

## Pharmacist Overview

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### Overview

Pharmacists distribute drugs prescribed by physicians and other health practitioners and provide information to patients about medications and their use. They advise physicians and other health practitioners on the selection, dosages, interactions, and side effects of medications. Pharmacists also monitor the health and progress of patients in response to drug therapy to ensure the safe and effective use of medication.



Pharmacists must understand the use, clinical effects, and composition of drugs, including their chemical, biological, and physical properties. Compounding -- the actual mixing of ingredients to form powders, tablets, capsules, ointments, and solutions -- is a small part of a pharmacist's practice, because most medicines are produced by pharmaceutical companies in a standard dosage and drug delivery form. Some pharmacists specialize in specific drug therapy areas, such as intravenous nutrition support, oncology (cancer), nuclear pharmacy (used for chemotherapy), geriatric pharmacy, and psychopharmacotherapy (the treatment of mental disorders by means of drugs).

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### Preparation

Courses offered at colleges of pharmacy are designed to teach students about all aspects of drug therapy. In addition, schools teach students how to communicate with patients and other health care providers about drug information and patient care. Students also learn professional ethics, how to develop and manage medication distribution systems, and concepts of public health. In addition to receiving classroom instruction, students in Pharm.D. programs spend about one-fourth of their time learning in a variety of pharmacy practice settings under the supervision of licensed pharmacists. The Pharm.D. degree has replaced the Bachelor of Pharmacy (B.Pharm.) degree, which is no longer being awarded.



The Pharm.D. is a 4-year program that requires at least 2 years of college study prior to admittance, although most applicants have completed 3 years. Entry requirements usually include courses in mathematics and natural sciences, such as chemistry, biology, and physics, as well as courses in the humanities and social sciences. Approximately two-thirds of all colleges require applicants to take the Pharmacy College Admissions Test (PCAT).

Prospective pharmacists should have scientific aptitude, good communication skills, and a desire to help others. They also must be conscientious and pay close attention to detail, because the decisions they make affect human lives. In community pharmacies, pharmacists usually begin at the staff level. In independent pharmacies, after they gain experience and secure the necessary capital, some become owners or part owners of pharmacies. Pharmacists in chain drugstores may be promoted to pharmacy supervisor or manager at the store level, then to manager at the district or regional level, and later to an executive position within the chain's headquarters.



Hospital pharmacists may advance to supervisory or administrative positions. Pharmacists in the pharmaceutical industry may advance in marketing, sales, research, quality control, production, packaging, or other areas.

### ► Admission

In 2003, the American Association of Colleges of Pharmacy (AACP) launched the Pharmacy College Application Service, known as PharmCAS, for students who are interested in applying to schools and colleges of pharmacy. This centralized service allows applicants to use a single web-based application and one set of transcripts to apply to multiple schools of pharmacy. Many schools are currently participating, but not all are -- so be sure to explore all the accredited programs in the section below.

### ► Advanced Degrees and Residencies

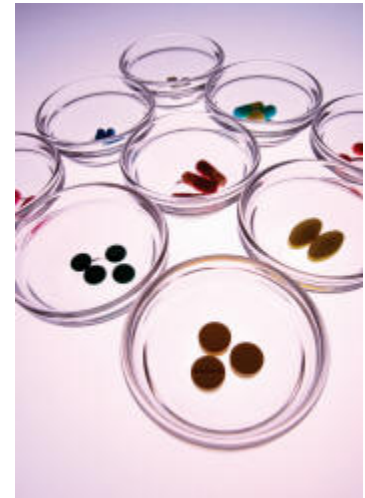
Many master's and Ph.D. degree holders do research for a drug company or teach at a university. Other options for pharmacy graduates who are interested in further training include 1-year or 2-year residency programs or fellowships. Pharmacy residencies are postgraduate training programs in pharmacy practice and usually require the completion of a research study. There currently are more than 700 residency training programs nationwide. Pharmacy fellowships are highly individualized programs that are designed to prepare participants to work in a specialized area of pharmacy, such as clinical practice or research laboratories. Some pharmacists who run their own pharmacy obtain a master's degree in business administration (MBA). Others may obtain a degree in public administration or public health. Areas of graduate study include pharmaceuticals and pharmaceutical chemistry (physical and chemical properties of drugs and dosage forms), pharmacology (effects of drugs on the body), toxicology and pharmacy administration.



