J. Sheehy  
*CEO, UnitedHealthcare*
- Tracy Bahl  
*CEO, Uniprise*
- Richard H. Anderson  
*CEO, Ingenix*
- Anthony Welters  
*CEO, AmeriChoice*
- William A. Munsell  
*CEO, Specialized Care Services*

#### PACIFICARE HEALTH SYSTEMS

- Howard G. Phanstiel  
*Chairman of the Board and CEO*
- Gregory W. Scott  
*Executive Vice President and CFO*
- Peter A. Reynolds  
*Senior Vice President and Corporate Controller*

- David A. Reed  
*Lead Independent Director*

- Aida Alvarez  
*Director*

- Brady C. Call  
*Director*

- Shirley S. Chater  
*Director*

- Terry O. Hornshart  
*Director*

- Gary L. Leary  
*Director*

- Dominic Ng  
*Director*

- Warren E. Pinckert II  
*Director*

- Charles R. Rinehart  
*Director*

- Linda Rosenstock  
*Director*

- Lloyd E. Ross  
*Director*

#### **AETNA**

- John W. Rowe, M.D.  
*Chairman and Chief Executive Officer*

- Ronald A. Williams  
*President*

- Alan M. Bennett  
*Senior Vice President and Chief Financial Officer*

- Louis J. Briskman  
*Senior Vice President and General Counsel*

- Craig R. Callen  
*Senior Vice President, Strategic Planning and Business Development*

- Timothy A. Holt  
*Senior Vice President and Chief Investment Officer*

- William C. Popik, M.D.  
*Senior Vice President and Chief Medical Officer*

- Dong H. Ahn  
*Senior Vice President, Group Insurance*

- Andrew Allocco  
*Senior Vice President, Network and Provider Services*

- John J. Bermel  
*VP and CFO, Health Business Operations*

- Mark T. Bertolini  
*Senior Vice President, Specialty Products*

- Roger Bolton  
*Senior Vice President, Communications*

- C. Timothy Brown  
*Senior Vice President, Middle Market Accounts*

#### **WELLPOINT HEALTH NETWORKS**

- Leonard D. Schaeffer  
*Chairman of the Board*

- Larry C. Glasscock  
*President and CEO*

- Dennis Mark Weinberg  
*Executive Vice President and Chief Development Officer*

- Joan E. Herman  
*Executive Vice President, Specialty Division*

- David S. Helwig  
*Executive Vice President, Blue Cross of California Businesses*

- Rebecca Kapustay  
*Executive Vice President, Blue Cross Blue Shield of Wisconsin*

- John A. O'Rourke  
*Executive Vice President, Central Business Region*

- David C. Colby  
*Executive Vice President, DFO*

- Thomas C. Geiser  
*Executive Vice President, General Counsel and Secretary*

- Woodrow A. Myers, Jr., M.D.  
*Executive Vice President, Chief Medical Officer*

- Alice F. Rosenblatt  
*Executive Vice President, Actuarial and Integration Planning and Implementation*

- Ronald J. Ponder, Ph.D.  
*Executive Vice President and CIO*

- John S. Watts, Jr.  
*Executive Vice President, Blue Cross Blue Shield of Georgia*
- Gene Householter  
*Executive Vice President, Central Services*

## **CIGNA**

- H. Edward Hanway  
*Chairman, Chief Executive Officer*
- Michael W. Bell  
*Chief Financial Officer*
- Annmarie T. Hagan  
*Vice President and Chief Accounting Officer*
- Jane E. Henney, M.D.  
*Director*
- Robert H. Campbell  
*Director*
- Peter N. Larson  
*Director*
- Joseph Neubauer  
*Director*
- Charles R. Shoemate  
*Director*
- Louis W. Sullivan, M.D.  
*Director*
- Harold A. Wagner  
*Director*
- Marilyn Ware  
*Director*

## **HUMANA**

- David A. Jones  
*Chairman of the Board*
- David A. Jones, Jr.  
*Vice Chairman of the Board*
- James H. Bloehm  
*Senior Vice President and CFO*
- Frank A. D'Amelio  
*Director*
- Michael E. Gellert  
*Director*

- John R. Hall  
*Director*
- Kurt J. Hilzinger  
*Director*
- Irwin Lerner  
*Director*
- Michael B. McCallister  
*Director, President, CEO*
- W. Ann Reynolds, Ph.D.  
*Director*

## **HEALTHCARE SERVICE PROVIDERS**

- Milton Carroll  
*Chairman of the Board*
- Raymond F. McCaskey  
*President and CEO*
- Gail K. Boudreaux  
*President, Illinois Division*
- Patricia A. Hemingway Hall  
*President, Texas Division*
- Elizabeth A. Watrin  
*President, New Mexico Division*
- Sherman M. Wolff  
*Executive Vice President and COO*
- Tara Dowd Gurber  
*Senior Vice President of Audit, Compliance, and Security*
- Hugo Tagli, Jr.  
*Senior Vice President and Chief Legal Officer*
- Patrick E. Moroney  
*Senior Vice President and CIO*
- Ray A. Angeli  
*Senior Vice President, Subsidiary Services*
- Larry J. Newsom  
*Senior Vice President and CEO, Life & Operations*
- Denise A. Bujak  
*Senior Vice President and CFO*
- Patrick F. O'Connor  
*Senior Vice President and Chief Human Resource Officer*

- Karen Chesrown  
*Senior Vice President of Strategy, Enterprise Process Management*

#### **COVENTRY HEALTHCARE**

- Allen F. Wise  
*President, CEO, and Director*
- Thomas P. McDonough  
*Executive Vice President and COO*
- Dale B. Wolf  
*Executive Vice President, CFO, and Treasurer*
- Nancy G. Cocozza  
*Senior Vice President*
- Thomas A. Davis  
*Senior Vice President*
- Harvey D. DeMoyick, Jr.  
*Senior Vice President, Customer Service Operations and CIO*
- Richard J. Gilfillan, M.D.  
*Senior Vice President*
- Shawn M. Guertin  
*Senior Vice President*
- J. Stewart Lavelle  
*Senior Vice President, Sales and Marketing*
- Bernard J. Mansheim, M.D.  
*Senior Vice President and Chief Medical Officer*
- James E. McGarry  
*Senior Vice President*
- Timothy E. Nolan  
*Senior Vice President*
- John J. Ruhlmann  
*Vice President and Corporate Controller*
- Francis S. Soistman, Jr.  
*Senior Vice President*
- Janet M. Stallmeyer  
*Senior Vice President*
- Charles R. Stark  
*Senior Vice President*

#### **D. ADDRESSES OF TOP HEALTHCARE ORGANIZATIONS**

##### **KAISER PERMANENTE**

- Colorado Springs  
1975 Research Parkway  
Suite 250, Woodmen Corporate Center  
Colorado Springs, CO 80920  
719-867-2100
- Colorado—Boulder/Denver  
Steve Krizman  
303-344-7932

##### **UNITED HEALTHCARE GROUP**

- 9900 Bren Road East  
Minneapolis, MN 55343  
952-936 1300

##### **UNITEDHEALTH GROUP**

- P.O. Box 1459  
Minneapolis, MN 55440-1459  
800-328-5979

##### **AETNA**

- 151 Farmington Avenue  
Hartford, CT 06156  
860-273-0123

##### **WELLPOINT NETWORKS AND ANTHEM (PURCHASED BY WELLPOINT)**

- WellPoint Way  
Thousand Oaks, CA 91362  
818-703-4000
- Anthem Headquarters  
120 Monument Circle  
Indianapolis, IN 46204  
317-488-6000
- 220 Virginia Avenue  
Indianapolis, IN 46204
- 9901 Linn Station Road  
Louisville, KY 40223-3803  
502-423-2011
- 4361 Irwin Simpson Road  
Mason, OH 45040  
800-442-1832
- 8333 Rockside Road, Suite 2000  
Cleveland, OH 44125  
800-442-1832
- 6740 North High Street

Worthington, OH 43085-7500  
614-438-3500

- West Headquarters  
700 Broadway  
Denver, CO 80273  
303-831-2131
- 6900 West Cliff Drive  
Las Vegas, NV 89145  
702-228-2583
- 5250 S. Virginia Street  
Reno, NV 89502  
775-448-4000
- Operations Center and East Headquarters  
370 Bassett Road  
North Haven, CT 06473  
203-239-4911
- Sales Office  
Merrittview Plaza, 8th Floor  
383 Main Street  
Norwalk, CT 06851  
203-840-6800
- Operations Center  
2 Gannett Drive  
South Portland, ME 04106-6911  
207-822-7000
- Augusta Office  
168 Capital Street  
Augusta, ME 04330
- Bangor Office  
One Merchants Plaza  
Bangor, ME 04401
- Presque Isle Office  
55 North Street  
Presque Isle, ME 04769
- Operations Center  
3000 Goffs Falls Road  
Manchester, NH 03111-0001  
603-695-7000
- Virginia and Southeast Headquarters  
2015 Staples Mill Road  
Richmond, VA 23230
- P.O. Box 27401  
Richmond, VA 23279
- 2220/2221 Edward Holland Drive  
Richmond, VA 23230
- 602 South Jefferson Street  
Roanoke, VA 24011  
540-853-5000

- 621 Lynnhaven Parkway  
Virginia Beach, VA 23452  
800-640-0007

#### **PACIFICARE HEALTH SYSTEMS**

- 5995 Plaza Drive  
Cypress, CA 90630  
714-952-1121
- 3120 Lake Center Drive  
Santa Ana, CA 92704  
714-825-5200

#### **CIGNA**

- One Liberty Place  
1650 Market Street  
Philadelphia, PA 19192  
215-761-1000

#### **HEALTH CARE SERVICE CORPORATION**

- Corporate Headquarters  
300 East Randolph Street  
Chicago, IL 60601  
312-653-6000
- 57 offices in Illinois, Texas, New Mexico, Ohio, and Colorado

#### **HUMANA**

- 500 W Main Street  
Louisville, KY 40202  
502-580-1000
- Humana also has offices in Green Bay, WI, Cincinnati, OH, and Puerto Rico, which are used for customer service, enrollment, and claims processing.

#### **COVENTRY HEALTH CARE**

- 6705 Rockledge Drive, Suite 900  
Bethesda, MD 20817  
301-581-0600

#### **BLUE CROSS/BLUE SHIELD**

- Below are a sampling of the offices for the 41 Blue Cross/Blue Shield companies. To find a particular address, go to: <http://bcbs.com/listing/index.html>

#### **BLUE CROSS BLUE SHIELD OF ALABAMA**

- 450 Riverchase Parkway East  
Birmingham, AL 35244

## ALASKA PREMIERA BLUE CROSS BLUE SHIELD

- **Premiera Blue Cross Blue Shield of Alaska**  
2550 Denali Street, Suite 1404  
Anchorage, AK 99503  
907-258-5065
- **Eastern Washington**  
Premiera Blue Cross  
3900 East Sprague  
Spokane, WA 99202  
509-536-4700
- **Western Washington**  
Premiera Blue Cross  
7001 220th SW  
Mountlake Terrace, WA 98043  
425-918-4000
- **Blue Cross/Blue Shield of Arizona**  
2444 W Las Palmaritas Drive  
Phoenix, AZ 85021
- **Mailing Address:**  
Blue Cross Blue Shield of Arizona  
P.O. Box 13466  
Phoenix, AZ 85002-3466
- **Blue Cross Blue Shield of Arkansas**  
**Northwest Region—Fayetteville**  
Mel Blackwood, Regional Executive  
516 E. Millsap Road, Suite 103  
Fayetteville, AR 72703  
Phone: 479-527-2310 or 888-847-1900  
Fax: 479-527-2323
- **West Central Region—Fort Smith**  
Steve Abell, Regional Executive  
3501 Old Greenwood Road, Suite 5  
Fort Smith, AR 72903  
Phone: 479-648-1635  
Fax: 479-648-6322  
Customer Service: 800-299-4060
- **Leann Rogers, Regional Executive**  
100 Greenwood Avenue, Suite C  
Hot Springs, AR 71913  
Phone: 501-620-2620 or 800-588-5733  
Fax: 501-620-2650  
Customer Service: 800-588-5733
- **Southwest Region—Texarkana**  
Jason Mann, Regional Executive  
P.O. Box 2018  
Texarkana, AR-TX 75504-2018  
Phone: 870-773-2584 or 800-470-9621  
Fax: 870-779-9138  
Customer Service (Arkansas): 866-254-3969  
Customer Service (Texas, Oklahoma, Louisiana):  
800-519-2583

- **Southeast Region—Pine Bluff**  
Karen Raley, Regional Executive  
1800 W. 73rd Street  
Pine Bluff, AR 71603  
Phone: 870-536-1223  
Fax: 870-543-2915  
Customer Service: 800-236-0369  
Sales: 800-330-3072  
Email: PBCS@arkbluecross.com
- **Central Region—Little Rock**  
Jim Bailey, Regional Executive  
320 W. Capitol, Suite 900  
Little Rock, AR 72201  
Central Region Group Marketing Sales Inquiries: 501-379-4600 or  
800-605-8301  
Fax: 501-379-4659
- **Arkansas Blue Cross and Blue Shield**  
Customer Service: 800-421-1112  
**Northeast Region—Jonesboro**  
Bill Brown, Regional Executive  
707 E. Matthews Avenue  
Jonesboro, AR 72401  
Phone: 870-935-4871 or 800-299-4124

## E. WEB ADDRESSES FOR TOP HEALTH CARE ORGANIZATIONS

### HMO WEBSITES

- **Aetna public information site:**  
[www.aetna.com/aboutaetna/aboutaetna.htm](http://www.aetna.com/aboutaetna/aboutaetna.htm)
- **Anthem public information site:**  
[www.anthem.com/jsp/antiphona/home.jsp](http://www.anthem.com/jsp/antiphona/home.jsp)
- **Blue Cross Blue Shield public information site:**  
[www.bluecares.com/](http://www.bluecares.com/)
- **CIGNA public information site:**  
[www.cigna.com/](http://www.cigna.com/)
- **Coventry Health Care public information site:**  
[www.cvty.com/](http://www.cvty.com/)
- **Health Care Service Corporation:**  
[www.hcsc.net/](http://www.hcsc.net/)
- **Humana public information site:**  
[www.humana.com/](http://www.humana.com/)
- **Kaiser Permanente public information site:**  
[www.kaiserpermanente.org/](http://www.kaiserpermanente.org/)
- **United HealthCare Group public information site:**  
[www.unitedhealthgroup.com/](http://www.unitedhealthgroup.com/)
- **WellPoint Health Networks public information site:**  
[www.wellpoint.com/](http://www.wellpoint.com/)

- Joint Commission on the Accreditation of Healthcare Organizations:  
[www.jcaho.org/index.htm](http://www.jcaho.org/index.htm)
- [www.aha.org](http://www.aha.org)
- American Medical Association:  
[www.ama-assn.org](http://www.ama-assn.org)

### HOSPITAL WEBSITES

- Advocate Christ Medical Center:  
[www.advocatehealth.com/cmc/](http://www.advocatehealth.com/cmc/)
- Chicago's largest hospitals:  
[www.chicagobusiness.com/cgi-bin/article.pl?page\\_id=1399](http://www.chicagobusiness.com/cgi-bin/article.pl?page_id=1399)
- Evanston Northwestern Hospital:  
[www.enh.org/](http://www.enh.org/)
- Houston's largest hospitals:  
[www.chron.com/content/chronicle/business/chron100/00/00hospitals.html](http://www.chron.com/content/chronicle/business/chron100/00/00hospitals.html)
- Inova Fairfax Hospitals:  
[www.inova.org/inovapublic.srt/iffh/index.jsp](http://www.inova.org/inovapublic.srt/iffh/index.jsp)
- Northwestern Memorial Hospital:  
[www.nmh.org/nmh/home.htm](http://www.nmh.org/nmh/home.htm)
- San Jose's largest hospitals:  
<http://sanjose.bizjournals.com/sanjose/stories/2002/08/12/list.html>
- Vermont's hospitals:  
[www.vtliving.com/hospitals/burl.shtml](http://www.vtliving.com/hospitals/burl.shtml)
- Virginia's hospitals:  
[www.virginiabusiness.com/magazine/yr2003/feb03/leaders\\_2003/hospitals.shtml](http://www.virginiabusiness.com/magazine/yr2003/feb03/leaders_2003/hospitals.shtml)
- Carolina's hospitals:  
[www.carolinas.org/facilities/hospitals/](http://www.carolinas.org/facilities/hospitals/)
- Rhode Island/New England:  
[www.brown.edu/Departments/Center\\_for\\_Biomedical\\_Ethics/hospitals.html](http://www.brown.edu/Departments/Center_for_Biomedical_Ethics/hospitals.html)

## III. MORE HEALTH CARE ORGANIZATIONS

### MAJOR HEALTH CARE PROVIDERS

- Blue Care Network of Michigan
- Blue Choice (Rochester, N.Y., area)
- Capital District Physicians' Health Plan (NY)
- Empire Blue Cross Blue Shield (Eastern NY)
- Group Health Cooperative (ID, WA)
- HAP (Health Alliance Plan of Michigan)
- Harvard Pilgrim Health Care (Northeast)
- Health Net of the Northeast (CT, NJ, NY)
- HealthPartners (MN, WI)

- HMO Blue (MA, NH)
- Independent Health (Western NY)
- John Deere Health Plan (IA, IL, TN, VA)
- Kaiser Permanente, Colorado
- Kaiser Permanente, Mid-Atlantic (DC, MD, VA)
- Kaiser Permanente, Northern California
- Kaiser Permanente, Northwest (OR, WA)
- Kaiser Permanente, Southern California
- Keystone Health Plan East (DE, MD, NJ, PA)
- Keystone Health Plan West (PA)
- Medica Health Plans (MN, ND, WI)
- MVP Health Plan (NY, VT)
- Oxford Health Plans (NY)
- Regence HMO of Oregon (OR, WA)
- Tufts Health Plan (CT, MA, NH, RI, VT)
- United Health Care of the Midwest (IL, KS, MO)

### MAJOR BLUE CROSS AFFILIATES

- Anthem Blue Cross Blue Shield (OH)
- Anthem Blue Cross Blue Shield (VA)
- Blue Cross Blue Shield (AL)
- Blue Cross Blue Shield (AZ)
- Blue Cross Blue Shield (FL)
- Blue Cross Blue Shield (IL)
- Blue Cross Blue Shield (MA)
- Blue Cross Blue Shield (MI)
- Blue Cross Blue Shield (MN)
- Blue Cross Blue Shield (NE)
- Blue Cross Blue Shield (TN)
- Blue Cross Blue Shield (TX)
- Blue Cross Blue Shield Kansas City
- Blue Cross Blue Shield of Missouri
- Blue Shield of California
- Capital Blue Cross (Central PA)
- CareFirst Blue Cross Blue Shield (MD)
- Empire Blue Cross Blue Shield (NY)
- Highmark Blue Cross Blue Shield (Western PA)
- Independence Blue Cross Philadelphia
- Regence Blue Cross Blue Shield (OR)
- Wellmark Blue Cross Blue Shield (IA)

### HEALTH CARE PROVIDER COMPANIES

- Ardent Health Services (27 psychiatric hospitals)
- Beverly Enterprises (largest post-acute health provider)
- Cancer Treatment Centers of America
- Community Health Systems (32 hospitals)
- Genesis Health Ventures (200 nursing centers)
- Health Management Associates (about 60 hospitals)
- HCA, Hospital Corporation of America (hospitals)
- HCR Manor Care (over 350 nursing centers)
- Kindred Healthcare (100 hospitals or so)
- Life Point Hospitals (20+ rural hospitals)
- Magellan Healthcare Corp. (psychiatric hospitals)
- Province Healthcare (20 rural hospitals)
- Quorum Health Resources (psychiatric hospitals)
- Select Medical Corporation (79 acute care hospitals)



- Sun Healthcare Group (100 nursing centers)
- SunLink Health Systems (8 rural hospitals)
- Tenet Healthcare Corporation (2nd largest hospital company)
- Triad Hospitals, Inc. (54 hospitals)
- Universal Health Services
- Vanguard Health Systems (16 acute care centers)
- Warm Springs Rehabilitation System (rehabilitation hospitals in Texas)

#### MANAGED CARE & INSURANCE COMPANIES

- Aetna
- Blue Cross and Blue Shield Association
- Blue Cross Blue Shield of NJ
- Blue Shield of California
- CIGNA
- Community Health Group
- Group Health Cooperative of Puget Sound
- HealthLink, Inc.
- Health Net
- HealthPartners
- Health Insurance Plan of New York
- Humana, Inc.
- IHC Health Plans, Inc.
- Kaiser Permanente
- MVP Health Plan
- PacifiCare Health Systems
- PreferredOne
- Private Healthcare Systems
- Rockford Health Plans

### IV. U.S. SEC EDGAR WEBSITES FOR HEALTH CARE COMPANIES (SECURITIES AND EXCHANGE COMMISSION ELECTRONIC DATA GATHERING AND RETRIEVAL WEBSITES)

#### AETNA

- [www.sec.gov/Archives/edgar/data/1013761/0000950123-00-001777-index.html](http://www.sec.gov/Archives/edgar/data/1013761/0000950123-00-001777-index.html)
- [www.sec.gov/Archives/edgar/data/1013761/0000950123-00-001321-index.html](http://www.sec.gov/Archives/edgar/data/1013761/0000950123-00-001321-index.html)
- [www.sec.gov/Archives/edgar/data/1013761/0000950123-99-001684.txt](http://www.sec.gov/Archives/edgar/data/1013761/0000950123-99-001684.txt)

#### CIGNA

- [www.sec.gov/Archives/edgar/ta/701221/000095015904000243/0000950159-04-000243-index.htm](http://www.sec.gov/Archives/edgar/ta/701221/000095015904000243/0000950159-04-000243-index.htm)
- [www.sec.gov/Archives/edgar/ta/701221/000095015903000165/0000950159-03-000165-index.htm](http://www.sec.gov/Archives/edgar/ta/701221/000095015903000165/0000950159-03-000165-index.htm)

#### COVENTRY

- [www.sec.gov/Archives/edgar/data/1054833/000105483304000032/0001054833-04-000032-index.htm](http://www.sec.gov/Archives/edgar/data/1054833/000105483304000032/0001054833-04-000032-index.htm)
- [www.sec.gov/Archives/edgar/data/1054833/000105483303000109/0001054833-03-000109-index.htm](http://www.sec.gov/Archives/edgar/data/1054833/000105483303000109/0001054833-03-000109-index.htm)
- [www.sec.gov/Archives/edgar/data/1054833/000105483303000061/form10k\\_12312002.htm](http://www.sec.gov/Archives/edgar/data/1054833/000105483303000061/form10k_12312002.htm)
- [www.sec.gov/Archives/edgar/data/1054833/000105483302000030/form10k\\_12312001.htm](http://www.sec.gov/Archives/edgar/data/1054833/000105483302000030/form10k_12312001.htm)

#### ANA

- [www.sec.gov/Archives/edgar/data/49071/000119312504035443/0001193125-04-035443-index.htm](http://www.sec.gov/Archives/edgar/data/49071/000119312504035443/0001193125-04-035443-index.htm)
- [www.sec.gov/Archives/edgar/ata/49071/000004907103000026/0000049071-03-000026-index.htm](http://www.sec.gov/Archives/edgar/ata/49071/000004907103000026/0000049071-03-000026-index.htm)
- [www.sec.gov/Archives/edgar/ata/49071/000093066103001145/0000930661-03-001145-index.htm](http://www.sec.gov/Archives/edgar/ata/49071/000093066103001145/0000930661-03-001145-index.htm)

#### PACIFICARE

- [www.sec.gov/Archives/edgar/data/766456/0000912057-97-001239.txt](http://www.sec.gov/Archives/edgar/data/766456/0000912057-97-001239.txt)

#### PACIFICARE HEALTH SYSTEMS

- [www.sec.gov/Archives/edgar/data/1027974/000089256904000306/0000892569-04-000306-index.htm](http://www.sec.gov/Archives/edgar/data/1027974/000089256904000306/0000892569-04-000306-index.htm)
- [www.sec.gov/Archives/edgar/data/1027974/000089256903000740/0000892569-03-000740-index.htm](http://www.sec.gov/Archives/edgar/data/1027974/000089256903000740/0000892569-03-000740-index.htm)

#### UNITED HEALTH CARE

- [www.sec.gov/Archives/edgar/data/731766/000095013404003522/0000950134-04-003522-index.htm](http://www.sec.gov/Archives/edgar/data/731766/000095013404003522/0000950134-04-003522-index.htm)
- [www.sec.gov/Archives/edgar/data/731766/000095013403004178/0000950134-03-004178-index.htm](http://www.sec.gov/Archives/edgar/data/731766/000095013403004178/0000950134-03-004178-index.htm)
- [www.sec.gov/Archives/edgar/data/731766/000095013702001930/0000950137-02-001930-index.htm](http://www.sec.gov/Archives/edgar/data/731766/000095013702001930/0000950137-02-001930-index.htm)

---

## WELLPOINT HEALTH NETWORKS

- [www.sec.gov/Archives/edgar/data/1013220/000110465904011721/0001104659-04-011721-index.htm](http://www.sec.gov/Archives/edgar/data/1013220/000110465904011721/0001104659-04-011721-index.htm)
- [www.sec.gov/Archives/edgar/data/1013220/000104746904007997/0001047469-04-007997-index.htm](http://www.sec.gov/Archives/edgar/data/1013220/000104746904007997/0001047469-04-007997-index.htm)

## ANTHEM

- [www.sec.gov/Archives/edgar/data/1156039/000119312504030877/0001193125-04-030877-index.htm](http://www.sec.gov/Archives/edgar/data/1156039/000119312504030877/0001193125-04-030877-index.htm)
- [www.sec.gov/Archives/edgar/data/1156039/000095013103001203/0000950131-03-001203-index.htm](http://www.sec.gov/Archives/edgar/data/1156039/000095013103001203/0000950131-03-001203-index.htm)

## V. HEALTH CARE TRADE ASSOCIATIONS/ PUBLICATIONS

### TRADE AND INDUSTRY ASSOCIATIONS

- American College of Healthcare Executives
- American Hospital Association
- American Medical Association
- American Pharmaceutical Association
- Consumer Healthcare Products Association
- Drug Information Association
- Health Industry Manufacturers Association
- Joint Commission on Accreditation of Healthcare Organizations
- National Association for Healthcare Quality
- National Managed Healthcare Congress

### TRADE AND INDUSTRY PUBLICATIONS

- American Hospital Directory
- FDA Consumer
- FDA Enforcement Report
- Health Care Journal
- Hospitals & Health Networks
- Journal for Healthcare Quality
- Managed Care
- Health Care Financing Administration

### INDUSTRY NEWS

- CPSNET Newsnet Healthcare News
- YAHOO! Healthcare/Hospital News

# THE PHARMACEUTICAL INDUSTRY AND THE HP INDIGO PRESS



---

# PHARMACEUTICAL MARKET OVERVIEW

---

## I. PHARMACEUTICAL MARKET STRUCTURE

---

In 2005, a Fortune 500 survey identified the pharmaceutical industry as the third most profitable U.S. industry, with a return on revenue of 14.3%. (<http://www.capv.com/eprise/main/Store/pdf/Pharmaceutical.pdf>). At that time, prescription drugs were expected to remain the fastest-growing portion of healthcare expenditures—projected to triple from \$140 billion to \$450 billion between 2001 and 2012. These projections seem to be right on track.

**IN AN INDUSTRY GROWING THIS FAST, YOU CAN BE SURE THE OPPORTUNITIES FOR DIGITAL PRINTING ARE GROWING AS WELL.**

### THE BIG PICTURE.

As with any market, it's important to understand the industry's essential structure—as well as its strengths and challenges—before approaching a pharmaceutical print buyer for digital printing business. Here are some basics:

The pharmaceutical industry is made up of companies that develop, produce, process, manufacture and/or market any of the following:

- biological and medicinal products
- botanical drugs and herbs
- pharmaceutical products, including ampoules, tablets, capsules, vials, ointments, powders, solutions and suspensions

Sometimes part or all of this industry is referred to by other names, including:

- pharmaceutical and medicine manufacturing industry
- cosmetics industry
- drug companies
- health services
- life sciences

According to the U.S. NAICS (North American Industry Classification System), this industry is primarily divided into two main sections:

- *Specialty-line pharmaceuticals, cosmetics and toiletries*, which comprise about two-thirds of the industry's total.
- *General-line drugs*, which are produced by wholesalers and are distinguished from specialty-line sellers on the basis of their commodity line mix. (<http://www.referenceforbusiness.com/industries/>)

### Wholesale-Trade/Drugs-Drug-Proprietaries-Druggists-Sundries.html)

Within these two main categories, companies are further divided into:

- Manufacturers of prescription and over-the-counter (OTC) drugs
- Manufacturers of medical supplies that are non-drug related
- Laboratories and R&D facilities

This paper is largely focused on the general-line drug, including prescription and OTC drug companies, as well as other medical supplies.

## II. THE STATE OF THE PHARMACEUTICAL INDUSTRY AND EMERGING TRENDS

---

The pharmaceutical industry is currently in a state of transition that is affecting how its companies act and interact. These changes will continue to progress along with the demands of the U.S. healthcare market.

Currently the pharmaceutical field is experiencing:

### EXPLODING SALES.

With the aging of baby boomers, prescription drug expenditures are on the rise. In fact, it is the fastest growing portion of healthcare spending in the United States. The competition for physicians among pharmaceutical companies is fierce.

### ◆ HP INDIGO BOTTOM LINE:

*This fast-growing, highly competitive market, and HP Indigo presses are uniquely suited to support this industry with excellent print quality, cost-effective solutions and support for the widest range of media in digital printing today.*

### DOMINANCE OF "BIG PHARMA".

There has been an increase in mergers and acquisitions leading to primarily large corporations that cover a wide range of manufacturing, developing and testing of drugs and medical products. Many smaller companies that focus on niche research areas such as biotech drug development are being acquired to further develop their drug lines and profits, however there is certainly still a large quantity of smaller pharmaceutical companies

---

◆ **HP INDIGO BOTTOM LINE:**

*The size of most potential pharmaceutical customers is massive, as are their print needs. Because there is a centralized number of large companies, there may seem to be fewer opportunities to pursue, but within any given company there will likely be many possible points of entry. Also, the smaller companies will continue to be a key opportunity, with possible fewer barriers to entry.*

**INCREASING DRUG PRICES.**

Drug companies have been increasing prices on their most popular prescription drugs to offset the low rate in new drug launches. The increased prices are causing many HMOs to cancel or reduce coverage for drugs that have become costly, placing the financial burden onto consumers.

◆ **HP INDIGO BOTTOM LINE:**

*Pharmaceutical companies are under pressure to cut costs wherever possible. The HP Indigo press can provide cost savings in both short and mid-length print runs, vs. longer-run jobs.*

**INCREASING DEMAND FOR GENERIC DRUGS.**

Because of the steep increase in the prices of brand name drugs by pharmaceutical companies, there is an increased demand for generic drugs that perform just as well as the brand names but at a fraction of the cost. As a result, there will be an increased focus on patent protection for drugs.

◆ **HP INDIGO BOTTOM LINE:**

*Pharmaceutical companies will expect confidentiality and may require a non-compete agreement.*

Direct-to-consumer (DTC) advertising has emerged as an alternative to advertising to physicians, primarily because of the increased difficulty in reaching physicians.

**ADVERTISING SHIFT TO CONSUMERS.**

With increased patient loads, physicians are busier and are often refusing even the 3-minute sales calls from pharmaceutical sales reps. In addition, physicians are inundated with direct mail advertising.

By skipping the route of selling to the doctor and instead targeting the consumer through intensive television and print ad campaigns, companies have often produced an increase in consumer demand.

According to an FDA survey on the impact of direct-to-consumer advertising for prescription drugs, DTC advertising creates significant influence on the attitudes of patients

toward particular medications. According to industry-research firm Cutting Edge Information, a pharmaceutical-marketing study revealed that the top three pharmaceutical companies had increased direct-to-consumer spending by 185%, on average, year-over-year and that DTC spending accounted for more than 13% of the industry's overall marketing spend for prescription drugs. ([http://www.medbanner.com/pharmaceutical\\_companies.html](http://www.medbanner.com/pharmaceutical_companies.html))

In addition, The New England Journal of Medicine reports that "total spending on pharmaceutical promotion grew from \$11.4 billion in 1996 to \$29.9 billion in 2005," with a huge portion of this identified as direct-to-consumer advertising.

◆ **HP INDIGO BOTTOM LINE:** *The direct-to-consumer trend is perfectly complemented by variable printing solutions—and the print opportunities are increasing exponentially.*

**GROWING MATURITY IN BRANDING/MARKETING .**

In the article "Pharmaceutical Branding," writer Jeff Marsh states that pharmaceutical branding is immature compared with consumer and business-to-business segments—but that is largely because of the previous formula of selling only to doctors. During a decade of patented protection, pharmaceutical products were almost guaranteed to generate large profits, and integrated brand strategies were unheard of, and unimportant.

Now pharmaceutical companies are starting to work on developing a product's brand even before the product is fully tested and ready for production. This process increasingly depends on marketing and promotional materials. All print products—from brochures to product leaflets—have to reflect the brand and appeal to the target market.

◆ **HP INDIGO BOTTOM LINE:**

*In an industry where there once was only a minimal print market, the print needs are virtually exploding now.*

**INTRODUCTION OF VARIABLE DATA PRINTING (VDP).**

This is a fairly new technology in this industry, but it has seen some excellent successes, such as a one-to-one marketing campaign produced by MicroMass, a relationship-marketing agency, to help SmithKline Beecham (now GlaxoSmithKline) promote their quit-smoking products. According to an article on Digital Output's website, by talking to smokers and combining educational materials with incentives, the promotional packages were "shown to be 50% more effective than just nicotine replacement. And the ongoing knowledge becomes fodder for cross-selling (i.e., offers for toothpaste), co-marketing deals with house-cleaning services, and other entertainment vehicles." (<http://www.digitaloutput.net/content/ContentCT.asp?P=103>)

Alex Hamilton, author of Digital Output's "Cashing in With One-to-One Marketing" article, states, "The loosening

of regulations governing contact between pharmaceutical companies and the public, combined with the specificity of patients' needs and available funds, made this area a 'killer app' for one-to-one."

◆ **HP INDIGO BOTTOM LINE:**

*The pharmaceutical industry is ripe for VDP solutions, and the HP Indigo press is a proven choice for brand-sensitive VDP print jobs, especially those that combine digital short-run production with personalization and spot colors.*

**EVOLVING STATUS OF PRESCRIPTION DRUGS.**

Drugs that were once sold by prescription have increasingly moved to over-the-counter (OTC) status. This has actually been seen as a positive move by the consumer even though it shifts the costs entirely onto them. Consumers have found that OTC drugs cost about the same as prescription drug co-payments and gives them the convenience of not having to go to the doctor's office.

Another trend is the marketing of dual-treatment drugs, in which two drugs that treated similar or closely related health issues separately in the past, are now being sold as one drug with two solutions. An example of this is Eli Lilly & Co.'s Symbyax, which combines an anti-psychotic drug (Zyprexa) with an anti-depressant drug, Prozac. (<http://www.careerjournal.com/salaryhiring/industries/pharmaceuticals/20040213-hensley.html>)

◆ **HP INDIGO BOTTOM LINE:**

*Pharmaceutical companies must be able to adjust marketing strategies quickly as products are added or shifted into new segments.*

**INCREASING COMPETITION.**

On the marketing front, competition has become more aggressive. Capturing and protecting market share is essential to recouping rising R&D costs, yet windows of exclusivity are shrinking, and gaining mind share is an uphill battle as hordes of competitors vie for the limited attention of physicians and other influencers.

([http://www.clarity-consulting.com/advancing\\_the\\_pharma\\_industry.htm](http://www.clarity-consulting.com/advancing_the_pharma_industry.htm))

◆ **HP INDIGO BOTTOM LINE:**

*Pharmaceutical companies need the most innovative and effective marketing solutions possible.*

**THE NEED FOR SECURITY.**

With the high stakes related to the required accuracy of pharmaceutical printing, companies must have great assurance that the art—once approved—is immutable. Some see digital printing as the "holy grail" of security, thanks to the perceived and real safety that is provided through digitally locked layouts.

◆ **HP INDIGO BOTTOM LINE:**

*Digital printing provides security that offset printing doesn't. This is an important benefit to communicate to pharmaceutical companies.*



# PHARMACEUTICAL MARKET OPPORTUNITY

## I. OVERVIEW OF PRINTING NEEDS IN THE PHARMACEUTICAL INDUSTRY

**THE PHARMACEUTICAL MARKET IS ONE OF THE LARGEST BUYERS OF PRINT—\$8.1 BILLION WORTH IN THE UNITED STATES ALONE.**

Following is an overview of the current and potential print needs in this massive industry.

### TYPES OF PRINT.

A variety of printed materials are used by pharmaceutical companies, most commonly packaging and labeling, business forms, advertisement and informational brochures, mandated federal drug fact sheets, and print ads in magazines.

Most of the print in the pharmaceutical market is based on:

- *Promotion*—soliciting and enticing new customers and business
- *Information*—communicating with existing customers
- *Process*—record keeping, internal systems, training, etc.
- *Packaging*—for pharmaceutical products

The most technological advances and unique solutions are being developed in the printing of medical packaging.

Here is the approximate breakdown:

- Packaging labels \$2.4 billion
- Ad collateral \$1.4 billion
- Direct mail \$1.2 billion
- Technical documentation \$1.1 billion
- Periodical \$0.5 billion
- Catalogs \$0.5 billion
- Stationery \$0.3 billion
- Internal \$0.3 billion
- Miscellaneous \$0.3 billion
- Financial transactional \$0.1 billion
- Newspapers \$0.0 billion
- Books \$0.0 billion
- Directories \$0.0 billion

**Total \$8.1 billion**

### OUTSOURCING.

Most pharmaceutical companies have some level of in-plant printing and/or digital printing. However, less than 10% of all pharmaceutical printing is produced internally.

Pharmaceutical companies outsource most of their printing to commercial services.

The average pharmaceutical firm uses about 12 different types of printing services, usually dividing them into these categories:

- Packaging
- Special forms
- Promotional materials
- Direct mail
- Special projects

Because of the volumes, pharmaceutical companies look for printers that can implement some level of supply-chain automation to keep inventory levels low.

## II. SPECIFIC PHARMACEUTICAL PRINTING OPPORTUNITIES

The following sections discuss each of the major areas of printing in the pharmaceutical industry and how the HP Indigo Press could meet these needs.

### AD COLLATERAL: \$1.4 BILLION.

*Brochures, newspaper ad inserts, flyers, posters, data sheets, booklets, folders, etc.*

Collateral material is significant in this market and is a major area of opportunity for printers. Physician sales kits, as well as direct-to-consumer/patient materials range from pocket folders, to brochures, to booklets, with an approximate breakdown of:

- Brochures (saddle stitched) 39%
- Small folders 29%
- Booklets (perfect bound) 21%
- Fliers 11%

In addition, as the pharmaceutical industry has rapidly increased its consumer advertising, ad inserts are another growing print need. And posters are commonly produced for display in doctor's offices.

◆ **HP Indigo Press OPPORTUNITY:**

Full-color, high-quality brochures and inserts are where the HP Indigo Press can shine—in quality, convenience, cost, turn-around times and waste reduction.