## "Pharmacist Overview"

## ► Licensing

A license to practice pharmacy is required in all states, the District of Columbia, and all U.S. territories. To obtain a license, the prospective pharmacist must graduate from a college of pharmacy that is accredited by the Accreditation Council for Pharmacy Education (ACPE) and pass an examination. All states require the North American Pharmacist Licensure Exam (NAPLEX), which tests pharmacy skills and knowledge, and 43 states and the District of Columbia require the Multistate Pharmacy Jurisprudence Exam (MPJE), which tests pharmacy law.



Both exams are administered by the National Association of Boards of Pharmacy. Pharmacists in the eight states that do not require the MJPE must pass a state-specific exam that is similar to the MJPE. In addition to the NAPLEX and MPJE, some states require additional exams unique to their state. All states except California currently grant a license without extensive reexamination to qualified pharmacists who already are licensed by another state. In Florida, reexamination is not required if a pharmacist has passed the NAPLEX and MPJE within 12 years of his or her application for a license transfer. Many pharmacists are licensed to practice in more than one state. Most states require continuing education for license renewal. Persons interested in a career as a pharmacist should check with individual state boards of pharmacy for details on examination requirements, license renewal requirements, and license transfer procedures.

## ► Accredited Programs

The Accreditation Council for Pharmacy Education (ACPE) is the accreditation agency recognized by the U.S. Department of Education to accredit professional degree programs in pharmacy. Pharmacy programs grant the degree of Doctor of Pharmacy (Pharm.D.), which requires at least 6 years of postsecondary study and the passing of a state board of pharmacy's licensure examination. The following table provides a list of currently accredited pharmacy programs.



<b>ALABAMA</b> <ul style="list-style-type: none"><li>► Auburn University Harrison School of Pharmacy</li><li>► Samford University McWhorter School of Pharmacy</li></ul>	<b>NEBRASKA</b> <ul style="list-style-type: none"><li>► Creighton University Medical Center School of Pharmacy and Health Professions</li><li>► University of Nebraska Medical Center College of Pharmacy</li></ul>
<b>ARIZONA</b> <ul style="list-style-type: none"><li>► Midwestern University College of Pharmacy-Glendale</li><li>► University of Arizona College of Pharmacy</li></ul>	<b>NEVADA</b> <ul style="list-style-type: none"><li>► University of Southern Nevada College of Pharmacy</li></ul>
<b>ARKANSAS</b> <ul style="list-style-type: none"><li>► University of Arkansas for Medical Sciences College of Pharmacy</li></ul>	<b>NEW JERSEY</b> <ul style="list-style-type: none"><li>► Rutgers, the State University of New Jersey Ernest Mario School of Pharmacy</li></ul>
<b>CALIFORNIA</b> <ul style="list-style-type: none"><li>► Loma Linda University School of Pharmacy</li><li>► Thomas J. Long School of Pharmacy &amp; Health Sciences at the University of the Pacific</li><li>► Touro University – California College of Pharmacy</li><li>► University of California, San Diego Skaggs School of Pharmacy and Pharmaceutical Sciences</li></ul>	<b>NEW MEXICO</b> <ul style="list-style-type: none"><li>► University of New Mexico College of Pharmacy</li></ul>
	<b>NEW YORK</b> <ul style="list-style-type: none"><li>► Albany College of Pharmacy</li><li>► Long Island University Arnold and Marie Schwartz College of Pharmacy and Health Sciences</li><li>► St. John Fisher College Wegmans School of Pharmacy</li></ul>