**CATALOGS: \$500 MILLION.**

*Promotional publications that list or show items that are available for purchase via retail store, mail, phone, or over the Internet*

Pharmaceutical companies produce product-line catalogs that are distributed to pharmacies and other health care offices. These catalogs contain extensive technical information.

◆ **HP Indigo Press OPPORTUNITY:**

The HP Indigo Press is a highly accurate and cost-effective solution for pharmaceutical catalogs, and its just-in-time capabilities prevent the need to inventory cases of printed catalogs or, worse, to end up with piles of outdated ones. Instead, pricing or product updates can be made as needed. Plus, the variable-data capabilities mean that pharmaceutical companies can customize the catalog based on the recipient.

**DIRECT MAIL MARKETING: \$1.2 BILLION.**

*Printed solicitations for information, commerce, or contributions mailed directly to individuals or companies*

This industry is a strong user of direct mail. In fact, direct mail is now the primary method for reaching consumers, using lists from HMO or other healthcare sources. Here are the approximate breakdowns:

- Brochures 54%
- Self-mailers 29%
- Postcards 14%
- Correspondence 3%

◆ **HP Indigo Press OPPORTUNITY:**

As you know, the HP Indigo Press presents none of the costly, time-consuming make-ready, films, plates, or chemicals of offset printing, which means you can delight pharmaceutical companies with the quality and pricing they want. They can print only the quantity they need at the time they need it—eliminating costly waste and obsolete materials—and refill requests can be turned around in a day or less.

Best of all, you can offer them something they may not have had before: affordable, full-color personalized direct mail with VDP (variable data printing). With the ability to change out images and text—beyond just the name and address—on every imprint, HMOs and hospitals can target specific audiences, or even specific people, with exactly the information that would be most persuasive and effective. This is a particularly valuable benefit with direct mail that is designed to significantly increase response.

**FINANCIAL/TRANSACTIONAL: \$100 MILLION.**

*Transactional materials that support financial, legal and insurance needs*

A recent trend has been to incorporate marketing messaging into transactional documents like patient bills and statements. This technique is producing revenue streams for both health care entities and print-service providers, and is providing valuable, targeted information to patients.

◆ **HP Indigo Press OPPORTUNITY:**

Using the HP Indigo Press, trans-promotional documents (with both marketing and transactional information) can easily be customized based on each patient's specific needs.

**FORMS AND INTERNAL COMMUNICATIONS: \$300 MILLION.**

*Flat and multipart forms that require variable data, single-sheet forms that often contain legal information, memos, reports, budgets and project-management internal publications*

Legal and financial forms are common in this market, especially because of federal oversight.

◆ **HP Indigo Press OPPORTUNITY:**

The versatile HP Indigo Press can print office forms and documents of any color with ease and can precisely reproduce corporate colors, to reinforce brand identity. And, again, the ability to print on demand without needing to store large inventories of forms—and to make fast revisions or updates—are key advantages to digital printing vs. traditional offset methods.

**PACKAGING: \$2.4 BILLION.**

*Labels, cartons, boxes, displays, signage, tags, CD/DVD covers, inserts/outserts, book covers, etc.*

Pharmaceutical packaging is extensive and complex. Labels, inserts, outserts and folding cartons combine with the medication holder (bottle, etc.) to create the marketable end product. Packaging types include:

- Custom folding cartons
- Point-of-purchase displays/trays
- Pharmaceutical inserts/outserts
- Marriage-style inserts/ labels
- Fan-fold, pressure sensitive outserts
- Labels
- Printed foil pouch materials
- Promotional printing
- Patient information materials printing
- Clinical case report forms and binders

◆ **HP Indigo Press OPPORTUNITY:**

**Pharmaceutical labels:** Pharmaceutical labels are an excellent market for digital printing. There are several reasons:

1. The run-lengths are generally shorter due to the fact that most labels are small and each label has many



different versions and translations. Digital printing is ideal for these short runs and variable versions and can handle multiple print sizes, including small labels.

2. The production workflow has to be as simple as possible to exclude risk for error. Fortunately, with the HP Indigo Press, the label artwork files can go straight from the pharmaceutical manufacturer's digital file to the press, with very minimal opportunities for error.
3. Lead times are short and getting even shorter—and the HP Indigo Press excels with fast-turnarounds.
4. Because of the sensitive nature of the products, the printing environment must be inherently clean and waste generated must be minimal. Without the films, plates and chemicals of offset or flexo printing, the HP Indigo Press provides a more sterile print environment.
5. The ability to produce serialized or bar-coded labels supports the anti-counterfeiting systems that are so critical today.

In short, pharmaceutical labels can be produced in a cheaper, faster and cleaner way by using a digital production tool instead of flexo or offset.

Also, there is an increasing trend towards more colorful and stylized labels in this market as more drugs receive OTC (over-the-counter) status and must rely on the packaging to sell the product (SMI Pharmaceutical Conferences, London 2004). Many marketers in this industry now understand the power of a strong label to build a loyal relationship with the patient. With its strong color capabilities, the HP Indigo Press enables pharmaceutical companies to effectively brand and merchandise their products.

**Inserts/Outserts:** Nearly every drug package or bottle contains a folded sheet of information that is either inserted into the package or adhered to the container. These too are ideal for the HP Indigo Press, for many of the same reasons as above.

**Packaging Prototypes/Trials:** When a drug is preparing for launch, prototypes to test the market can be printed on an HP Indigo Press to save on costly production by another process, such as offset or flexography.

#### **PERIODICALS: \$500 MILLION.**

*Publications consisting of multiple pages, bound as a unit, and published on a scheduled basis with a fixed interval between issues, such as magazines, journals, newsletters and reprints or preprints*

The pharmaceutical industry produces some health-related periodicals that are typically distributed to doctor's offices, hospitals and other healthcare professionals. Virtually every company also produces an internal newsletter, which can be distributed to as many as 5,000 employees. All printing in this market is very high quality.

#### ◆ **HP Indigo Press OPPORTUNITY:**

*The HP Indigo Press is ideal for short- or medium-run, print-on-demand periodicals, newsletters and magazines. The efficient digital process can eliminate slow, expensive conventional impositions, as well as the multiple rounds of proofing and correcting. The four-color and spot-color capabilities as well as the ultra-high photo quality produce an impressively finished piece.*

#### **TECHNICAL DOCUMENTATION: \$1.1 BILLION.**

*Manuals, guides, instructions, etc.*

This is a major market in the pharmaceutical industry, and it goes beyond training materials. Two examples of materials required for clinical trials are multilingual patient diaries with each investigator's individual name preprinted onto the document, and submission dossiers with as many as 20,000 unique pages.

Companies are now applying print on-demand technologies as they begin a trial with a small number of case report forms (CRFs) to see how the trial evolves and are then increasing the quantity when there is better information. Companies are then including changes and amendments directly into reprints instead of changing pages manually.

Clinical trials involve many specific requirements, including bar-coding, just-in-time delivery, worldwide shipments to investigative sites, quality-assured production and online shipment tracking.

#### ◆ **HP Indigo Press OPPORTUNITY:**

*In addition to being an economical, high-quality printing source for technical documents, the HP Indigo Press is ideal for printing versioned manuals and guides like those needed in clinical trials. Pharmaceutical companies can print the initial low run of CRFs, and adjust and print more as needed. Unique barcodes, investigator names and other variable information can be printed economically and with great accuracy onto each document from the company's own digital file.*

#### **STATIONERY AND MISCELLANEOUS PRINTING NEEDS: \$600 MILLION .**

*Letterhead, envelopes, business cards, appointment cards, etc.*

Every company needs these basic items. Sometimes each medication or product will have its own letterhead as well.

#### ◆ **HP Indigo Press OPPORTUNITY:**

*Turnover of personnel makes business cards a major print product. The short runs and as-you-need-it printing of a digital press prevents waste and keeps cards up to date and accurate. In addition, the HP Indigo Offpress Ink Mixing Station permits mixing of corporate spot colors to produce a precise color match in a single pass—improving printing productivity, maintaining quality and saving costs.*

---

# PHARMACEUTICAL MARKET STRATEGY

---

## I. STRATEGY OVERVIEW

---

For a printer with an HP Indigo Press, the opportunities within the massive pharmaceutical industry are virtually unlimited. This is one of the most profitable industries in the U.S., with an \$8.1 billion print budget. The challenge is to break in, gain the right contacts and provide a full suite of services on an ongoing basis.

The Digital Printing Council (DPC) has compiled a list of key messages to use when targeting pharmaceutical organizations with your digital printing capabilities. Be sure to focus on these particular value-added features when pursuing this market:

- Asset management
- Easy document revisions
- Timely distribution methods
- Security innovations and processes that prevent counterfeiting (especially with packaging)
- Automated data workflows—from the input of patient records to label printing
- Commitment to (and understanding of) FDA regulatory and security issues
- End-to-end direct-mail solutions, from creation to fulfillment
- Integration of marketing materials, from print to Web
- Workflow automation
- Supply chain management
- Measurements of effectiveness

Pharmaceutical companies are especially looking for printers that offer integrated services. Consider full-service solutions a hot point with potential pharmaceutical customers.

## II. STRATEGY SPECIFICS

---

### PROVIDE COMPLETE SOLUTIONS.

Pharmaceutical manufacturers are seeking supply-chain management solutions for their print and promotional material programs. They prefer single-source programs that enable them to concentrate on their core business activities while receiving measurable increases in efficiency and decreases in turn times and total costs.

A multipoint order-entry system for a pharmaceutical company's print materials may have to support 5,000 or more sales representatives at a time. HP Indigo Press owners who invest beyond just printing materials, and who

are also able to streamline the production, warehousing and distribution of these materials into a total supply chain management system will gain a competitive advantage.

The good news for HP Indigo Press owners is that, with print-on-demand and web-to-print digital printing, the need for warehousing and inventory is greatly reduced and/or eliminated. If you equip your print operation to also offer fulfillment and distribution services—or partner with someone who can—you will have a strong advantage over other full-service supply-chain management systems.

### GET IN EARLY.

Pharmaceutical brand teams spend about 45% of their marketing budgets during a product's launch phase, according to a study by pharmaceutical intelligence firm, Cutting Edge Information. Marketers identify early, consistent budgeting as key to product success, and spending ramps up considerably as soon as the product enters human trials.

Printers who are well-connected prior to a product's launch will do best. Check with industry organizations like the Pharmaceutical Research and Manufacturers of America (PhRMA) for information on which drugs are currently in development stages ([http://www.phrma.org/medicines\\_in\\_development](http://www.phrma.org/medicines_in_development)) and time your sales efforts accordingly.

### OFFER DAM CAPABILITIES.

According to the DPC, printers who provide a Data Asset Management (DAM) workflow have a serious competitive advantage within the pharmaceutical industry because it is so critical that information be accurate before a drug is given to a patient. Pharmaceutical companies also see VDP as an excellent tool for tailoring prescriptions and drug information specifically to each individual patient.

The DPC reports that printers who specialize in these types of critical informational printing are sure to see success in this industry. The HP Indigo Press is a leader in data asset management and automated workflows. Promote it as such!

### LEARN THE REGULATIONS.

For printers to achieve success in this changing industry, they must remain well-versed in the very strict regulatory actions set forth by the FDA.

### **KNOW THE MARKET.**

Rarely is a pharmaceutical product pushed forward without extensive research and product testing, and the printed materials on a new product will reflect that. Because of the enormous investments each pharmaceutical product requires, marketing success is not an option. This industry strives to hit target users with a high effectiveness rate that turns a profit on their products. If the message is lost or loses focus, a competing product may produce higher sales.

Pharmaceutical companies are seeking printers who are knowledgeable about all aspects and needs of their industry and who are able to reach potential customers effectively.

### **KNOW WHERE TO FOCUS.**

Informational product-marketing campaigns are the major opportunities for printers. These campaigns can utilize:

- On-demand printing—for technical documentation and some promotional materials
- Variable-data printing—for direct mail to consumers
- Workflow automation—to control inventories and support fulfillment

### **KNOW THE BEST APPLICATIONS FOR DIGITAL PRINTING.**

The pharmaceutical industry can and does use digital printing on a daily basis for applications because of its quick turn, short run, and personalization capabilities.

The following items are good choices for digital printing:

- Pharmaceutical labels—Usually preprinted offsite, imprinted onsite with drug information, tracking codes, expiration date, patient name, etc.
- Prescription patient instructions—Usually preprinted offsite, imprinted onsite with patient, drug, precaution and purchase information
- Brochures/pamphlets—Direct-to-consumer marketing materials on display in retail or clinic settings
- Package prototypes and designs—Test packaging used prior to a drug's launch
- Ad/corporate collateral—Everything from business cards to memo/prescription pads to sell sheets
- Direct mail—Sent to consumers and/or healthcare providers, often personalized

### **KNOW THE BEST APPLICATIONS FOR VARIABLE-DATA PRINTING.**

VDP is used for many applications throughout the pharmaceutical industry, especially with the personalization required by prescription and labeling regulations.

Pharmaceutical companies and pharmacies have a wealth of data, as well as access to:

- Patient information
- Healthcare policies
- Member lists

With this data, they can then reach their customers for:

- Free trials
- Legal notices
- Health advisories
- Promotional material

The print products include:

- Direct mail—especially clinical trial notices and informational brochures
- Labels and patient instructions—VDP create security-printing opportunities as a way to prevent counterfeit products
- Physician and patient informational kits

### **FIND THE PRINT BUYERS.**

The pharmaceutical industry is large and diverse. To sell printing to this industry, there are two points of contact:

1. The marketing staff
2. The purchasing staff

These departments prefer to work with creative and effective print providers that offer new ideas in terms of supply-chain management and marketing innovation.

Also, note that the corporate print customer has changed dramatically over the last five years. Document owners, who are charged with effective communication, now have many choices for publication—from the Internet to paper. Purchasing print has become a distributed task and is less often the province of a professional “print buyer.” In fact, 68% of print buyers lack specific training or experience related to purchasing print. Forty-four percent of those work with a mandated process instead.

---

# PHARMACEUTICAL MARKET PLAN—NEXT STEPS

---

Here are a few tips on where to start as you pursue business in the pharmaceutical industry:

## **TRACK DOWN YOUR TARGETS.**

It will involve persistence to find and reach the marketing managers who will be key to earning value-added print projects. There are not many opportunities to make personal contact at meetings or conferences, and their names do not typically appear on organization websites. Here are a few approaches for finding these decision makers:

1. Ask the print buyers in purchasing/procurement.
2. Contact the senior executive from Section III.2 or the annual report/10-K, and ask his or her administrative assistant.
3. Check the attached list of contacts—although some of the names and titles may have changed

Once you have found the marketing managers, use direct mail to contact them, at least at first. These print-savvy professionals tend to look at the direct mail they receive in terms of how it might apply to their own campaigns. Be sure to use variable data printing, full color and other HP Indigo features to show your capabilities and generate leads.

## **NETWORK, NETWORK, NETWORK.**

Use contacts to meet other contacts.

## **STUDY THE BUSINESS.**

Look for problems they may have with communication.

## **LISTEN.**

You can not “sell” a pharmaceutical company on your services. You must help them solve a problem.

## **DO RESEARCH AS A POTENTIAL CUSTOMER/PATIENT.**

Stay informed about drugs in development, learn what various drugs are used for, consider best ways to reach the appropriate customers. Much of this can be done online.

## **CREATE YOUR OWN PROMOTIONAL MATERIALS.**

Develop an innovative direct mail piece and also a leave-behind piece that targets pharmaceutical organizations. Make sure they are customizable, that they showcase the capabilities of the HP Indigo Press, and they address the specific needs of the industry. Have them ready to go so you can respond quickly to leads.

## **BE SURE YOU CAN PROVIDE INTEGRATED SOLUTIONS.**

The HP Indigo Press can help automate workflow, streamline document management and much more. But to really have an edge with this market, you may want to consider beefing up your distribution or fulfillment capabilities. You may also need to provide some dedicated staff to support your pharmaceutical business.



---

# PHARMACEUTICAL MARKET RESOURCES

---

## I. PHARMACEUTICAL TERMINOLOGY

### **21 CFR PART 11, TITLE 21 (CODE OF FEDERAL REGULATIONS, PART 11)**

Part 11 established the criteria under which electronic records and signatures will be considered equivalent to paper records and handwritten signatures in manufacturing processes regulated by the FDA.

### **ABBREVIATED NEW DRUG APPLICATION (ANDA)**

Application made to the FDA for a generic version of a branded drug. The duplicate drug must be bioequivalent to the branded version of the drug. The first company to receive FDA approval of an ANDA receives 180 days of market exclusivity for the generic drug. Compare with NDA.

### **ABSORPTION, DISTRIBUTION, METABOLISM, AND EXCRETION/TOXICOLOGY (ADME/T)**

The objective of ADME/T testing is to measure what happens to a compound in the human physiology. ADME/T tests are done during the preclinical stage of the drug discovery process and are a necessary part of any clinical trial, prior to filing an IND.

### **ACTIVE PHARMACEUTICAL INGREDIENT (API)**

Any substance or mixture of substances intended to be used in the manufacture of a drug product and that becomes an active ingredient of the drug. APIs are intended to cause pharmacological activity or other direct effect in the diagnosis, cure, mitigation, treatment, or prevention of disease or to affect the structure and function of the body.

### **ADVERSE DRUG REACTION (ADR)**

An undesirable effect associated with the use of a drug. It may occur as a standard part of the drug's action, or it may be unpredictable.

### **AGONIST**

A substance or a drug that can interact with a receptor and initiate a physiological or a pharmacological response characteristic of that receptor.

### **AMPOULE (AMPULE)**

A small glass vial sealed after filling. Ampoules were one of the earliest devices developed for safe storage of a sterile injectable.

### **ANTAGONIST**

A drug or compound that opposes the physiological effects of another. At the receptor level, it is a chemical entity that opposes the receptor-associated responses normally induced by another bioactive agent.

### **ANTIBIOTIC**

An organic substance of microbial origin that is either toxic to or inhibits the growth of other organisms. Examples include penicillin, tetracycline, and erythromycin. Synthetically produced antibiotics also exist.

### **ANTIBODY**

A protein molecule in the blood serum (and other bodily fluids) produced by the immune system in response to exposure to a foreign substance. Antibodies are the body's protective mechanism against infection and disease. An antibody is characterized by a structure complementary to the foreign substance (the antigen that provokes its formation), making it capable of binding specifically to the foreign substance to neutralize it.

### **ANTIGEN**

Any foreign or "non-self" substance that, when introduced into the body, causes the immune system to create an antibody.

### **ANTISENSE**

A nucleic acid sequence that complements (or mirrors) the coding sequence of DNA or mRNA. An antisense sequence does not code for RNA or protein synthesis, but can match to a coding strand and interfere with its function. Antisense sequences may have therapeutic usage, particularly against some varieties of cancer, but initial clinical results have yet to bear fruit.

### **ANTISEPTIC**

An agent that has been formulated for use on living tissue such as mucous membranes or skin to prevent or inhibit growth or action of organisms.

### **ASEPTIC PROCESSING**

A method of producing a sterile (devoid of living organisms) product in which sterile bulk drug or raw materials are compounded and assembled with sterile packaging components.

## **ASSAY**

A laboratory test or technique to identify and/or measure the amount of a particular substance in a sample, or for determining characteristics such as composition, purity, activity, and weight. Used to determine whether compounds (drugs, chemicals, etc.) have the desired effect either in a living organism, outside an organism, or in an artificial environment.

## **AUTO-INJECTOR**

A device used to administer/self-administer a predetermined dose of intramuscular or subcutaneous medication.

## **BATCH**

A specific quantity of material produced in a process (or series of processes) and expected to be homogeneous within specified limits. The batch size may be defined either by fixed quantity or the amount produced in a fixed time interval. In the case of continuous production, a batch may correspond to a defined fraction of the production characterized by its intended homogeneity.

## **BIOASSAY**

The determination of the biological activity of a drug by observing its effect on an organism (or organ) compared to a standard preparation.

## **BIOAVAILABILITY**

A measure of the uptake of an ingested substance by the body as assessed by its concentration in the blood. The rate and extent of its appearance in the blood are important determinants of bioavailability.

## **BIOEQUIVALENCE**

A scientific basis on which generic and brand name drugs are compared with one another. Drugs are bioequivalent if they enter circulation at the same rate when given in similar doses under similar conditions. Proof of bioequivalence is crucial for generic drugs and must be demonstrated in ANDAs.

## **BIOINFORMATICS**

The use of computers in the life sciences, electronic databases of genomes and protein sequences, and computer modeling of biomolecules and biologic systems.

## **BIO-INTERMEDIATE**

For biotechnological/biological products, a material produced during a manufacturing process that is not the drug substance but which is critical to the successful production of the drug. An intermediate will generally be quantifiable and specifications will be established to determine the successful completion of the manufacturing step before continuation of the manufacturing process. This includes material that may undergo further molecular modification or be held for an extended period before further processing.

## **BIOLOGICAL**

According to the FDA's Center for Biologics Evaluation and Research, a biological product is any virus, therapeutic serum, toxin, antitoxin, vaccine, blood, blood component or derivative, allergenic product, or analogous product applicable to the prevention, treatment, or cure of diseases or injuries to humans. Biological products include, but are not limited to, bacterial and viral vaccines, human blood and plasma and their derivatives, and certain products produced by biotechnology, such as interferons and erythropoietins.

## **BIOLOGICAL PATHWAY**

A cellular process serving a specific purpose such as insulin regulation. These sequences of events can reveal the causes of problems such as tumor progression and help researchers target particular molecular processes to block with drugs.

## **BIOLOGICS LICENSE APPLICATION (BLA)**

An application to FDA for a license to market a new biological product in the United States.

## **BIOPROCESS**

A process in which living cells or their components are used to produce a desired product.

## **BIOREACTOR**

Vessel used for bioprocessing.

## **BIOSYNTHESIS**

Production of a chemical by a living organism.

## **BLOW (FORM), FILL, SEAL**

Refers to machines that combine formation of a plastic container by blow molding, aseptic filling of a liquid product, and sealing of the final package.

## **BLISTER PACK**

A unit-dose package commonly constructed from a formed cavity containing one or more individual doses.

## **BULK PHARMACEUTICAL CHEMICAL (BPC)**

A pharmaceutical product derived by chemical synthesis, in bulk form, for later dispensing, formulation or compounding, and filling in a pharmaceutical finishing facility.

## **CASE REPORT FORM (CRF)**

A record of pertinent information collected on each subject during a clinical trial, as outlined in the study protocol.

## **CELL LINES**

When cells from a first culture (taken from the organism) are used to make subsequent cultures, a cell line is established.

## **CHANGE CONTROL**

The processes, authorities for, and procedures to be used for all changes that are made to the computerized system and/or the system's data. Change control is part of the QA program and should be clearly described in SOPs.

## **CHARACTERIZATION**

Precisely describing the characteristics of a drug substance that affect its efficacy and its purity. Also, the chemical, physical, and biological properties of a specific drug substance.

## **CHEMICAL PROCESS DEVELOPMENT**

A step in the drug discovery process in which the chemical reactions necessary for the production of a drug are streamlined.

## **CHEMICAL SYNTHESIS AND SCALE-UP**

A step in the drug discovery process in which a chemical process is expanded to produce adequate amounts of a potential drug compound for preclinical and clinical testing.

## **CHEMINFORMATICS**

A term that encompasses the design, creation, organization, management, retrieval, analysis, dissemination, visualization, and use of chemical information.

## **CHILD RESISTANT (CR)**

A package that will pass a test protocol administered by the U.S. Consumer Product Safety Commission (CPSC).

## **CHEMISTRY, MANUFACTURING, AND CONTROLS (CMC)**

The section on a BLA or IND describing the composition, manufacture, and specifications of a drug product and its ingredients.

## **CHIRAL COMPOUND**

Molecules that have the same chemical formula and the same structural formula but are mirror images to each other. Stereochemically speaking, the exhibit “handedness.”

## **CLEANROOM**

A specially constructed space environmentally controlled with respect to airborne particles (size and count), temperature, humidity, air pressure, airflow patterns, air motion, and lighting. ISO 14644-1 defines a cleanroom as “a room in which the concentration of airborne particles is controlled, and which is constructed and used in a manner to minimize the introduction, generation, and retention of particles inside the room, and in which other relevant parameters—e.g., temperature, humidity, and pressure—are controlled as necessary.”

## **CLINICAL RESEARCH ASSOCIATE**

Also known as a monitor, a CRA is an individual who oversees the progress and conduct of a clinical trial to ensure the scientific integrity of the data collected, and the protection of the rights, safety, and well-being of human study subjects.

## **CLINICAL TRIALS**

Carefully designed investigations of the effects of investigational new drugs, medical treatments, or devices on a group of patients. There are typically three phases

of clinical trials prior to the filing of an NDA, sometimes followed by ongoing, postapproval studies. See *Phase I*, *Phase II*, *Phase III*, and *Phase IV*.

## **CODE OF FEDERAL REGULATIONS (CFR) TITLE 21**

The U.S. regulations that directly apply to biopharmaceutical development are contained in Title 21 parts 58 (Good Laboratory Practice for Nonclinical Laboratory Studies), 210 (Current Good Manufacturing Practice in Manufacturing, Processing, Packing, or Holding of Drugs; General), 211 (Current Good Manufacturing Practice for Finished Pharmaceuticals), and 600 (Biological Products: General). Parts 50 (Protection of Human Subjects), 56 (Institutional Review Boards), and 312 (Investigational New Drugs) apply to critical trials. Part 11 provides criteria that will consider electronic records to be equivalent to paper records and electronic signatures to be equivalent to traditional handwritten signatures. See also 21

## **CFR PART 11**

Combinatorial chemistry. An approach to chemical synthesis that creates large numbers of organic compounds by putting chemical “building blocks” together in every possible combination. Combinatorial chemistry is used in the drug discovery process to create many lead compounds that are screened against biological targets.

## **COMPUTATIONAL BIOLOGY**

The process of analyzing and interpreting biological data.

## **COMPUTATIONAL CHEMISTRY**

A discipline used for computer-aided drug design. Computer modeling attempts to predict the type of compounds (and the structures) most chemically suitable for binding to a drug target.

## **COMPUTER SYSTEMS VALIDATION**

Confirmation by examining and providing objective evidence that computer system specifications conform to user needs and intended uses, and that all requirements can be consistently fulfilled.

## **CONTRACT MANUFACTURING ORGANIZATION (CMO)**

A company that offers manufacturing services, with volume capabilities ranging from small amounts for preclinical R&D to larger volumes necessary for clinical trials purposes and commercialization.

## **CONTRACT RESEARCH ORGANIZATION (CRO)**

A company involved in performing clinical research on a contract basis for a pharmaceutical company, research organization, or other health organization. CROs are contracted to perform some or all of the duties by the sponsor for a clinical trial; examples include monitoring the trial, enrolling patients, performing statistical analysis, and writing the protocols.

## **CONTROLLED-RELEASE FORMULA**

A drug formulation that releases the active ingredient at a steady rate. This can be done by a variety of technologies, including liposomes, subcutaneous injections of a polymer matrix, and transdermal patches. Controlled release of a drug can increase patient comfort and compliance by reducing the number of injections or oral doses that must be taken, as well as avoiding the “peak and valley” profile of drug concentration in the blood that is usually seen after a dose of conventional formulations. Peak concentration can limit the tolerated dose, so by lowering these peaks, a higher average concentration can be maintained without toxic side effects.

## **COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT (CRADA)**

A written agreement between a private company and a government agency to work together on a project. The collaborating partner agrees to provide funds, personnel, services, facilities, equipment, or other resources needed to conduct a specific research or development effort while the federal government agrees to provide similar resources (but not funds) directly to the partner.

## **CR&M**

Acronym for “contract research and manufacturing.”

## **CURRENT GOOD MANUFACTURING PRACTICES (CGMP).**

Current accepted standards of design, operation, practice, and sanitization. The FDA is empowered to inspect drug-manufacturing plants in which drugs are processed, manufactured, packaged, and stored for compliance with these standards.

## **DETAILING**

The practice of pharmaceutical sales representatives (PSRs) visiting physicians in offices and hospitals to promote their firm’s drugs.

## **DISEASE PATHWAY**

The set of proteins and their regulators whose activation or inactivation lead to a particular disease. By defining a disease pathway, scientists can learn which genes and proteins contribute to the disease and are therefore potential drug targets.

## **DOSAGE FORM**

The form in which the drug is delivered to the patient. Dosage forms include parenteral, topical, tablet, oral (liquid or dissolved powder), suppository, inhalation, and transdermal.

## **DOUBLE BLIND**

A procedure in which the subjects, investigators, and sometimes also the data analysts in a clinical trial are not told of the treatment assignments (experimental vs. control). This is done to prevent bias of the results, because neither the investigator nor investigated know what interaction is

being conducted in a clinical study (i.e., placebo vs. investigational compound, sham procedure vs. investigational procedure, etc.).

## **DRUG DELIVERY**

The process by which a formulated drug is administered to the patient. Traditional routes are oral or intravenous perfusion. New methods deliver through the skin with a transdermal patch or across the nasal membrane with an aerosol spray. Optimized compliance and increased prescription writing tends to occur when agents are developed in ways to ease adverse and uncomfortable effects associated with delivery and systems thereof.

## **DRUG DISCOVERY**

Identification of a biological, genetic, or protein target linked to a particular disease, and subsequent lead identification of a potential drug that interacts with the target to help cure the disease or halt its progression.

## **EFFICACY**

Measures the power to produce, in a controlled setting such as a clinical trial, a stated effect typically attributable to a known physiologic phenomenon. It is important to derive measures of efficacy because, with appropriate statistical achievements, these data can approximate real-world effectiveness.

## **ENDPOINT**

In clinical trials, a parameter used to compare the results in different arms of the trial. Endpoints may be directly related to the condition (such as progression of the disease) or may be measurements of surrogate markers.

## **ENZYME**

A protein that acts as a catalyst, affecting the rate at which chemical reactions occur in cells.

## **EXCIPIENT**

A more or less inert substance added in a prescription drug compound. Excipients serve as diluents or vehicles or to give form or consistency when the remedy is given in a pill form. Examples include simple syrup, aromatic powder, and honey.

## **FAST TRACK**

Designation given by the FDA to programs that are designed to facilitate the development and expedite the review of new drugs that are intended to treat serious or life-threatening conditions and that demonstrate the potential to address unmet medical needs. Fast track emphasizes the critical nature of close early communication between the FDA and sponsor, procedures such as pre-IND and end of Phase I meetings as methods to improve the efficiency of preclinical and clinical development, and focuses on efforts by the FDA and sponsor to reach early agreement on the design of the major clinical efficacy studies that will be needed to support approval.



## **FDAMA**

The FDA Modernization Act of 1997 reauthorized the collection of user fees by the FDA and amended the Federal Food, Drug, and Cosmetic Act and the Public Health Service Act to improve the regulation of food, drugs, devices, and biological products, and to facilitate the development and evaluation of new drugs and biologics designed to treat serious and life-threatening illnesses.

## **FILL AND FINISH**

Some secondary elements of the drug manufacturing process. Includes formulation, vial preparation, filling, capping, and inspection.

## **FORM 483**

The official form of notification prepared at the conclusion of an inspection (without review by FDA management) listing observations of perceived violations of good manufacturing practices that may constitute violations of law in the opinion of an inspector. Originally intended to inform companies of possible product adulteration, they must be replied to satisfactorily and/or corrective action taken in order to alleviate any offensive notification and avoid action from the FDA. Form 483s can lead to withholding of product approvals and plant shutdowns, may come into play in due diligence phases of acquisitions and mergers, and can potentially cost companies money.

## **FUNCTIONAL GENOMICS**

Applying genomic information to determine gene function, commonly using microarrays and model organisms. An important part of target validation.

## **GENE**

A natural unit of hereditary material that is the physical basis for the transmission of the characteristics of living organisms from one generation to another. The basic genetic material is fundamentally the same in all living organisms. It consists of deoxyribonucleic acid (DNA) in most organisms and ribonucleic acid (RNA) in certain viruses, and is usually associated in a linear arrangement that constitutes part of the chromosome. The segment of DNA that is involved in producing a polypeptide chain, it includes regions preceding (leader) and following (trailer) the coding region as well as intervening sequences (introns) between individual coding segments (exons).

## **GENERIC DRUG**

Drug product sold under a branded drug's chemical name, following the expiration of the pertinent patents to the branded drug. Drug patents are issued for 20 years from time of filing. The active ingredients in the branded and generic products are the same. Both the branded and the generic versions must have the same potency, be available in the same dosage forms (i.e., tablet, liquid, injectable), be demonstrated safe and effective, and be manufactured under government-approved GMPs.

## **GENE THERAPY**

According to the FDA's Center for Biologics Evaluation and Research, gene therapy is the use of normal genes or genetic material to replace or cancel out the "bad" or defective genes in a person's body that are responsible for a disease or medical problem. In early studies of gene therapy for cancer, researchers were trying to improve the body's natural ability to fight the disease or to make the tumor more sensitive to other kinds of therapy. This treatment may involve the addition of a functional gene or group of genes to a cell by gene insertion to correct a hereditary disease.

## **GENOME**

A genome is all of the DNA in an organism, which includes genes and a great deal of DNA that does not carry genetic code (known as "introns" and "exons"). Each animal or plant has its own unique genome. Genetic DNA is the molecular code that carries information for making all the proteins required by a living organism.

## **GENOMICS**

The study of genes and their function. Genomics has revealed many new biological targets for the development of drugs and has given scientists innovative ways to design new drugs, vaccines, and DNA diagnostics. Genomic-based therapeutics may include small molecule drugs, biologics, and gene therapy.

## **GOOD CLINICAL PRACTICES (GCP)**

The international ethical and scientific quality standard for designing, conducting, monitoring, recording, auditing, analyzing, and reporting studies. It insures that the data reported is credible and accurate, and that subject's rights and confidentiality are protected.

## **GOOD LABORATORY PRACTICE (GLP)**

A set of rules and criteria for a quality system concerned with the organizational process and the conditions under which nonclinical health and environmental safety studies are planned, performed, monitored, recorded, archived, and reported. The GLP principles have been developed to promote the quality and validity of data generated in the testing of chemicals in order to facilitate their recognition for purposes of assessment and other uses relating to the protection of human health and the environment.

## **GOOD MANUFACTURING PRACTICE (GMP)**

A set of principles and procedures which, when followed by manufacturers of drugs and other therapeutics, helps ensure that the products manufactured will be of the required quality. GMP is based on the premise that quality cannot be tested into a batch but must be built into each batch of product during all stages of manufacturing.

## **GMP FACILITY**

A production facility or clinical trial materials pilot plant for manufacturing drug products. It includes the manufacturing

---

space, the storage warehouse for raw and finished product, and support lab areas. A GMP facility operates under the guidelines established by the CFR (Code of Federal Regulations) Title 21, Parts 225 (Current Good Manufacturing for Medicated Feeds—Subpart B), and Part 226 (Current Good Manufacturing Practice for Type A Medicated Articles—Subpart B).

#### **HIGH-PRESSURE LIQUID CHROMATOGRAPHY (HPLC).**

A separation technique based on a solid stationary phase and a liquid mobile phase. Separations (into distinct bands) are achieved by partition, adsorption, or ion-exchange processes, depending upon the type of stationary phase used. Each band is then profiled as the solvent flows through a UV detector, or by fluorescence, or refractive index detectors. Sometimes called “high-performance liquid chromatography.”

#### **HIGH-THROUGHPUT SCREENING (HTS)**

A process in which batches of compounds are tested for binding activity or biological activity against target molecules. High-throughput screening seeks to evaluate large numbers of compounds rapidly and in parallel. Compounds are tested as inhibitors of target enzymes, as competitors for binding of a natural ligand to its receptor, and as agonists or antagonists for receptor-mediated intracellular processes.

#### **HIPAA**

An acronym for Health Insurance Portability and Accountability Act. This law, passed by Congress in 1996, helps to protect citizens’ rights to health coverage during events such as changing or losing jobs, pregnancy, moving, or divorce. It also provides rights and protections for employers when getting and renewing health coverage for their employees.

#### **HIT**

A positive result from high throughput screening. Compounds resulting in hits are collected for further testing in which further potency or effectiveness may be determined. If hits demonstrate further potency, they become lead compounds.

#### **INDIVIDUALIZED MEDICINE**

The goal of an individual care plan based upon knowledge of a person’s genetic profile primarily derived from gene expression analyses and genotyping, and including both disease susceptibility analyses and response-to-treatment/medication profiling.

#### **INFORMATICS**

The study of the application of computer and statistical techniques to the management of information. In genome projects, informatics includes the development of methods to search databases quickly, to analyze DNA sequence information, and to predict protein sequence and structure from DNA sequence data.

#### **IN-LICENSING**

Obtaining the right from another company to develop, produce, and commercialize a particular compound.

#### **INTERNATIONAL CONFERENCE ON HARMONIZATION (ICH)**

The objective of ICH is to increase international harmonization of technical requirements to ensure that safe, effective, and high-quality medicines are developed and registered in the most efficient and cost-effective manner. These activities have been undertaken to promote public health, prevent unnecessary duplication of clinical trials in humans, and minimize the use of animal testing without compromising safety and effectiveness. The goal of ICH is to promote international harmonization by bringing together representatives from the three ICH regions (European Union, Japan, and the United States) to discuss and establish common guidelines.

#### **INVESTIGATIONAL NEW DRUG APPLICATION (IND)**

An application to the FDA to begin clinical trials of a new drug or biologic on humans. The IND gives the plan for the study and contains formulation, manufacturing, and animal test result information.

#### **IN SILICO**

Test performed in a computer model.

#### **IN VITRO**

Literally, “in glass.” Test performed in a test tube or other laboratory apparatus.

#### **IN VIVO**

Test performed in a living organism.

#### **LABORATORY INSTRUMENT MANAGEMENT SYSTEMS (LIMS)**

Software applications used to automate the routine operations of a laboratory.

#### **LARGE-VOLUME PARENTERAL (LVP)**

A parenteral product packaged in a volume of 100 ml or more.

#### **LEAD**

A compound with validated biological activity, both in primary and secondary screens, against known targets.

#### **LEAD COMPOUND**

A peptide or small molecule that can bind to a target and bring about a therapeutic effect. A successful lead compound will become a drug candidate for clinical trials.

#### **LEAD DISCOVERY**

The process of identifying a lead compound from a pool of candidates. Lead candidates may be discovered randomly using high-throughput screening techniques or structure-based drug design, which is intended to streamline the process.

### **LEAD OPTIMIZATION**

The process of creating the most advantageous lead compound in terms of its binding affinity for the discovery and production of drugs.

### **LEGACY SYSTEMS**

Hardware and software applications in which a company has already invested considerable time and money. Legacy systems typically perform critical operations in companies for many years even though they may no longer employ state-of-the-art technology.

### **LIPOSOME**

An artificial phospholipid vesicle. Liposomes can be useful for the enclosure of macromolecules such as nucleic acids or after loading with an appropriate drug. They may be used therapeutically to achieve slow release of the drug into circulation.

### **LIQUID CHROMATOGRAPHY/GAS CHROMATOGRAPHY (LC/GC)**

Chromatography involves a sample (or sample extract) dissolved in a mobile phase (a gas, a liquid, or a supercritical fluid). The mobile phase is then forced through an immobile, immiscible stationary phase. The phases are chosen so that components of the sample have differing solubilities in each phase. As a result of these differences in solubilities, sample components will become separated from each other as they travel through the stationary phase. This process, in addition to separating components, also permits analysis.

### **LYOPHILIZATION**

Also known as “freeze drying,” lyophilization is a means of stabilizing wet substances by freezing them, then evaporating the resulting ice, to leave a substantially dry, porous residue which has the same size and shape of the original frozen mass.