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<ul style="list-style-type: none"> <li>▶ University of California, San Francisco School of Pharmacy</li> <li>▶ University of Southern California School of Pharmacy</li> <li>▶ Western University of Health Sciences College of Pharmacy</li> </ul>	<ul style="list-style-type: none"> <li>▶ St. John's University College of Pharmacy and Allied Health Professions</li> <li>▶ University at Buffalo The State University of New York School of Pharmacy &amp; Pharmaceutical Sciences</li> </ul>
<p><b>COLORADO</b></p> <ul style="list-style-type: none"> <li>▶ University of Colorado at Denver and Health Sciences Center School of Pharmacy</li> </ul>	<p><b>NORTH CAROLINA</b></p> <ul style="list-style-type: none"> <li>▶ Campbell University School of Pharmacy</li> <li>▶ University of North Carolina at Chapel Hill School of Pharmacy</li> <li>▶ Wingate University School of Pharmacy</li> </ul>
<p><b>CONNECTICUT</b></p> <ul style="list-style-type: none"> <li>▶ University of Connecticut School of Pharmacy</li> </ul>	<p><b>NORTH DAKOTA</b></p> <ul style="list-style-type: none"> <li>▶ North Dakota State University College of Pharmacy , Nursing and Allied Sciences</li> </ul>
<p><b>DISTRICT OF COLUMBIA</b></p> <ul style="list-style-type: none"> <li>▶ Howard University College of Pharmacy, Nursing, and Allied Health Sciences School of Pharmacy</li> </ul>	<p><b>OHIO</b></p> <ul style="list-style-type: none"> <li>▶ Northeastern Ohio Universities College of Pharmacy</li> <li>▶ Ohio Northern University College of Pharmacy</li> <li>▶ Ohio State University College of Pharmacy</li> <li>▶ University of Cincinnati James L. Winkle College of Pharmacy</li> <li>▶ University of Findlay School of Pharmacy</li> <li>▶ University of Toledo College of Pharmacy</li> </ul>
<p><b>FLORIDA</b></p> <ul style="list-style-type: none"> <li>▶ Florida Agricultural and Mechanical University College of Pharmacy and Pharmaceutical Sciences</li> <li>▶ Nova Southeastern University College of Pharmacy</li> <li>▶ Palm Beach Atlantic University Lloyd L. Gregory School of Pharmacy</li> <li>▶ University of Florida College of Pharmacy</li> </ul>	<p><b>OKLAHOMA</b></p> <ul style="list-style-type: none"> <li>▶ Southwestern Oklahoma State University School of Pharmacy</li> <li>▶ University of Oklahoma College of Pharmacy</li> </ul>
<p><b>GEORGIA</b></p> <ul style="list-style-type: none"> <li>▶ Mercer University College of Pharmacy and Health Sciences</li> <li>▶ South University School of Pharmacy</li> <li>▶ University of Georgia College of Pharmacy</li> </ul>	<p><b>OREGON</b></p> <ul style="list-style-type: none"> <li>▶ Oregon State University College of Pharmacy</li> <li>▶ Pacific University School of Pharmacy</li> </ul>
<p><b>HAWAII</b></p> <ul style="list-style-type: none"> <li>▶ University of Hawaii at Hilo College of Pharmacy</li> </ul>	<p><b>PENNSYLVANIA</b></p> <ul style="list-style-type: none"> <li>▶ Duquesne University Mylan School of Pharmacy</li> <li>▶ Lake Erie College of Osteopathic Medicine, School of Pharmacy</li> <li>▶ Nesbitt College of Pharmacy and Nursing School of Pharmacy at Wilkes University</li> <li>▶ Temple University School of Pharmacy</li> <li>▶ University of Pittsburgh School of Pharmacy</li> <li>▶ University of the Sciences in Philadelphia - Philadelphia College of Pharmacy</li> </ul>
<p><b>IDAHO</b></p> <ul style="list-style-type: none"> <li>▶ Idaho State University College of Pharmacy</li> </ul>	<p><b>PUERTO RICO</b></p> <ul style="list-style-type: none"> <li>▶ University of Puerto Rico Medical Sciences Campus School of Pharmacy</li> </ul>
<p><b>ILLINOIS</b></p> <ul style="list-style-type: none"> <li>▶ Midwestern University Chicago College of Pharmacy</li> <li>▶ Southern Illinois University Edwardsville School of Pharmacy</li> <li>▶ University of Illinois at Chicago College of Pharmacy</li> </ul>	<p><b>RHODE ISLAND</b></p> <ul style="list-style-type: none"> <li>▶ University of Rhode Island College of Pharmacy</li> </ul>
<p><b>INDIANA</b></p> <ul style="list-style-type: none"> <li>▶ Butler University College of Pharmacy and Health Sciences</li> <li>▶ Purdue University School of Pharmacy and Pharmaceutical Sciences</li> </ul>	<p><b>SOUTH CAROLINA</b></p> <ul style="list-style-type: none"> <li>▶ Medical University of South Carolina College of Pharmacy</li> <li>▶ South Carolina College of Pharmacy</li> <li>▶ University of South Carolina College of Pharmacy</li> </ul>
<p><b>IOWA</b></p> <ul style="list-style-type: none"> <li>▶ Drake University College of Pharmacy and Health Sciences</li> <li>▶ University of Iowa College of Pharmacy</li> </ul>	<p><b>SOUTH DAKOTA</b></p> <ul style="list-style-type: none"> <li>▶ South Dakota State University College of Pharmacy</li> </ul>
<p><b>KANSAS</b></p> <ul style="list-style-type: none"> <li>▶ University of Kansas School of Pharmacy</li> </ul>	<p><b>TENNESSEE</b></p> <ul style="list-style-type: none"> <li>▶ East Tennessee State University College of Pharmacy</li> <li>▶ University of Tennessee Health Science Center College of Pharmacy</li> </ul>
<p><b>KENTUCKY</b></p> <ul style="list-style-type: none"> <li>▶ University of Kentucky College of Pharmacy</li> </ul>	<p><b>TEXAS</b></p> <ul style="list-style-type: none"> <li>▶ Texas A&amp;M University Health Science Center Irma Lerma Rangel College of Pharmacy</li> <li>▶ Texas Southern University College of Pharmacy and Health Sciences</li> <li>▶ Texas Tech University Health Sciences Center School of Pharmacy</li> <li>▶ University of Houston College of Pharmacy</li> </ul>
<p><b>LOUISIANA</b></p> <ul style="list-style-type: none"> <li>▶ University of Louisiana at Monroe College of Pharmacy</li> <li>▶ Xavier University of Louisiana College of Pharmacy</li> </ul>	
<p><b>MARYLAND</b></p> <ul style="list-style-type: none"> <li>▶ University of Maryland School of Pharmacy</li> </ul>	
<p><b>MASSACHUSETTS</b></p>	

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<ul style="list-style-type: none"> <li>▶ Massachusetts College of Pharmacy and Health Sciences School of Pharmacy-Worcester</li> <li>▶ Massachusetts College of Pharmacy and Health Sciences School of Pharmacy-Boston</li> <li>▶ Northeastern University Bouvé College of Health Sciences School of Pharmacy</li> </ul> <p><b>MICHIGAN</b></p> <ul style="list-style-type: none"> <li>▶ Ferris State University College of Pharmacy</li> <li>▶ University of Michigan College of Pharmacy</li> <li>▶ Wayne State University, Eugene Applebaum College of Pharmacy and Health Sciences</li> </ul> <p><b>MINNESOTA</b></p> <ul style="list-style-type: none"> <li>▶ University of Minnesota College of Pharmacy</li> </ul> <p><b>MISSISSIPPI</b></p> <ul style="list-style-type: none"> <li>▶ University of Mississippi School of Pharmacy</li> </ul> <p><b>MISSOURI</b></p> <ul style="list-style-type: none"> <li>▶ St. Louis College of Pharmacy</li> <li>▶ University of Missouri-Kansas City School of Pharmacy</li> </ul> <p><b>MONTANA</b></p> <ul style="list-style-type: none"> <li>▶ University of Montana College of Health Professions and Biomedical Sciences, Skaggs School of Pharmacy</li> </ul>	<ul style="list-style-type: none"> <li>▶ University of Texas at Austin College of Pharmacy</li> <li>▶ University of the Incarnate Word Feik School of Pharmacy</li> </ul> <p><b>UTAH</b></p> <ul style="list-style-type: none"> <li>▶ University of Utah College of Pharmacy</li> </ul> <p><b>VIRGINIA</b></p> <ul style="list-style-type: none"> <li>▶ Hampton University School of Pharmacy</li> <li>▶ Shenandoah University Bernard J. Dunn School of Pharmacy</li> <li>▶ University of Appalachia College of Pharmacy</li> <li>▶ Virginia Commonwealth University at the Medical College of Virginia Campus School of Pharmacy</li> </ul> <p><b>WASHINGTON</b></p> <ul style="list-style-type: none"> <li>▶ University of Washington School of Pharmacy</li> <li>▶ Washington State University College of Pharmacy</li> </ul> <p><b>WEST VIRGINIA</b></p> <ul style="list-style-type: none"> <li>▶ University of Charleston School of Pharmacy</li> <li>▶ West Virginia University School of Pharmacy</li> </ul> <p><b>WISCONSIN</b></p> <ul style="list-style-type: none"> <li>▶ University of Wisconsin-Madison School of Pharmacy</li> </ul> <p><b>WYOMING</b></p> <ul style="list-style-type: none"> <li>▶ University of Wyoming School of Pharmacy</li> </ul>
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## Day in the Life