### **MASS SPECTROMETER**

An analytical instrument that measures the mass of charged particles or ions. Mass spectrometry works only on molecules that are charged or ionized; therefore, most biological samples must be subjected to conditions inside the spectrometer that cause the individual molecules to ionize.

### **MEDICINAL CHEMISTRY**

A field of study that combines organic chemistry, analytical chemistry, and other chemistry disciplines for the discovery and production of drugs.

### **MEDIUM**

A substance containing nutrients needed for cell growth.

### **METHODS VALIDATION**

Establishing, through documented evidence, a high degree of assurance that an analytical method will

consistently yield results that accurately reflect the quality characteristics of the product tested.

### **MONOCLONAL ANTIBODY (MAB)**

A laboratory-engineered antibody, derived from a single cell, that recognizes and targets a specific antigen.

### **NEW CHEMICAL ENTITY (NCE)**

Any new molecular compound (excluding diagnostic agents, vaccines, and other biologic compounds) not previously approved for human use by CDER.

### **NEW DRUG APPLICATION (NDA)**

An application to FDA for a license to market a new drug in the United States. Sponsor companies submit NDAs after completing clinical trials on a new drug.

### **NUTRACEUTICAL**

A medicinally or nutritionally functional food.

### **OFF-LABEL USE**

The use of a drug in a way neither approved by the FDA nor permitted to be put on its label and advertised as its intended purpose. Once a drug is approved by the FDA, physicians are free to prescribe it for any indication they see fit.

### **ORANGE BOOK**

An FDA-issued list of all approved prescription and OTC drug products. The list includes indications of “equivalency” for generic drugs, as well as pertinent patent information.

### **ORPHAN DRUGS**

Drugs developed for rare diseases and conditions which, in the United States, affect fewer than 200,000 people or which, in the European Union, affect five or fewer per 10,000 people. Because sales of orphan drugs are likely to be small compared to their development costs, pharmaceutical companies are awarded exclusive rights to market these medicines for a period of time (usually seven years) as an incentive to develop them and bring them to market.

### **OUT-LICENSING**

Selling the rights of a developed products or potential compound to another firm for further development, production, or marketing.

### **OUT OF SPECIFICATION**

An examination, measurement, or test result that does not comply with pre-established criteria.

### **PARENTERAL DRUG**

A drug intended for injection through the skin or other external boundary tissue, rather than through the alimentary canal (oral), so that active substances they contain are administered directly into a blood vessel,

organ, tissue, or lesion. They are infused when administered intravenously, or injected when administered intramuscularly, or subcutaneously into the human body.

#### **PATENT**

A grant made by the government giving the creator of an invention the sole right to make, use, and sell the invention for a set period of time.

#### **PEPTIDE**

A molecule consisting of between two and twenty amino acids connected by peptide bonds; a short segment of a larger protein or a completely functional molecule.

#### **PHARMACODYNAMICS (PD)**

Study of the reactions between drugs and living structures. This covers a compound's pharmacologic effect on patients, including the study of uptake, movement, binding, and interactions of agents at their tissue and cellular site(s) of action.

#### **PHARMACOGENETICS**

The hereditary determinants of how individuals metabolize drugs.

#### **PHARMACOGENOMICS**

The application of genomics to the discovery and development process for drugs. This use of genetic information can predict the safety, toxicity, and/or efficacy of drugs in individual patients or groups of patients. Genomics may aid drug development by defining specific receptive subpopulations of patients, thus simplifying and focusing the clinical trial process. Refined models of disease mechanism based on knowledge of the genome may provide new lines of research and possibly new drugs.

#### **PHARMACOKINETICS (PK)**

The movements of drugs within biological systems, as affected by uptake, distribution, elimination, and biotransformation.

#### **PHARMACOLOGY**

The study of how drugs produce their effects. Pharmacology relies on knowledge of physiology, biochemistry, molecular biology, and other scientific disciplines.

#### **PHARMACOVIGILANCE**

The monitoring of the quality, safety, and efficacy of marketed medicines.

#### **PHASE I**

Initial safety studies in humans. May include as few as 10 subjects, often in healthy volunteers, and includes PK, ADME/T, and dose escalation studies to determine some side effects. Usually open label.

#### **PHASE II**

Following initial safety (Phase I) testing, a drug is tested for efficacy, typically in blind, randomized trials, in which

a control group receives a placebo. Phase II testing may last from several months to two years. Phase II trials involve 100–300 subjects with the disease or condition of interest. Includes PK, dose ranging, safety, and efficacy.

#### **PHASE III**

Following Phase II testing, a drug is tested in a large-scale setting (several hundred to several thousand patients) to determine effectiveness, benefits, and the range of possible adverse reactions. Most Phase III studies are randomized and double blinded, and typically last several years. Usually, two well-controlled studies are necessary to establish efficacy. Once Phase III trials are successfully completed, a pharmaceutical company can request FDA approval for marketing the drug, by filing a new drug application (see *NDA*).

#### **PHASE IV**

Following FDA approval and marketing, drug companies may conduct further studies on their products. These post-approval studies have several objectives, including comparing the drug with other drugs already in the market, monitoring the drug's long-term effectiveness, and determining additional potential uses for the drug.

#### **PILOT-PLANT SCALE**

The production of drug substance or drug product by a procedure that may or may not be representative of that to be applied at manufacturing scale.

#### **PLACEBO**

A mock treatment or drug that has no effect on the illness given in a clinical trial to the control group to help differentiate the specific versus nonspecific effects of an experimental treatment.

#### **PRE-APPROVAL INSPECTION (PAI)**

An inspection of an establishment that performs manufacturing steps in an approved BLA or NDA and for which the applicant has submitted a supplement for a significant manufacturing change or other change that ordinarily requires on-site review of the change.

#### **PRECLINICAL STUDIES**

Studies that test a drug on animals and in other nonhuman test systems. Safety information from such studies is used to support an investigational new drug (IND) application.

#### **PRESCRIPTION DRUG USER FEE ACT (PDUFA)**

In 1992, Congress passed the PDUFA, authorizing the FDA to collect fees from companies that produce certain human drug and biological products. Any time a company wants the FDA to approve a new drug or biologic prior to marketing, it must submit an application along with a fee to support the review process. In addition, companies pay annual fees for each manufacturing establishment and for each prescription drug product marketed. In exchange for industry fees, the FDA was to meet drug-review performance goals, which emphasize timeliness.

## **PROCESS VALIDATION**

Establishing, through documented evidence, a high degree of assurance that a specific process will consistently yield a product that meets predetermined specifications and quality characteristics.

## **PROTEIN**

A large, complex molecule composed of amino acids. The sequence of the amino acids, and thus the function of the protein, is determined by the sequence of the base pairs in the gene that encodes it. Proteins are essential to the structure, function, and regulation of the body. Examples are peptide hormones, enzymes and antibodies.

## **PROTEOME**

The set of proteins encoded by a genome. That is, the collection of proteins found in a cell.

## **PROTEOMICS**

The study of gene expression at the protein level, by the identifying and characterizing proteins present in a biological sample. By comparing samples from healthy and diseased tissues, it is possible to identify proteins that are specific to diseased cells. These may be potential diagnostic markers for particular diseases, or targets for drug development. Unlike the genome, which is constant regardless of cell type, the proteome varies in each cell type. The science of proteomics attempts to identify the protein profile of each cell type, assess protein differences between healthy and diseased cells, and uncover not only a protein's specific function but also how it interacts with other proteins.

## **PROTOCOL**

A plan that sets guidelines for a trial and usually involves several different trial locations. A protocol is usually designed by the sponsor of a clinical trial.

## **QUALITY ASSURANCE (QA)**

The procedures established to ensure that a product is manufactured, or a clinical trial is performed, in compliance with the appropriate standards and regulatory requirements, and that the process or results are properly documented.

## **QUALITY CONTROL (QC)**

Checking or testing that specifications are met, or the regulatory process through which the industry measures actual quality performance, compares it with standards, and acts on the difference.

## **RATIONAL DRUG DESIGN**

Using the known three-dimensional structure of a molecule, usually a protein, to design a drug molecule that will bind to it. Usually viewed as an alternative to drug discovery through screening many molecules for biological activity.

## **RECEPTOR**

A protein or group of associated proteins in a cell or on its

surface that selectively binds a specific substance (called a "ligand"). Upon binding its ligand, the receptor triggers a specific response in the cell.

## **SCALE-UP**

Transition from small-scale production to production of large industrial quantities. Scale-up and post-approval changes (SUPAC). The FDA-recommended testing and filing actions to be taken by a pharmaceutical firm when it changes the manufacturing processes of a drug product that has already been approved via an NDA or ANDA. FDA provided recommendations to industry in the form of guidances.

## **SINGLE NUCLEOTIDE POLYMORPHISM (SNP)**

A SNP is a place in the genetic code where DNA differs from one person to the next by a single letter. These slight genetic variations among human beings may predispose some people to disease and explain why some respond better to certain drugs.

## **SMALL MOLECULE DRUG**

One or more active chemical compounds, typically formulated as an orally available pill, that interact with a specific biological target, such as a receptor, enzyme, or ion channel, to provide a curative effect.

## **SMALL MOLECULE LIBRARY**

A collection of prepared small molecule compounds. Such libraries are maintained in order to facilitate screening and target validation. Small molecules interacting favorably with a target may become drug compound candidates, and so the target may become validated.

## **SMALL-VOLUME PARENTERAL (SVP)**

A "catch-all" term for all non-LVP parenterals products, except biologicals.

## **SOLID DOSAGE**

Capsules, tablets, suppositories.

## **STABILITY**

Refers to the physico-chemical condition of a parenteral, biological, or shelf life of other drugs. Certain drugs must pass USP or CFR stability tests. Manufacturers must have documentation of potency of products under labeled storage conditions.

## **STANDARD OPERATING PROCEDURES**

The description of activities necessary to respond to normal and abnormal situations in an operating system. SOPs may include a troubleshooting checklist, list of personnel to contact, etc. They should also describe normal operation, maintenance, and cleaning of the system, as well as normal operating parameters. An SOP may be created for any system but an SOP must be created for each system requiring qualification.

---

## STATIN

Any of several drugs known to inhibit the activity of the cholesterol synthetic enzyme, 3-hydroxy-3-methylglutaryl-Coenzyme A (HMG CoA) reductase. The name derives from the fact that branded compounds of this class have their names end in “-statin.” Examples include cerivastatin (Baycol) and simvastatin (Zocor). Recent evidence suggests that not only do these drugs target HMG CoA reductase, but also various proteins involved in the maintenance of blood vessel architecture.

## STRUCTURAL GENOMICS

The generation of three-dimensional structural information about proteins and the use of that information, using advanced computational methods, to predict compounds capable of interacting with the proteins. Structural genomics techniques may be useful in identifying new drug compounds for particular targets.

## STRUCTURE-ACTIVITY RELATIONSHIP (SAR)

The relationship between chemical structure and pharmacological activity for a series of compounds.

## STRUCTURE-BASED DRUG DESIGN

The process of drug discovery that uses a high-resolution picture of the drug target’s structure. This can help develop a profile of the compound that would be the most suitable for that target.

## SUPPLEMENTAL NEW DRUG APPLICATION (SNDA)

Application submitted for an already approved NDA for any changes in packaging, labeling, dosages, ingredients, or new indications.

## TARGET VALIDATION.

The process of demonstrating that a drug interacting with a given target could have a therapeutic effect.

## TECHNOLOGY TRANSFER

The process of transferring discoveries made by basic research institutions, such as universities and government laboratories, to the commercial sector for development into useful products and services.

## TERMINAL STERILIZATION

Sterilization of a product at the final stage of production. The desire for increased levels of sterility assurance has led the FDA to promote the use of terminal sterilization for aseptically filled products. The FDA has stated that terminal sterilization processing is the method of choice unless the manufacturer can show that it is detrimental to the product. Terminal sterilization may be accomplished using autoclaves that apply overpressure to balance the pressures that are developed across the inside and outside of the containers.

## THERAPEUTICS

Compounds that are used to treat specific diseases or medical conditions.

## TOPICAL

A medication applied to the skin, an ointment. Usually a medicament suspended in a carrier such as petrolatum or another oil-based carrier.

## TRANSGENICS

Altering the genes of an animal or plant so that it expresses a specific, engineered protein. The protein can then be purified from its expression medium (for example, the milk of a cow) and used to create biologic drugs.

## VACCINE

A substance that closely resembles a particular disease-causing agent, to the body’s immune system. The similarity primes the immune system to recognize the agent and fight against it.

## VALIDATED TARGET

A drug target, usually a protein, that has been demonstrated by any of a variety of methods to have therapeutic potential.

## VALIDATION

The establishment of documented evidence (for example, data derived from rigorous testing) that provides a high degree of assurance that a specific process or system will consistently yield a product meeting predetermined specifications and quality attributes.

## XENOBIOTIC

A compound foreign to an organism.

## X-RAY CRYSTALLOGRAPHY

A technique used to determine protein structure in which proteins in a crystalline form are exposed to X-rays. Advanced computer programs analyze the patterns of the X-rays bending through the crystals to create a picture of the protein in three dimensions.

(Source: [www.contractpharma.com/glossary.php](http://www.contractpharma.com/glossary.php))

## II. TOP PHARMACEUTICAL ORGANIZATIONS

(based on 2005 data)

### A. SIZE RANKINGS OF TOP PHARMACEUTICAL ORGANIZATIONS

The largest pharmaceutical organizations by market capitalization are:

Company	Employees	Revenue
Pfizer Inc.	115,000	\$192.8 billion
Johnson and Johnson Inc.	109,900	\$189 billion
GlaxoSmithKline PLC	100,000	\$136.3 billion
Novartis AG	81,392	\$121.7 billion
AstraZeneca PLC	64,200	\$76.9 billion
Abbott Laboratories	60,600	\$72.3 billion
Merck & Co. Inc.	63,000	\$67.3 billion
Wyeth	51,401	\$60.9 billion
Eli Lilly and Company	44,500	\$60.6 billion
Bristol-Myers Squibb Co.	43,000	\$48.9 billion
Teva Pharmaceutical Industries, Ltd.	10,100	\$7 billion
Barr Pharmaceuticals Inc.	1,500	\$4.9 billion
Mylan Laboratories, Inc.	3,000	\$3.9 billion
Watson Pharmaceuticals Inc.	3,851	\$3.8 billion

(finance.yahoo.com, data from Winter 2005)

### B. OVERVIEW OF TOP PHARMACEUTICAL ORGANIZATIONS

\*All company profiles obtained from Yahoo Finance and are current as of winter 2005. (finance.yahoo.com)

#### PFIZER INC.

Pfizer, Inc. engages in the discovery, development, manufacture, and marketing of prescription medicines for humans and animals, as well as consumer healthcare products worldwide. It operates in three segments:

1. The Human Health segment offers treatments for cardiovascular and metabolic diseases, central nervous system disorders, arthritis and pain, infectious and respiratory diseases, urogenital conditions, cancer, eye disease, endocrine disorders, and allergies.
2. The Consumer Healthcare segment markets over-the-counter medications for oral care, upper respiratory health, tobacco dependence, gastrointestinal health, skin care, eye care, and hair growth. Its principal products include Listerine mouthwash, Listerine PocketPaks oral care strips, Nicorette for tobacco dependence, Benadryl antihistamine for allergies, Sudafed for sinus congestion, Rogaine for hair growth, Zantac 75 for prevention and relief of heartburn, Roloids antacid tablets, Efferdent denture cleaner, Neosporin antibiotic ointment, Visine eye drops, BenGay topical

analgesic, Cortizone skin care products, Lubriderm moisturizing lotions, Unisom sleep aids, Desitin ointments for treatment of diaper rash, Ludens throat drops, and Purell instant hand sanitizer.

3. The Animal Health segment discovers, develops, and sells products for the prevention and treatment of diseases in livestock and companion animals. Its products include parasiticides, anti-inflammatories, vaccines, antibiotics, and related medicines.

In addition, the company offers empty soft-gelatin capsules, contract manufacturing, and bulk pharmaceutical chemicals. It offers its products to healthcare providers, such as doctors, nurse practitioners, physician assistants, pharmacists, hospitals, pharmacy benefit managers, managed care organizations, and government agencies. Pfizer was incorporated in 1942 and is headquartered in New York City.

#### JOHNSON AND JOHNSON INC.

Johnson & Johnson engages in the manufacture and sale of various products in the healthcare field primarily in the United States. It operates through three segments:

1. Consumer segment manufactures and markets a range of products used in the baby and child care, skin care, oral and wound care, and women's healthcare fields, as well as over-the-counter pharmaceutical and nutritional products. These products are marketed primarily to the general public; and sold to wholesalers, and directly to independent and chain retail outlets worldwide.
2. Pharmaceutical segment franchises various products in the anti-fungal, anti-infective, cardiovascular, contraceptive, dermatology, gastrointestinal, hematology, immunology, neurology, oncology, pain management, psychotropic, and urology fields. These products are distributed directly and through wholesalers and healthcare professionals for use by prescription by the general public.
3. Medical Devices and Diagnostics (MDD) segment offers a range of products, including wound care and women's health products; minimally invasive surgical products; circulatory disease management products; blood glucose monitoring products; professional diagnostic products; orthopedic joint reconstruction, spinal, and sports medicine products; and disposable contact lenses. These products are distributed directly and through surgical suppliers and other dealers for use by or under the direction of physicians, nurses, therapists, hospitals, diagnostic laboratories, and clinics.

Johnson & Johnson was founded by Robert Wood Johnson in 1887. The company is headquartered in New Brunswick, New Jersey.

## GLAXOSMITHKLINE PLC

GlaxoSmithKline PLC engages in the creation, discovery, development, manufacture, and marketing of pharmaceutical and consumer health-related products worldwide. The company operates in two segments:

1. The Pharmaceutical segment offers prescription pharmaceuticals and vaccines. Its primary pharmaceutical products include medicines in nine therapeutic areas, including central nervous system, respiratory, antivirals, antibacterials, vaccines, oncology and emesis, metabolic, cardiovascular, and urogenital.
2. The Consumer Healthcare segment provides various over-the-counter medicines, oral care, and nutritional healthcare products. Its oral care products include toothpastes and mouthwashes, toothbrushes, and denture care products. Its nutritional healthcare products include glucose energy and sports drinks, a black currant juice-based drink with vitamin C, and a range of milk-based malted food and chocolate drinks.

GlaxoSmithKline has a strategic alliance with Theravance, Inc. to develop and commercialize medicines across various therapeutic areas. The company was incorporated in 1999 and is headquartered in London.

## NOVARTIS AG

Novartis AG engages in the research, development, manufacture, and marketing of pharmaceutical products worldwide. It operates in three divisions:

1. Pharmaceuticals division develops, markets, and sells branded pharmaceuticals in various therapeutic areas, including cardiovascular and metabolism, neuroscience, respiratory and dermatology, specialty medicines, oncology and hematology, transplantation and immunology, and ophthalmic diseases, as well as arthritis, bone, gastrointestinal, hormone replacement therapy, and infectious diseases.
2. Consumer Health division operates five units—the over-the-counter self-medication products, animal health, medical nutrition, infant and baby foods, and lens and vision care.
3. Sandoz division develops, manufactures, markets, and sells retail generics drugs, and off-patent active pharmaceutical ingredients and intermediates to wholesalers, pharmacies, hospitals, and other healthcare outlets. It also provides biopharmaceutical products, such as protein hormones and other human proteins.

The company sells its products to physicians, pharmacists, hospitals, insurance groups, and managed care organizations. Novartis was formed in 1996 as a result of the merger between Sandoz AG and CIBA-Geigy AG. The company is headquartered in Basel, Switzerland.