Most pharmacists work in a community setting, such as a retail drugstore, or in a health care facility, such as a hospital, nursing home, mental health institution, or neighborhood health clinic.

Pharmacists in community and retail pharmacies counsel patients and answer questions about prescription drugs, including questions regarding possible side effects or interactions among various drugs. They provide information about over-the-counter drugs and make recommendations after talking with the patient.

They also may give advice about the patient's diet, exercise, or stress management or about durable medical equipment and home health care supplies. In addition, they also may complete third-party insurance forms and other paperwork.



Those who own or manage community pharmacies may sell non-health-related merchandise, hire and supervise personnel, and oversee the general operation of the pharmacy. Some community pharmacists provide specialized services to help patients manage conditions such as diabetes, asthma, smoking cessation, or high blood pressure. Some community pharmacists also are trained to administer vaccinations.

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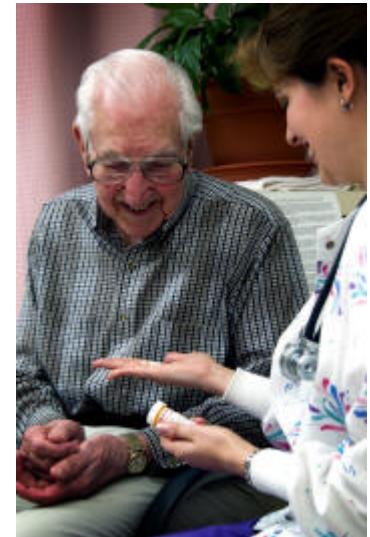
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Pharmacists in health care facilities dispense medications and advise the medical staff on the selection and effects of drugs. They may make sterile solutions to be administered intravenously. They also assess, plan, and monitor drug programs or regimens.



Pharmacists counsel hospitalized patients on the use of drugs and on their use at home when the patients are discharged. Pharmacists also may evaluate drug-use patterns and outcomes for patients in hospitals or managed care organizations.

Pharmacists who work in home health care monitor drug therapy and prepare infusions -- solutions that are injected into patients -- and other medications for use in the home. Most full-time salaried pharmacists work approximately 40 hours a week, and about 10 percent work more than 50 hours.



Many community and hospital pharmacies are open for extended hours or around the clock, so pharmacists may be required to work nights, weekends, and holidays. Consultant pharmacists may travel to nursing homes or other facilities to monitor patients' drug therapy.

About 16 percent of pharmacists work part time. Many pharmacists spend most of their workday on their feet.

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## Earnings

Median annual of wage-and-salary pharmacists is \$94,520. The middle 50 percent earned between \$83,180 and \$108,140 a year. The lowest 10 percent earned less than \$67,860, and the highest 10 percent earned more than \$119,480 a year. Median annual earnings in the industries employing the largest numbers of pharmacists were:



Department Stores	\$99,050
Grocery Stores	\$95,600
Pharmacies and Drug Stores	\$94,640
General Medical and Surgical Hospitals	\$93,640

According to a 2006 survey by Drug Topics Magazine, pharmacists in retail settings earned an average of \$92,291 per year, while pharmacists in institutional settings earned an average of \$97,545. Full-time pharmacists earned an average of \$102,336, while part-time pharmacists earned an average of \$55,589.