## ASTRAZENECA PLC

AstraZeneca PLC engages in the research, development, manufacture, and marketing of prescription pharmaceuticals, as well as the supply of healthcare services worldwide. It provides medicines designed to fight disease in areas of medical need, such as cancer, cardiovascular, gastrointestinal, infection, neuroscience, and respiratory.

The company's product portfolio includes Casodex, Arimidex, and Faslodex for treating cancer; Nexium for gastrointestinal problems; Symbicort for asthma; Atacand for treating hypertension; Crestor for treating high cholesterol; Zomig for treating migraine; and Seroquel for treating schizophrenia. AstraZeneca has a strategic alliance with Cambridge Antibody Technology (CAT) for discovering and developing human antibody therapeutics in inflammatory disorders. In addition, it also engages in research and development, manufacture, and marketing of medical devices and implants for use in healthcare. The company was incorporated in 1992 and was formerly known as Zeneca Group PLC and changed its name to AstraZeneca PLC in 1999.

AstraZeneca PLC is headquartered in London.

## ABBOTT LABORATORIES

Abbott Laboratories engages in the discovery, development, manufacture, and sale of healthcare products principally in the United States and Canada. The company operates through three segments:

1. The Pharmaceutical Products segment includes a line of adult and pediatric pharmaceuticals, which are sold primarily on the prescription, or recommendation, of physicians. This segment sells its products directly to wholesalers, government agencies, healthcare facilities, and independent retailers in the United States through company-owned distribution centers and public warehouses.
2. The Diagnostic Products segment consists of diagnostic systems and tests for blood banks, hospitals, commercial laboratories, alternate-care testing sites, plasma protein therapeutic companies, and consumers. These products are sold directly to hospitals, laboratories, clinics, and physicians' offices.
3. The Ross Products segment includes a line of pediatric and adult nutritionals. This segment sells its products directly to physicians, healthcare facilities, and government agencies through wholesalers.

Abbott Laboratories was founded by Wallace Calvin Abbott in 1888. The company is based in Abbott Park, Illinois.

## MERCK & CO., INC.

Merck & Co., Inc. engages in the discovery, development, manufacture, and marketing of a range of products to improve human and animal health. The company's products consist of therapeutic and preventive agents, sold by



prescription, for the treatment and prevention of human disorders. It offers atherosclerosis products, which include Zocor; hypertension/heart failure products, including Cozaar, Hyzaar, and Vasotec; anti-inflammatory/analgesics, agents that specifically inhibit the COX-2 enzyme, which is responsible for pain and inflammation; an osteoporosis product,

Fosamax, for treatment and prevention of osteoporosis; a respiratory product, Singulair, a leukotriene receptor antagonist for treatment of asthma and for relief of symptoms of seasonal allergic rhinitis; vaccines/biologicals, a live virus vaccine of chickenpox and hepatitis B vaccine; anti-bacterial/anti-fungal products, which include Primaxin, Cancidas, and Invanz; a urology product, Proscar, for treatment of symptomatic benign prostate enlargement; and HIV products, including Stocrin and Crixivan for the treatment of human immunodeficiency viral infection in adults. Its other products include Maxalt, for the treatment of acute migraine headaches in adults; and Propecia, for the treatment of male pattern hair loss.

The company sells its products primarily to drug wholesalers and retailers; hospitals; clinics; government agencies; and managed healthcare providers, such as health maintenance organizations and other institutions through its professional representatives.

Merck & Co. was established in 1891 and is headquartered in Whitehouse Station, New Jersey.

## WYETH

Wyeth engages in the discovery, development, manufacture, distribution, and sale of pharmaceuticals, vaccines, biotechnology products, nonprescription medicines, and animal healthcare products worldwide. It operates in three segments:

1. The Pharmaceuticals segment manufactures and distributes branded human ethical pharmaceuticals, biologicals, vaccines, and nutritionals. Its principal products include neuroscience therapies, cardiovascular products, nutritionals, gastroenterology drugs, anti-infectives, vaccines, oncology therapies, musculoskeletal therapies, hemophilia treatments, immunological products, and women's healthcare products.
2. The Consumer Healthcare segment sells over-the-counter healthcare products, which include analgesics, cough/cold/allergy remedies, and nutritional supplements, as well as hemorrhoidal, asthma, and other relief items.
3. The Animal Health segment offers animal biological and pharmaceutical products that comprise vaccines, pharmaceuticals, parasite control, and growth implants.

The company sells its products to wholesalers, pharmacies,

hospitals, physicians, retailers, healthcare institutions, and veterinarians located in various markets in approximately 140 countries. The company was incorporated in 1926 as American Home Products Corporation and changed its name to Wyeth in 2002. Wyeth is headquartered in Madison, New Jersey.

## ELI LILLY AND COMPANY

Eli Lilly and Company engages in the discovery, development, manufacture, and sale of primarily pharmaceutical products in the United States and internationally. The company's products include neuroscience products, which include Zyprexa, Prozac, Strattera, Cymbalta, Permax, Symbyax, and Yentreve; endocrinology products that consist primarily of Humalog, Humulin, Actos, Evista, Forteo, and Humatrope; and oncology products, which comprise primarily of Gemzar and Alimta. It also offers cardiovascular products that consist primarily of ReoPro and Xigris; and anti-infectives, which primarily include Ceclor and Vancocin. The other pharmaceutical product group includes Cialis, Axid, and other miscellaneous pharmaceutical products and services.

In addition, Eli Lilly offers animal health products that include Tylan, Rumensin, Coban, and other products for livestock and poultry. It primarily sells its pharmaceutical products through wholesalers that serve pharmacies, physicians and other healthcare professionals, and hospitals.

The company was founded by Eli Lilly in 1876. Eli Lilly and Company is based in Indianapolis, Indiana.

## BRISTOL-MYERS SQUIBB COMPANY

Bristol-Myers Squibb Company (BMS) engages in the discovery, development, license, manufacture, marketing, distribution, and sale of pharmaceutical and other healthcare products. The company primarily operates in three segments:

1. The Pharmaceuticals segment provides branded pharmaceutical products for cardiovascular, virology, including human immunodeficiency virus, infectious diseases, oncology, affective disorders, and metabolics. It offers its products primarily to wholesalers, retail pharmacies, hospitals, government entities, and the medical professionals.
2. The Nutritionals segment manufactures, markets, distributes, and sells infant formulas and other nutritional products, including a line of Enfamil products. The nutritional products are generally sold by wholesalers and retailers to healthcare professionals.
3. The company's Other healthcare segment consists of ConvaTec, Medical Imaging, and Consumer Medicines businesses. ConvaTec provides ostomy, wound, and skin care products. Medical Imaging offers cardiovascular imaging products, including radiopharmaceuticals and ultra-sound agents. Consumer Medicines provides consumer healthcare products for headache relief, analgesics, cold,

cough, flu, and moisturizers, as well as for diabetics. BMS has strategic alliances with Sanofi-Aventis; Otsuka Pharmaceutical Co., Ltd.; ImClone Systems Incorporated; and Sankyo Company, Ltd. The company through a collaboration agreement with Merck & Co., Inc. co-develops and co-promotes muraglitazar, its dual peroxisome proliferator activated receptor agonist.

The company was incorporated in 1933 under the name Bristol-Myers Company and changed its name to Bristol-Myers Squibb Company in 1989. Bristol-Myers is headquartered in the New York City.

### **IVAX CORPORATION**

IVAX Corporation engages in the research, development, manufacture, and marketing of pharmaceutical products worldwide. It offers respiratory drugs primarily for bronchial asthma, including a breath-operated inhaler called BREATHMATICa in the United States; Easi-Breathe in other countries; and a dry powder inhaler, as well as metered-dose inhalers. The company also develops various inhalation products, such as chlorofluorocarbon-free inhalation aerosol products; Xorane; TP-38; Cervene; and Talampanel. As of December 31, 2004, IVAX manufactured and marketed approximately 73 brand equivalent prescription drugs in capsule or tablet forms in an aggregate of approximately 169 dosage strengths. As of the same date, it distributed approximately 168 additional brand equivalent prescription and over-the-counter drugs, and vitamin supplements in the United States.

The company offers its products to wholesalers, retail drug chains, retail pharmacies, mail order companies, physicians, pharmacies, hospitals, managed healthcare organizations, and government agencies. IVAX was founded in 1987 and is headquartered in Miami, Florida.

### **BARR PHARMACEUTICALS INC.**

Barr Pharmaceuticals, Inc., through its subsidiaries, Barr Laboratories, Inc. and Duramed Pharmaceuticals, Inc., engages in the development, manufacture, and marketing of pharmaceutical products. It operates in two segments:

1. Generic Pharmaceuticals segment provides approximately 100 dosage forms and strengths of approximately 70 different generic pharmaceutical products, including 19 oral contraceptive products, representing the category of its generic portfolio.
2. Proprietary Pharmaceuticals segment offers 11 proprietary pharmaceutical products, focusing in the female healthcare arena. These products include SEASONALE extended-cycle oral contraceptive product; Cenestin line of hormone therapy products; and Plan B emergency contraceptive product. The company manufactures its products in the form of tablets, capsules, and powder.

Barr Pharmaceuticals markets its products to drug store chains, supermarket chains, mass merchandisers, wholesalers, distributors, managed care organizations, mail order accounts, government/military, and repackagers in the United States and Puerto Rico.

The company was founded by Edwin A. Cohen in 1970. It was formerly known as Barr Laboratories, Inc. and changed its name to Barr Pharmaceuticals, Inc. in 2003. Barr Pharmaceuticals is headquartered in Pomona, New York.

### **MYLAN LABORATORIES, INC.**

Mylan Laboratories, Inc. engages in developing, licensing, manufacturing, marketing, and distributing generic and brand pharmaceutical products. The company operates in two segments:

1. The Generic segment's pharmaceutical products are therapeutically equivalent to a brand name product and are marketed primarily to wholesalers, retail pharmacy chains, mail order pharmacies, and group purchasing organizations. These products are approved for distribution by the U.S. Food and Drug Administration (FDA) through the Abbreviated New Drug Application process.
2. The Brand segment's pharmaceutical products are patent-protected products, which include off-patent brand products, as well as branded generics. These products are approved by the FDA primarily through the New Drug Application process.

The company markets products through its sales force and wholesalers. The company was founded in 1961 and is headquartered in Canonsburg, Pennsylvania.

### **WATSON PHARMACEUTICALS INC.**

Watson Pharmaceuticals, Inc. engages in the development, manufacture, marketing, distribution, and sale of branded and generic pharmaceutical products in the United States. It offers a range of generic products, such as antidepressants, anti-diabetics, analgesic, oral contraceptives, anti-hypertensives, anti-anxiety products, antibiotics, anti-infective systems, antihistamine products, and aids to smoking cessation. Watson Pharmaceuticals offers various branded pharmaceutical products that include specialty products, such as urology, anti-hypertensive, psychiatry, pain management, and dermatology products, as well as a genital warts treatment and a visual cervical screening device; and nephrology products, which consists of products for the treatment of iron deficiency anemia.

The company sells its brand and generic pharmaceutical products primarily to drug wholesalers, retailers, and distributors, including large chain drug stores, hospitals, and clinics; government agencies; and managed healthcare providers, such as health maintenance organizations and

other institutions.

Watson Pharmaceuticals was co-founded by Allen Chao and David C. Hsia in 1984, and is headquartered in Corona, California.

## C. ORGANIZATIONAL STRUCTURE FOR TOP PHARMACEUTICAL ORGANIZATIONS

### PFIZER INC.

- Margaret M. Foran  
*Vice President Corporate Governance and Secretary*
- Henry A. McKinnell  
*Chairman of the Board, Chief Executive Officer, and Director*
- David L. Shedlarz  
*Executive Vice President and Chief Financial Officer*
- Loretta V. Cangialosi  
*Vice President and Controller*
- Michael S. Brown  
*Director*
- M. Anthony Burns  
*Director*
- Robert N. Burt  
*Director*
- W. Don Cornwell  
*Director*
- William H. Gray III  
*Director*
- Constance J. Homer  
*Director*
- William R. Howell  
*Director*
- Stanley O. Ikenberry  
*Director*
- George A. Lorch  
*Director*
- Dana G. Mead  
*Director*
- Franklin D. Raines  
*Director*
- Ruth J. Simmons

*Director*

- William C. Steer, Jr.  
*Director*
- Jean-Paul Valles  
*Director*

### JOHNSON AND JOHNSON INC.

- William C. Weldon  
*Chairman of the Board, Chief Executive Officer, and Director*
- Robert J. Darretta  
*Vice Chairman, Chief Financial Officer, and Director*
- S.J. Cosgrove  
*Controller*
- G.N. Burrow  
*Director*
- Mary Sue Coleman  
*Director*
- James G. Cullen  
*Director*
- M.J. Folkman  
*Director*
- Ann Dibble Jordan  
*Director*
- Arnold G. Langbo  
*Director*
- Susan L. Lindquist  
*Director*
- Leo F. Mullin  
*Director*
- S.S. Reinemund  
*Director*
- D. Satcher  
*Director*
- H.B. Schacht  
*Director*

### GLAXOSMITHKLINE PLC

- Jean-Pierre Garnier  
*Chief Executive Officer*
- Christopher Gent  
*Non-Executive Chairman*
- Lawrence Culp  
*Non-Executive Director*
- Crispin Davis

*Non-Executive Director*

- Julian Heslop  
*Chief Financial Officer*
- Deryck Maughan  
*Non-Executive Director*
- Ian Prosser  
*Senior Independent Non-Executive Director*
- Ronaldo Schmitz  
*Non-Executive Director*
- Lucy Shapiro  
*Non-Executive Director*
- Robert Wilson  
*Non-Executive Director*
- Tadataka Yamada  
*Executive Director and Chairman, Research and Development*

*Director*

- Peter Burckhardt  
*Director*
- Srikant Datar  
*Director*
- William W. George  
*Director*
- Alexandre F. Jetzer  
*Director*
- Pierre Landolt  
*Director*
- Ulrich Lehner  
*Director*
- Wendelin Wiedeking  
*Director*
- Rolf M. Zinkernagel  
*Director*

**NOVARTIS AG**

- Daniel Vasella  
*Chief Executive Officer*
- Raymund Breu  
*Chief Financial Officer*
- Urs Baerlocher  
*Head of Legal and General Affairs*
- Thomas Ebeling  
*Chief Executive Officer, Pharmaceuticals*
- Paul Choffat  
*Chief Executive Officer, Consumer Health*
- Mark C. Fishman  
*President of the Novartis Institutes for Biomedical Research*
- Juergen Brokatzky-Geiger  
*Head of Human Resources*
- Andreas Rummelt  
*Chief Executive Officer, Sandoz*
- Paul Herrling  
*Head of Corporate Research*
- Jorg Reinhardt  
*Head of Pharma Development*
- Ingrid Duplain  
*Corporate Secretary*
- Ann Bailey  
*Head of Corporate Communications*
- Birgit Breuel

**ASTRAZENECA PLC**

- Tom McKillop  
*Chief Executive*
- Bruno Angelici  
*Executive Vice President, Europe, Japan, Asia Pacific and ROW*
- Jan Lundberg  
*Executive Vice President, Discovery Research*
- Jonathan Symonds  
*Chief Financial Officer*
- Martin Nicklasson  
*Executive Vice President, Product Strategy and Licensing and Business Development*
- David Brennan  
*Executive Vice President, North America*
- Barrie Thorpe  
*Executive Vice President, Operations*
- Tony Bloxham  
*Executive Vice President, Human Resources*
- John Patterson  
*Executive Director, Development*
- Louis Schweitzer  
*Non-Executive Chairman*
- Håkan Mogren  
*Non-Executive Deputy Chairman, Member of the Nomination Committee*

- Dame Bridget Ogilvie  
*Non-Executive Director, Member of the Audit Committee and the Science Committee*
- Peter Bonfield  
*Senior Non-Executive Director, Chairman of the Remuneration Committee and Member of the Nomination Committee*
- Jane Henney  
*Non-Executive Director Member of the Audit Committee, the Nomination Committee, and the Science Committee*
- Marcus Wallenberg  
*Non-Executive Director*
- Erna Möller  
*Non-Executive Director, Member of the Remuneration Committee and the Science Committee*
- John Buchanan  
*Non-Executive Director, Chairman of the Audit Committee*
- Michele Hooper  
*Non-Executive Director*
- Joe Jimenez  
*Non-Executive Director and Member of the Nomination Committee*

#### **ABBOTT LABORATORIES**

- Miles D. White  
*Chairman of the Board and Chief Executive Officer*
- Richard A. Gonzalez  
*President and Chief Operating Officer, Medical Products Group and Director*
- Roxanne S. Austin  
*Director*
- Jeffrey M. Leiden  
*President and Chief Operating Officer, Pharmaceutical Products Group, Director*
- Thomas C. Freyman  
*Executive Vice President, Finance and Chief Financial Officer*
- Greg W. Linder  
*Vice President and Controller Boon Powell, Jr. Director*
- William M. Daley  
*Director*
- H. Laurance Fuller  
*Director*
- Jack M. Greenberg  
*Director*

- David A.L. Owen  
*Director*
- Roy S. Roberts  
*Director*
- A. Barry Rand  
*Director*
- William D. Smithburg  
*Director*
- W. Ann Reynolds  
*Director*
- John R. Walter  
*Director*

#### **MERCK & CO. INC.**

- Raymond V. Gilmartin  
*Chairman of the Board, President, Chief Executive Officer, Director*
- Judy C. Lewent  
*Executive Vice President, Chief Financial Officer, and President*
- Richard C. Henriques, Jr.  
*Vice President, Controller*
- Lawrence A. Bossidy  
*Director*
- William G. Bowen  
*Director*
- Johnnetta B. Cole  
*Director*
- William B. Harrison, Jr.  
*Director*
- William N. Kelley  
*Director*
- Rochelle B. Lazarus  
*Director*
- Thomas E. Shenk  
*Director*
- Anne M. Tatlock  
*Director*
- Samuel O. Thier  
*Director*
- Peter C. Wendell  
*Director*

## WYETH

- Robert Essner Chairman  
*President, and Chief Executive Officer*
- Kenneth J. Martin  
*Executive Vice President and Chief Financial Officer*
- Bernard J. Poussot  
*Executive Vice President*
- Thomas Hofstaetter  
*Senior Vice President, Corporate Business Development*
- Rene R. Lewin  
*Senior Vice President, Human Resources*
- Joseph M. Mahady  
*Senior Vice President*
- Marily H. Rhudy  
*Senior Vice President, Public Affairs*
- Robert R. Ruffolo  
*Jr. Senior Vice President*
- Lawrence V. Stein Senior  
*Vice President and General Counsel*
- Douglas A. Dworkin  
*Vice President and Deputy General Counsel*
- Bruce Fadem  
*Vice President, Corporate Information Services, and Chief Information Officer*
- Leo C. Jardot  
*Vice President, Government Relations*
- Paul J. Jones  
*Vice President and Controller*
- John C. Kelly  
*Vice President, Finance Operations*
- Eileen M. Lach  
*Vice President, Corporate Secretary and Associate General Counsel*
- David A. Manspeizer  
*Vice President, Intellectual Property and Associate General Counsel*
- Jack M. O'Conner  
*Vice President and Treasurer*
- James J. Pohlman  
*Vice President, Corporate Strategic Initiatives*
- Steven A. Tasher  
*Vice President, Environmental Affairs and Facilities Operations and Associate General Counsel*
- Justin R. Victoria  
*Vice President, Investor Relations*

- Mary Katherine Wold  
*Vice President, Taxes*

## ELI LILLY AND COMPANY

- Sidney Taurel  
*Chairman of the Board, President, Chief Executive Officer, and Director*
- Charles E. Golden  
*Executive Vice President, Chief Financial Officer, and Director*
- Arnold C. Hanish  
*Chief Accounting Officer*
- Steven C. Beering  
*Director*
- Winfried Bischoff  
*Director*
- J. Michael Cook  
*Director*
- Martin S. Feldstein  
*Director*
- George M.C. Fisher  
*Director*
- Karen N. Horn  
*Director*
- Alfred G. Gilman  
*Director*
- Ellen R. Marram  
*Director*
- Franklyn G. Prendergast  
*Director*
- John Rose  
*Director*
- Kathi P. Seifert  
*Director*

## BRISTOL-MYERS SQUIBB COMPANY

- Peter R. Dolan  
*Chairman of the Board Directors and Chief Executive Officer*
- Andrew R.J. Bonfield  
*Senior Vice President and Chief Financial Officer*
- David L. Zabor  
*Vice President and Controller*
- Robert E. Allen  
*Director*

- Lewis B. Campbell  
*Director*
- Vance D. Coffman  
*Director*
- James M. Cornelius  
*Director*
- Ellen V. Futter  
*Director*
- Louis V. Gerstner, Jr.  
*Director*
- Laurie H. Glimcher  
*Director*
- Leif Johansson  
*Director*
- James D. Robinson III  
*Director*
- Louis W. Sullivan  
*Director*

#### **IVAX CORPORATION**

- Phillip Frost  
*Chairman of the Board and Chief Executive Officer*
- Thomas E. Beier  
*Chief Financial Officer*
- Thomas E. McClary  
*Chief Accounting Officer*
- Betty G. Amos  
*Director*
- Mark Andrews  
*Director*
- Ernst Biekert  
*Director*
- Paul L. Cejas  
*Director*
- Jack Fishman  
*Director*
- Neil Flanzraich  
*Director, President, and Chairman*
- Bruce W. Greer  
*Director*
- Jane Hsiao  
*Director and Vice Chairman, Regulatory Affairs*
- Richard M. Krasno  
*Director*

- David A. Lieberman  
*Director*
- Richard C. Pfenniger, Jr.  
*Director*
- Bertram Pitt, M.D.  
*Director*

#### **BARR PHARMACEUTICALS**

- Bruce L. Downey  
*Chairman of the Board and Chief Executive Officer*
- William T. McKee  
*Vice President, Chief Financial Officer, and Treasurer*
- Carole S. Ben-Maimon  
*Director*
- Paul M. Bisaro  
*Director*
- Harold N. Chefitz  
*Director*
- Richard R. Frankovic  
*Director*
- James S. Gilmore III  
*Director*
- Jack M. Kay  
*Director*
- Peter R. Seaver  
*Director*
- George P. Stephan  
*Director*

#### **MYLAN LABORATORIES, INC.**

- Robert J. Coury  
*Vice Chairman, Chief Executive Officer, and Director*
- Edward J. Borkowski  
*Chief Financial Officer*
- Gary E. Sphar  
*Vice President, Corporate Controller*
- Milan Puskar  
*Chairman and Director*
- Wendy Cameron  
*Director*
- Laurence S. Delynn  
*Director*
- Douglas J. Leech  
*Director*

- Joseph C. Maroon  
*Director*
- Rod Piatt  
*Director*
- Patricia A. Sunseri  
*Director*
- C.B. Todd  
*Director*
- R.L. Vanderveen  
*Director*
- Stuart A. Williams  
*Director*

#### **WATSON PHARMACEUTICALS INC.**

- Allen Chao  
*Chairman, President and Chief Executive Officer*
- Charles P. Slacik  
*Executive Vice President and Chief Financial Officer*
- R. Todd Joyce  
*Vice President Corporate Controller and Treasurer*
- Michael J. Fedida  
*Director*
- Michel J. Feldman  
*Director*
- Albert F. Hummel  
*Director*
- Catherine M. Klema  
*Director*
- Jack Michelson  
*Director*
- Ronald R. Taylor  
*Director*
- Andrew L. Turner  
*Director*
- Fred G. Weiss  
*Director*

## **D. ADDRESSES OF TOP PHARMACEUTICAL ORGANIZATIONS**

#### **PFIZER INC.**

- 235 East 42nd Street  
New York, NY 10017  
Phone: 212-573-2323  
Fax: 212-573-7851

- 301 Henrietta Street  
Kalamazoo, MI 49007-4940  
Phone: 269-276-9329
- Pfizer Global R&D Research Technology Center  
620 Memorial Drive  
Cambridge, MA 02139  
Phone: 617-551-3000
- Pfizer Inc.  
Privacy Officer  
235 East 42nd Street  
Mailstop 235/24/7  
New York, NY 10017
- Pfizer Animal Health Inc.  
Northeastern Industry  
Guilderland Center, NY 12085  
Phone: 518-861-6048

#### **JOHNSON AND JOHNSON INC.**

- One Johnson & Johnson Plaza  
New Brunswick, NJ 08933  
Phone: 732-524-0400  
Fax: 732-214-0332
- Johnson & Johnson Development Corporation  
410 George Street  
New Brunswick, NJ 08901  
Telephone: 732-524-3218  
Fax: 732-247-5309
- Johnson & Johnson Pharmaceutical Research & Development, LLC  
P.O. Box 300  
Mail Stop 2628  
Raritan, NJ 08869

#### **GLAXOSMITHKLINE PLC**

- 980 Great West Road  
Brentford, TW8 9GS  
Phone: 44 20 8047 5000  
Fax: 44 20 8047 7807
- 53 State Street 39th Floor  
Boston, MA 02109  
Fax: 617-589-3474
- One Franklin Plaza  
P.O. Box 7929  
Philadelphia, PA 19101  
Phone: 215-751-3338
- Registrar Bank of New York  
P.O. Box 11258  
Church Street Station  
New York NY 10286-1258



## **NOVARTIS AG**

- Lichtstrasse 35  
Basel, CH-4056  
Phone: 41 61 324 1111  
Fax: 41 61 324 8001
- Sandoz Inc., Broomfield Site  
2655 West Midway Boulevard  
Broomfield, CO 80020  
Phone: 303-466-2400
- Novartis Institutes for BioMedical Research, Inc.  
400 Technology Square  
Cambridge, MA 02139  
Phone: 617-871-1800  
Pharmaceuticals
- Sandoz Inc., Cranbury Site  
2540 Route 130 North  
Cranbury, NJ 08512  
Phone: 732-274-2400  
Generics
- Sandoz Inc., Dayton Site  
2400 Route 130 North  
Dayton, NJ 08810-1519  
Phone: 732-274-2400  
Generics
- Ciba Vision  
CIBA Vision Corporation  
11460 Johns Creek Parkway  
Duluth, GA 30097  
Phone: 770-905-1000
- Novartis Pharmaceuticals Corporation  
One Health Plaza  
East Hanover, NJ 07936-1080  
Phone: 862-778-8300  
Pharmaceuticals
- Gerber Products Company  
445 State Street  
Fremont, MI 49413  
Phone: 231-928-2000  
Consumer Health
- Novartis Animal Health US, Inc.  
3200 Northline Avenue, Suite 300  
Greensboro, NC 27408  
Phone: 336-3847-1000  
Animal Health
- Novartis Corporation  
608 Fifth Avenue  
New York, NY 10020  
Phone: 212-307-1122

- Novartis Consumer Health, Inc.  
200 Kimball Drive  
Parsippany, NJ 07054-0622  
Phone: 973-503-8000  
Consumer Health
- Sandoz Inc.  
506 Carnegie Center, Suite 400  
Princeton, NJ 08540  
Phone: 609-627-8500  
Generics
- Novartis Nutrition Corporation  
1600 Utica Avenue South, #600  
St. Louis Park, MN 55416  
Phone: 952-848-6000  
Consumer Health
- Gerber Life Insurance Company  
1311 Mamaroneck Avenue  
White Plains, NY 10605  
Phone: 914-272-4000  
Consumer Health
- Lek Pharmaceuticals, Inc.  
115 North Third Street, Suite 301  
Wilmington, NC 28401  
Phone: 910-3620021  
Generics

## **ASTRAZENECA PLC**

- 15 Stanhope Gate  
London, W1K 1LN  
Fax: 44 20 7304 5151
- AstraZeneca Latin America Inc.  
804 Douglas Road, Suite 630  
Coral Gables, FL 33134  
Phone: 305-442-1127
- AstraZeneca LP  
50 Otis Street, P.O. Box 4500  
Westborough, MA 01581-4500  
Phone: 508-366-1100
- AstraZeneca Pharmaceuticals LP (U.S. Headquarters)  
P.O. Box 15437  
Wilmington, DE 19850-5437  
Phone: 302-886-3000
- AstraZeneca Pharmaceuticals LP  
1250 Eye Street NW, Suite 804  
Washington, DC 20005  
Phone: 202-289-2570
- AstraZeneca Pharmaceuticals LP  
587 Old Baltimore Pike  
Newark, DE 19702  
Phone: 302-286-3500

- AstraZeneca R&D Boston  
35 Gatehouse Drive  
Waltham, MA 02451  
Phone: 781-839-4000
- AstraZeneca R&D Wilmington  
P.O. Box 15437  
Wilmington, DE 19850-5437  
Phone: 302-886-3000
- Boston Business Center  
50 Otis Street  
Westborough, MA 01581  
Phone: 800-270-5373
- Chicago Business Center  
475 N. Martingale Road, Suite 700  
Schaumburg, IL 60173  
Phone: 888-272-7872
- Dallas Business Center  
6363 N. Highway 161, Suite 400  
Irving, TX 75038  
Phone: 800-726-7266
- Detroit Business Center  
26200 Town Center Drive, Suite 220  
Novi, MI 48375  
Phone: 800-261-7568
- Los Angeles Business Center  
21700 Oxnard Street, Suite 300  
Woodland Hills, CA 91367  
Phone: 800-995-2173
- Nashville Business Center  
501 Corporate Centre Drive, Suite 300  
Franklin, TN 37067  
Phone: 800-295-3935
- Others: Astra Tech Inc.  
890 Winter Street, Suite 310  
Waltham, MA 02451  
Phone: 781-890-6800
- Others: Astra Tech Inc.  
21535 Hawthorne Boulevard, Suite 525  
Torrance, CA 90503  
Phone: 310-316-2626
- Philadelphia Business Center  
690 Lee Road, Suite 100  
Wayne, PA 19087  
Phone: 800-937-1664
- Puerto Rico Business Center  
270 Munoz Rivera Avenue, Suite 402 (Apdo. 14)  
Hato Rey, PR 00918  
Phone: 800-355-5995

- Tampa Business Center  
6200 Courtney Campbell Causeway, Suite 600  
Tampa, FL 33607  
Phone: 800-569-8300
- Westborough Business Center  
50 Otis Street  
Westborough, MA 01581  
Phone: 508-366-1100

#### **ABBOTT LABORATORIES**

- 100 Abbott Park Road  
Abbott Park, IL 60064-6400  
Phone: 847-937-6100  
Fax: 847-937-1511
- Ross Products  
1250 W. Maricopa Highway  
Casa Grande, AZ 85222  
Phone: 520-421-6600  
Nutritional Products
- Abbott Diagnostics  
Ambulatory  
5440 Patrick Henry Drive  
Santa Clara, CA 95054  
Phone: 408-982-4800  
Diagnostic Products
- Abbott Laboratories  
820 Mission Street  
South Pasadena, CA 91030  
Phone: 818-440-0700
- Abbott Ambulatory Infusion Systems  
15330 Avenue of Science, Suite 100  
San Diego, CA 92128  
Phone: 619-485-7474
- Perclose  
400 Saginaw Drive  
Redwood City, CA 94063  
Phone: 650-474-3000  
Medical Products
- Murex Diagnostics  
3075 Northwoods Circle  
Norcross, GA 30071  
Phone: 770-662-0660  
Diagnostic Products
- Corporate Headquarters  
Abbott Laboratories  
100 Abbott Park Road  
Abbott Park, IL 60064-3500  
Phone: 847-937-6100

- Abbott Laboratories  
1401 Sheridan Road  
North Chicago, IL 60064-4000  
Phone: 847-937-6100  
Nutritional, Pharmaceutical, Diagnostic, Chemical  
and Agricultural Products
- TAP Pharmaceuticals  
675 North Field Drive  
Lake Forest, IL 60045  
Phone: 847-348-2779  
Pharmaceutical Products
- MediSense, Inc.  
4A Crosby Drive  
Bedford, MA 01730  
Phone: 781-276-6000  
Diagnostic Products
- Abbott Bioresearch Center  
100 Research Drive  
Worcester, MA 01605  
Phone: 508-849-2500  
Pharmaceutical Products
- Ross Products  
901 N. Centerville Road  
Sturgis, MI 49091  
Phone: 616-651-0600  
Nutritional Products
- 30 N. Jefferson Road  
Whippany, NJ 07981  
Phone: 973-428-4000  
Pharmaceutical Products
- Ross Products  
625 Cleveland Avenue  
Columbus, OH 43215  
Phone: 614-624-7677  
Nutritional Products
- Abbott Laboratories  
1921 Hurd Drive  
Irving, TX 75038  
Phone: 972-518-6000  
Diagnostic Products
- Abbott Critical Care Systems  
4455 Atherton Drive  
Salt Lake City, UT 84123  
Phone: 801-262-2688  
Diagnostic Products
- Abbott Critical Care Systems  
Ross Products  
U.S. Highway 29 North, P.O. Drawer 479  
Altavista, VA 24517  
Phone: 434-369-3100  
Nutritional Products

#### **MERCK & CO. INC.**

- P.O. Box 100  
One Merck Drive  
Whitehouse Station, NJ 08889-0100  
Phone: 908-423-1000  
Fax: 908-735-1253
- 126 E. Lincoln Avenue  
P.O. Box 2000  
Rahway, NJ 07065
- 770 Sumneytown Pike  
P.O. Box 4  
West Point, PA 19486
- 8777 N. Gainey Center Drive, Suite 250  
Scottsdale, AZ 85258-2154  
Phone: 480-483-0752
- 14645 NW 77th Avenue, Suite 201  
Hialeah, FL 33014-2569  
Phone: 305-817-1007
- 577 Airport Boulevard, Suite 150  
Burlingame, CA 94010-2046  
Phone: 650-685-4030
- 3300 Douglas Boulevard, Suite 345  
Roseville, CA 95661-3858  
Phone: 916-773-2808

#### **WYETH**

- Five Giralda Farms  
Madison, NJ 07940  
Phone: 973-660-5000  
Fax: 973-660-5771
- Wyeth Pharmaceuticals Worldwide Headquarters  
500 Arcola Road  
Collegeville, PA 19426  
Phone: 610-902-1200
- Wyeth Pharmaceuticals  
One Burt Road  
Andover, MA 01810  
Phone: 978-475-9214
- Wyeth Pharmaceuticals  
35 Cambridge Park Drive  
Cambridge, MA 02140  
Phone: 617-876-1170
- Wyeth Pharmaceuticals  
4305 Oak Park  
Sanford, NC 27330-9728  
Phone: 919-774-7400

- Wyeth Pharmaceuticals  
401 N. Middletown Road  
Pearl River, NY 10965-1299  
Phone: 845-732-5000
- Wyeth Pharmaceuticals  
211 Bailey Road  
W. Henrietta, NY 14586-9728  
Phone: 585-272-7000
- Wyeth Pharmaceuticals  
2248 Darbytown Road  
Richmond, VA 23231  
Phone: 804-257-2000
- Wyeth Research  
865 Ridge Road  
Monmouth Junction, NJ 08852  
Phone: 732-329-2300
- Fort Dodge Animal Health  
P.O. Box 25945  
Overland Park, KS 66225-5945  
Phone: 913-664-7000
- 4951 Lake Brook Drive  
Glen Allen, VA 23060-9279  
Phone: 804-418-6200
- 9700 Innovation Drive  
Manassas, VA 20110-2218  
Phone: 703-257-0349
- Spokane, WA 99217  
Phone: 509-922-7185
- 1250 S. Capital of Texas Highway  
Austin, TX 78746-6464  
Phone: 512-328-1503
- 11811 N. Tatum Boulevard, Suite 2100  
Phoenix, AZ 85028-1604  
Phone: 602-867-1466
- 2400 E. Katella Avenue, Suite 530  
Anaheim, CA 92806-5979  
Phone: 714-385-1825
- 3131 S. Willow Avenue  
Fresno, CA 93725-9349  
Phone: 559-443-2600

#### **ELI LILLY AND COMPANY**

- Lilly Corporate Center  
Indianapolis, IN 46285  
Phone: 317-276-2000  
Elanco Animal Health  
A Division of Eli Lilly and Company
- Lilly Corporate Center  
Indianapolis, IN 46201  
Phone: 317-276-3000  
Tualatin, OR 97062  
Phone: 503 691-6266
- 10201 Centurion Parkway N.  
Jacksonville, FL 32256-4100  
Phone: 904-296-4201
- 14301 Fnb Parkway  
Omaha, NE 68154-5213  
Phone: 402-964-1139
- 1979 Marcus Avenue  
New Hyde Park, NY 11042-1002  
Phone: 516-622-2244
- 303 Village Drive  
Johnson City, TN 37604-1939  
Phone: 423-282-6043
- 5865 Ridgeway Center Parkway, Suite 300  
Memphis, TN 38120-4014  
Phone: 901-767-8227
- 10001 Woodloch Forest Drive  
Spring, TX 77380-1923  
Phone: 281-298-3900
- 425 California Street, Suite 2450  
San Francisco, CA 94104-2214  
Phone: 415-217-5830
- 3945 Landings Drive  
Fort Collins, CO 80525-3181  
Phone: 970-377-4152
- 6400 S. Fiddlers Green Circle, Suite 1775  
Greenwood Village, CO 80111-4997  
Phone: 303-740-8336
- 150 Freshwater Boulevard  
Enfield, CT 06082-4436  
Phone: 860-741-0761
- 555 12th Street NW, Suite 650  
Washington, DC 20004-1209  
Phone: 202-393-7950
- Bristol-Myers Squibb Co.  
345 Park Avenue  
New York, NY 10154  
Phone: 212-546-4000  
Fax: 212-546-4020
- 528 Cottage Street NE, Suite 205  
Salem, OR 97301-3828  
Phone: 503-585-1223
- Convatec  
200 Headquarters Park Drive  
Skillman, NJ 08558-2624  
Phone: 908-281-2500

- General Offices  
1 Squibb Drive  
New Brunswick, NJ 08901-1588  
Phone: 201-519-2000
- General Offices  
Route 206  
Princeton, NJ 08540  
Phone: 609-921-4000
- General Offices  
345 Park Avenue  
New York, NY 10001-0004  
Phone: 212-546-4000
- Marketing Services  
40 W. 57th Street, Floor 20  
New York, NY 10019-4001  
Phone: 212-314-9000
- 5 Research Parkway  
Wallingford, CT 06492-1951  
Phone: 203-677-6000

#### **IVAX CORPORATION**

- 4400 Biscayne Boulevard  
Miami, FL 33137  
Phone: 305-575-6000  
Fax: 305-575-6055
- 125 Wells Avenue  
Congers, NY 10920-2036  
Phone: 845-267-2444
- 77 Brenner Drive  
Congers, NY 10920-1307  
Phone: 845-267-2555
- 8800 NW 36th Street  
Doral, FL 33178-2404  
Phone: 305-591-3777
- 50 NW 176th Street  
Miami, FL 33169-5043  
Phone: 305-652-5380

#### **BARR PHARMACEUTICALS**

- 400 Chestnut Ridge Road  
Woodcliff Lake, NJ 07677-7668  
Phone: 201-930-3300  
Fax: 845-354-0504
- Corporate Headquarters  
Research & Development, Laboratories,  
Manufacturing/Packaging & Warehouse  
223 Quaker Road  
Pomona, NY 10970  
Phone: 845-362-1100