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## Employment

Pharmacists hold about 243,000 jobs in the United States. About 62 percent worked in community pharmacies that were either independently owned or part of a drugstore chain, grocery store, department store, or mass merchandiser. Most community pharmacists were salaried employees, but some were self-employed owners. About 23 percent of pharmacists worked in hospitals.

A small proportion worked in mail-order and Internet pharmacies, pharmaceutical wholesalers, offices of physicians, and the Federal Government.



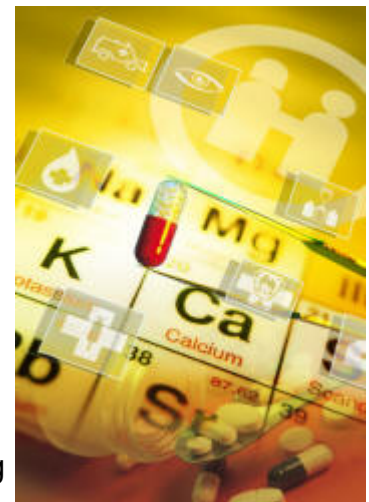
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## Career Path Forecast

According to the U.S. Department of Labor, Bureau of Labor Statistics, employment of pharmacists is expected to increase much faster than the average through 2016. As a result of rapid growth and the need to replace workers who leave the occupation, job prospects should be excellent. Employment of pharmacists is expected to grow by 22 percent between 2006 and 2016, which is much faster than the average for all occupations. The increasing numbers of middle-aged and elderly people -- who use more prescription drugs than younger people -- will continue to spur demand for pharmacists throughout the projection period. Other factors likely to increase the demand for pharmacists include scientific advances that will make more drug products available and the coverage of prescription drugs by a greater number of health insurance plans and Medicare.



As the use of prescription drugs increases, demand for pharmacists will grow in most practice settings, such as community pharmacies, hospital pharmacies, and mail-order pharmacies. As the population ages, assisted living facilities and home care organizations should see particularly rapid growth. Demand will also increase as cost conscious insurers, in an attempt to improve preventative care, use pharmacists in areas such as patient education and vaccination administration.



Demand is also increasing in managed care organizations where pharmacists analyze trends and patterns in medication use, and in pharmacoconomics -- the cost and benefit analysis of different drug therapies. New jobs also are being created in disease management -- the development of new methods for curing and controlling diseases -- and in sales and marketing. Rapid growth is also expected in pharmacy informatics -- the use of information technology to improve patient care. Excellent opportunities are expected for pharmacists over the 2006 to 2016 period. Job openings will result from rapid employment growth, and from the need to replace workers who retire or leave the occupation for other reasons.

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## Professional Organizations

Professional organizations and associations provide a wide range of resources for planning and navigating a career in nursing. These groups can play a key role in your development and keep you abreast of what is happening in your industry. Associations promote the interests of their members and provide a network of contacts that can help you find jobs and move your career forward. They can offer a variety of services including job referral services, continuing education courses, insurance, travel benefits, periodicals, and meeting and conference opportunities. A broader list of professional associations is also available at [www.careercornerstone.org](http://www.careercornerstone.org).



- ▶ **Accreditation Council for Pharmacy Education ([www.acpe-accredit.org](http://www.acpe-accredit.org))**
- ▶ **American Association of Colleges of Pharmacy ([www.aacp.org](http://www.aacp.org))**
- ▶ **American Association of Pharmaceutical Scientists ([www.aaps.org](http://www.aaps.org))**
- ▶ **American Pharmacists Association ([www.aphanet.org](http://www.aphanet.org))**
- ▶ **American Society of Health-System Pharmacists ([www.ashp.org](http://www.ashp.org))**
- ▶ **Board of Pharmaceutical Specialties ([www.bpsweb.org](http://www.bpsweb.org))**
- ▶ **National Association of Boards of Pharmacy ([www.nabp.net](http://www.nabp.net))**