- Virginia Facility  
Research & Development, Distribution,  
Manufacturing/Packaging and Warehouse  
2150 Perrowville Road  
Forest, VA 24551  
Phone: 434-534-8600
- Ohio Facility  
Laboratories, Manufacturing/Packaging  
5040 Duramed Circle  
Cincinnati, OH 45213  
Phone: 513-731-9900
- Enhance Facility  
Research & Development, Laboratories, Manufacturing  
109 Morgan Lane  
Plainsboro, NJ 08536  
Phone: 609-897-0809
- Livingston Facility Manufacturing  
265 Livingston Street  
Northvale, NJ 07647
- Duramed Research  
Corporate Offices  
One Belmont Avenue, 11th Floor  
Bala Cynwyd, PA 19004  
Phone: 610-747-2600
- Government Affairs  
444 North Capitol Street, Suite 722  
Washington, DC 20001  
Phone: 202-393-6599
- Mylan Laboratories, Inc.  
1500 Corporate Drive  
Canonsburg, PA 15317  
Phone: 724-514-1800  
Fax: 724-514-1870
- St. Albans, VT  
Phone: 802-527-7792
- Morgantown, WV  
Phone: 304-599-2595
- Mylan Bertek Pharmaceuticals  
Research Triangle Park, NC  
Phone: 919-991-9800
- Bertek Pharmaceuticals  
Sugarland, TX  
Phone: 800-231-3052

#### **WATSON PHARMACEUTICALS INC.**

- 311 Bonnie Circle  
Corona, CA 92880-2882  
Phone: 951-493-5300  
Fax: 909-270-1096

- 605 Tri-State Parkway  
Gurnee, IL 60031-5277  
Phone: 847-377-5500
- 577 Chipeta Way  
Salt Lake City, UT 84108-1222  
Phone: 801-588-6200
- 620 North 51st Avenue  
Phoenix, AZ 8504  
Phone: 602-278-1400
- 311 Bonnie Circle  
Corona, CA 92880  
Phone: 951-493-5300
- 700 E. Business Center Drive  
Mt. Prospect, IL 60056  
Phone: 224-521-3100
- 360 Mt. Kemble Avenue  
Morristown, NJ 07962  
Phone: 973-355-8300
- Mt. Ebo Corp. Park  
39 Mt. Ebo Road  
South Brewster, NY 10509  
Phone: 845-278-3700
- 33 Ralph Avenue  
P.O. Box 30  
Copiague, NY 11726  
Phone: 631-842-8383
- 131 West Street  
Danbury, CT 06810  
Phone: 203-744-7200

## E. WEB ADDRESSES FOR TOP PHARMACEUTICAL ORGANIZATIONS

- Johnson and Johnson Inc. public information site:  
[www.jnj.com/our\\_company/index.htm](http://www.jnj.com/our_company/index.htm)
- Pfizer Inc. public information site:  
[www.pfizer.com/pfizer/are/index.jsp](http://www.pfizer.com/pfizer/are/index.jsp)
- Novartis AG public information site:  
[www.novartis.com/about-novartis/index.shtml](http://www.novartis.com/about-novartis/index.shtml)
- GlaxoSmithKline PLC public information site:  
[www.gsk.com/about/about.htm](http://www.gsk.com/about/about.htm)
- Abbott Laboratories public information site:  
[www.abbott.com](http://www.abbott.com)
- Merck & Co. Inc. public information site:  
[www.merck.com/about/](http://www.merck.com/about/)
- AstraZeneca PLC public information site:  
[www.astrazeneca.com/article/111148.aspx](http://www.astrazeneca.com/article/111148.aspx)
- Wyeth public information site:  
[www.wyeth.com/](http://www.wyeth.com/)
- Bristol-Myers Squibb Company public information site:  
[www.bms.com/aboutbms/data/](http://www.bms.com/aboutbms/data/)
- Eli Lilly and Co. public information site:  
[www.lilly.com/about/](http://www.lilly.com/about/)
- Teva Pharmaceutical Industries, Ltd. public information site:  
[www.tevapharm.com/about/](http://www.tevapharm.com/about/)
- Barr Pharmaceuticals public information site:  
[www.barrlabs.com/](http://www.barrlabs.com/)
- Watson Pharmaceuticals Inc. public information site:  
[www.watsonpharm.com/about.asp](http://www.watsonpharm.com/about.asp)
- Mylan Laboratories, Inc. public information site:  
[www.mylan.com/](http://www.mylan.com/)

### III. MORE PHARMACEUTICAL COMPANIES

Top 50 Pharmaceutical Companies in 2004 (in millions of dollars)

Rank	Company	Revenue	R&D	Net Income	Employees
1.	Pfizer, USA	\$52,516	\$7,684	\$11,361	115,000
2.	Johnson & Johnson, USA	\$47,348	\$5,203	\$8,509	109,900
3.	GlaxoSmithKline, UK	\$37,318	\$5,204	\$7,886	100,619
4.	Sanofi-Aventis, France	\$31,615	\$4,927	\$6,526	96,439
5.	Novartis Switzerland	\$28,247	\$4,207	\$5,767	81,392
6.	Roche, Switzerland	\$25,163	\$4,098	\$5,344	64,703
7.	Merck & Co., USA	\$22,939	\$4,010	\$5,813	62,600
8.	AstraZeneca, UK	\$21,427	\$3,803	\$3,813	64,200
9.	Abbott Laboratories, USA	\$19,680	\$1,697	\$3,236	50,600
10.	Bristol-Myers Squibb, USA	\$19,380	\$2,500	\$2,388	43,000
11.	Wyeth, USA	\$17,358	\$2,461	\$1,234	51,401
12.	Eli Lilly and Co., USA	\$13,858	\$2,591	\$1,810	44,500
13.	Bayer, Germany	\$10,554	\$1,299	\$750	113,060
14.	Amgen, USA	\$10,550	\$2,028	\$2,363	14,400
15.	Boehringer Ingelheim, Germany	\$10,146	\$1,532	\$1,104	35,529
16.	Baxter International, USA	\$9,509	\$517	\$388	48,000
17.	Takeda Pharmaceutical Co., Japan	\$9,330	\$1,285	\$2,636	14,510
18.	Schering-Plough, USA	\$8,272	\$1,607	-\$981	30,500
19.	Astellas Pharma, Japan	\$7,904	\$1,213	\$566	15,500
20.	Procter & Gamble, USA	\$7,786	(n/a)	\$7,257	110,000
21.	Schering, Germany	\$5,103	\$1,143	\$622	26,131
22.	Merck KGaA, Germany	\$5,018	\$611	\$836	28,877
23.	Eisai Co., Japan	\$4,857	\$744	\$527	8,295
24.	Novo Nordisk, Denmark	\$4,847	\$727	\$837	20,285
25.	Teva Pharmaceutical Industries, Israel	\$4,799	\$338	\$332	13,813
26.	Genentech, USA	\$4,621	\$948	\$785	7,646
27.	Sankyo Co., Japan	\$4,329	\$822	\$459	11,444
28.	Akzo Nobel, The Netherlands	\$4,037	\$644	\$1,065	61,400
29.	Alcon, Switzerland	\$3,914	\$390	\$872	12,200
30.	Forest Laboratories, USA	\$3,160	\$294	\$839	5,136
31.	Daiichi Pharmaceutical Co., Japan	\$2,964	\$546	\$353	7,333
32.	Chugai Pharmaceutical Co., Japan	\$2,833	\$463	\$328	5,327
33.	Taisho Pharmaceutical Co., Japan	\$2,655	\$221	\$337	5,378
34.	Altana, Germany	\$2,623	\$506	\$486	10,783
35.	Serono, Switzerland	\$2,458	\$595	\$494	4,902
36.	Bausch & Lomb, USA	\$2,232	\$163	\$160	12,400
37.	Mitsubishi Pharma, Japan	\$2,226	\$480	\$125	5,917
38.	Biogen Idec, USA	\$2,210	\$684	\$518	4,266
39.	Genzyme, USA	\$2,201	\$392	\$87	7,100
40.	Solvay, Belgium	\$2,170	\$366	\$673	29,300
41.	UCB, Belgium	\$2,088	\$404	\$451	11,403
42.	Allergan, USA	\$2,046	\$346	\$377	5,030
43.	Kyowa Hakko Kogyo Co., Japan	\$2,035	\$230	\$170	5,960
44.	Shionogi & Co., Japan	\$1,862	\$279	\$180	5,522
45.	IVAX Corporation, USA	\$1,837	\$142	\$198	10,100
46.	Chiron, USA	\$1,723	\$431	\$79	5,400
47.	Watson Pharmaceuticals, USA	\$1,641	\$134	\$151	3,851
48.	H. Lundbeck, Denmark	\$1,625	\$296	\$288	5,155
49.	Sumitomo Chemical Co., Japan	\$1,622	\$239	\$612	20,195
50.	Tanabe Seiyaku Co., Japan	\$1,509	\$264	\$151	4,517

\* Source: Top 50 Pharmaceutical Companies, MedAdNews, September 2005

---

#### IV. U.S. SEC EDGAR WEBSITES FOR PHARMACEUTICAL COMPANIES (SECURITIES AND EXCHANGE COMMISSION ELECTRONIC DATA GATHERING AND RETRIEVAL WEBSITES)

---

##### **PFIZER INC.**

- <http://www.sec.gov/Archives/edgar/data/78003/000095012305002379/0000950123-05-002379-index.htm>
- <http://www.sec.gov/Archives/edgar/data/78003/000095012305002379/y06124e10vk.htm>

##### **JOHNSON AND JOHNSON INC.**

- <http://www.sec.gov/Archives/edgar/data/200406/000095012305003140/0000950123-05-003140-index.htm>
- <http://www.sec.gov/Archives/edgar/data/200406/000095012305003140/y06203e10vk.txt>

##### **GLAXOSMITHKLINE PLC**

- N/A

##### **NOVARTIS AG**

- N/A

##### **ASTRAZENECA PLC**

- N/A

##### **ABBOTT LABORATORIES**

- <http://www.sec.gov/Archives/edgar/data/1800/000104746905005185/0001047469-05-005185-index.htm>
- <http://www.sec.gov/Archives/edgar/data/1800/000104746905005185/a2149332z10-k.htm>

##### **MERCK & CO. INC.**

- <http://www.sec.gov/Archives/edgar/data/64978/000095012305003003/0000950123-05-003003-index.htm>
- <http://www.sec.gov/Archives/edgar/data/64978/000095012305003003/y06253e10vk.htm>

##### **WYETH**

- <http://www.sec.gov/Archives/edgar/data/5187/000000518705000033/0000005187-05-000033-index.htm>
- <http://www.sec.gov/Archives/edgar/data/5187/000000518705000033/form10-k.txt>

##### **ELI LILLY AND COMPANY**

- <http://www.sec.gov/Archives/edgar/data/59478/000095013405004385/0000950134-05-004385-index.htm>

- <http://www.sec.gov/Archives/edgar/data/59478/000095013405004385/c92539e10vk.htm>

##### **BRISTOL-MYERS SQUIBB COMPANY**

- <http://www.sec.gov/Archives/edgar/data/14272/000119312505041808/0001193125-05-041808-index.htm>
- <http://www.sec.gov/Archives/edgar/data/14272/000119312505041808/d10k.htm>

##### **IVAX CORPORATION**

- <http://www.sec.gov/Archives/edgar/data/772197/000095014405002659/0000950144-05-002659-index.htm>
- <http://www.sec.gov/Archives/edgar/data/772197/000095014405002659/g93824e10vk.htm>

##### **BARR PHARMACEUTICALS INC.**

- <http://www.sec.gov/Archives/edgar/data/10081/000095012304010080/0000950123-04-010080-index.htm>
- <http://www.sec.gov/Archives/edgar/data/10081/000095012304010080/y00877e10vk.htm>

##### **MYLAN LABORATORIES, INC.**

- <http://www.sec.gov/Archives/edgar/data/69499/000095015205004620/0000950152-05-004620-index.htm>
- <http://www.sec.gov/Archives/edgar/data/69499/000095015205004620/j1401201e10vk.htm>

##### **WATSON PHARMACEUTICALS INC.**

- <http://www.sec.gov/Archives/edgar/data/884629/000104746905006534/0001047469-05-006534-index.htm>
- <http://www.sec.gov/Archives/edgar/data/884629/000104746905006534/a2149545z10-k.htm>

#### V. PHARMACEUTICAL TRADE ASSOCIATIONS/PUBLICATIONS

---

##### **TRADE ASSOCIATIONS**

The Pharmaceutical Printed Literature Association (PPLA) is the world's sole trade group exclusively serving printers of pharmaceutical inserts, labels, and cartons. Representing the majority of the North American pharmaceutical printed-insert industry, the not-for-profit trade group was chartered in 2001 to serve as the voice of manufacturers and to provide a forum for members to advance patient safety and risk communication. The PPLA supports health-care professionals and advocates use of printed literature to legislative, regulatory, and other decision-making bodies. In addition, the PPLA is an educational resource for strategic partners and the public.

<http://www.pplaonline.org>



## PHARMACEUTICAL ASSOCIATIONS

- Academy of Managed Care Pharmacy (AMCP)  
<http://www.amcp.org>
- Accreditation Council for Pharmacy Education  
<http://www.acpe-accredit.org>
- Alabama Board of Pharmacy  
<http://www.albop.com>
- American Association of Colleges of Pharmacy (AACP)  
<http://www.aacp.org>
- American Association of Pharmaceutical Sales Professionals (AAPSP)  
<http://www.pharmaceuticalsales.org>
- American Association of Pharmaceutical Scientists (AAPS)  
<http://www.aaps.org>
- American Association of Pharmacy Technicians (AAPT)  
<http://www.pharmacytechnician.com>
- American College of Clinical Pharmacology  
<http://www.accp1.org>
- American College of Clinical Pharmacy (ACCP)  
<http://www.accp.com>
- American Institute of the History of Pharmacy  
<http://www.pharmacy.wisc.edu/aihp>
- American Pharmaceutical Association (APhA)  
<http://www.aphanet.org>
- American Society for Clinical Pharmacology and Therapeutics  
<http://www.ascpt.org>
- American Society of Consultant Pharmacists (ASCP)  
<http://www.ascp.com>
- American Society of Health-System Pharmacists  
<http://www.ashp.org>
- American Society of Pharmacognosy  
<http://www.phcog.org>
- Arkansas State Board of Pharmacy  
<http://www.ark.org/asbp>
- Army Pharmacy  
<http://www.armypharmacy.org>
- Board of Pharmaceutical Specialties  
<http://www.bpsweb.org>
- California Pharmacists Association  
<http://www.cpha.com>
- Canadian Society for Pharmaceutical Sciences  
<http://www.cspscanada.org>
- Canadian Society of Hospital Pharmacists  
<http://www.cshp.ca>
- Canadian Society of Hospital Pharmacists—BC Branch  
<http://www.cshp-bc.com>
- Commission for Certification in Geriatric Pharmacy  
<http://www.ccgp.org>
- Drug Information Association  
<http://www.diahome.org>
- Federation of Pharmacy Networks  
<http://www.fpn.org>
- Food and Drug Administration (FDA)  
<http://www.fda.gov>
- Georgia Pharmacy Association  
<http://www.gpha.org>
- Healthcare Distribution Management  
<http://www.nwda.org>
- IAGIM Drug Development Association  
<http://www.IAGIM.org>
- Illinois Council of Health-System Pharmacists  
<http://www.ichpnet.org>
- Illinois Pharmacists Association  
<http://www.ipha.org>
- Indiana State Board of Pharmacy  
<http://www.state.in.us/pla/bandc/isbp>
- Institute for Safe Medication Practices  
<http://www.ismp.org>
- Institute of Pharmacy Management International Ltd.  
<http://www.ipmi.org.uk>
- International Academy of Compounding Pharmacist  
<http://www.iacprx.org>
- International Society for Pharmacoepidemiology  
<http://www.pharmacoepi.org>
- Kansas Pharmacists Association  
<http://www.kansaspharmacy.org>

- Maine Society of Health-System Pharmacists  
<http://www.meshp.org>
- Maryland Pharmacists Association (MphA)  
<http://www.marylandpharmacist.org>
- Mount Sinai Hospital Pharmacy Association  
<http://www.mshpa.net>
- National Association of Boards of Pharmacy (NABP)  
<http://www.nabp.net>
- National Association of Chain Drug Stores  
<http://www.nacds.org>
- National Association of Pharmacy Regulatory Authorities  
<http://www.napra.org>
- National Community Pharmacists Association  
<http://www.ncpanet.org>
- National Council for Prescription Drug Programs  
<http://www.ncdpd.org>
- National Council on Patient Information and Education (NCPPIE)  
<http://www.talkaboutrx.org>
- National Coordinating Center for Medication Error Reporting and Prevention (NCC MERP)  
<http://www.nccmerp.org>
- National Pharmacy Technician Association  
<http://www.pharmacytechnician.org>
- New Mexico Society of Health-System Pharmacists  
<http://www.nmshp.org>
- New York State Society of Health-Systems Pharmacists  
<http://www.nyschp.org>
- Nonprescription Drug Manufacturers Association of Canada  
<http://www.ndmac.ca>
- North Carolina Association of Pharmacists  
<http://www.ncpharmacists.org>
- North Carolina Board of Pharmacy  
<http://www.ncbop.org>
- Ohio Pharmacists Association  
<http://www.ohiopharmacists.org>
- Ohio Society of Health-System Pharmacists  
<http://www.ohioshp.org>
- Ohio State Board of Pharmacy  
<http://www.state.oh.us/pharmacy/index.htm>
- Oklahoma Society of Health-System Pharmacists  
<http://www.oshp.net>
- Oregon Board of Pharmacy  
<http://www.pharmacy.state.or.us>
- Oregon State Pharmacy Association  
<http://www.oregonpharmacy.org>
- Pan American Health Organization  
<http://www.paho.org>
- Pediatric Pharmacy Advocacy Group  
<http://www.ppag.org>
- Pennsylvania Pharmacists Association  
<http://www.papharmacists.com>
- Pharmaceutical Education & Research Institute (PERI)  
<http://www.peri.org>
- Pharmaceutical Research and Manufacturers of America (PhRMA)  
<http://www.phrma.org>
- Pharmaceutical Research and Manufacturers of America Foundation  
<http://www.phrmaf.org>
- Pharmacists Society of the State of NY  
<http://www.pssny.org>
- Pharmacy Benefit Management Institute, Inc.  
<http://www.pbmi.com>
- Regulatory Affairs Professionals Society  
<http://www.raps.org>
- Rhode Island Society of Health-System Pharmacists  
<http://www.rishp.org>
- Roundtable of Toxicology Consultants (RTC)  
<http://www.rtctox.com>
- San Diego County Pharmacists Association (SDCPHA)  
<http://www.sdcpha.com>
- Society for Biomolecular Screening  
<http://www.sbsonline.org>
- South Carolina Pharmacy Association  
<http://www.scrx.org>

- 
- Southeastern Michigan Society of Health-System Pharmacists  
<http://www.smshp.org>
  - Southeastern Society of Health-System Pharmacists  
<http://www.geocities.com/sshp.geo>
  - Tennessee Pharmacists Association  
<http://www.tnpharm.org>
  - Texas State Board of Pharmacy  
<http://www.tsbp.state.tx.us>
  - The Organization for Professionals in Regulatory Affairs (TOPRA)  
<http://www.esra.org>
  - University College of Pharmaceutical Sciences  
<http://www.ucpsalumni.org>
  - Utah Pharmaceutical Association  
<http://www.upha.com>
  - Verified Internet Pharmacy Practice Sites  
<http://www.nabp.net/vipps/intro.asp>

#### **PUBLICATIONS**

- BioPharm International
- InPharm.com
- Pharmaceutical Manufacturing Review
- Pharmaceutical and Healthcare Industry News Database
- Pharmaceutical Technology
- Pharmaceutical Online
- Pharmacy Week
- Pharmacy Times
- Pharmacy Today
- U.S. Pharmacist

© Copyright 2009 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein. Adobe is a trademark of Adobe Systems Incorporated. Microsoft is a U.S. registered trademark of Microsoft Corporation. Oracle is a registered US trademark of Oracle Corporation, Redwood City, California.

4AA2-7666ENUC, June 2009

