In December 2011, the Office of the Chief Pharmacist of the U.S. Public Health Service released a report to the U.S. Surgeon General on Improving Patient and Health System Outcomes through Advanced Pharmacy Practice. The report is constructed around four focal points:

- **Pharmacists Integrated as Health Care Providers:** Definition of primary care; pharmacist roles; interprofessional collaboration and support
- **Recognition as Health Care Providers:** Advanced pharmacy practice models; pharmacy education and training
- **Compensation Mechanisms:** Essential for sustainability; legislation history; medication therapy management (MTM) under Medicare Part D
- **Evidence-Based Alignment with Health Reform:** Quality of care and patient outcomes; disease prevention and management; cost-effectiveness and cost-containment; primary care workforce; access to care

The report summarizes pharmacists’ contributions to patient care in various practice settings either as part of a health care team or as an individual provider working in collaboration with physicians in a pharmacist-delivered service. It highlights the role of the pharmacist in managing diseases through collaborative practice agreements with physicians in which pharmacists

- perform patient assessment (subjective and objective data including physical assessment);
- have prescriptive authority (initiate, adjust, or discontinue treatment) to manage disease through medication use and deliver collaborative drug therapy or medication management;
- order, interpret, and monitor laboratory tests;
- formulate clinical assessments and develop therapeutic plans;
- provide care coordination and other health services for wellness and prevention of disease; and
- develop partnerships with patients for ongoing (follow-up) care.

In addition to reciting the evidence supporting the impact of various pharmacist services on improving patient and health care outcomes, the report summarizes the economic benefit, explaining that, between 1998 and 2005, the overall average benefit gained was $10.07 per $1 of funds allocated to clinical pharmacy services. The report maintains that compensation mechanisms are needed to sustain such services that will be in alignment with health care reform and future primary care workforce demands and that pharmacists should be recognized as health care providers, as defined in the Social Security Act and other health legislation and policy.

In a public letter in support of the report, Regina Benjamin, M.D., MBA, U.S. Surgeon General, recognized that the comprehensive patient care services that pharmacists provide through collaborative practice agreements increase access to care, optimize patient outcomes, and contain health care costs. Moreover, she recommended that health leaders and policy-makers explore ways to expand such services. Dr. Benjamin noted that recognizing pharmacists as health care providers is appropriate and that compensation models are needed to sustain these patient-centered pharmacy services.


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A Survey of Students’ Perceptions of the Pharmacy Profession in Japan*

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In 2006, the Ministry of Education, Culture, Sports, Science and Technology in Japan started a 6-year education system for pharmacists. At present, two pharmacy education systems exist—the 6-year program to educate aspiring pharmacists and the 4-year system to educate pharmaceutical scientists. The Pharmaceutical Society of Japan then developed a model core curriculum, adopted by all 6-year programs. Subjects taught in the first 3 years of 6-year programs are quite similar to those in the 4-year programs. These include basic and pharmaceutical sciences such as chemistry, pharmacology, pharmaceutics, and pharmacotherapy. In the fourth year, clinically oriented subjects are increased, and students must pass the Pharmaceutical Common Achievement Test, consisting of Computer-Based Testing and the Objective Structured Clinical Examination. The fifth-year students gain clinical experience in pharmacies both at hospitals (11 weeks) and in the community (11 weeks). Sixth-year students complete a graduation research project, with themes ranging from basic pharmaceutical science to clinical practice. After completing the 6-year program, they are eligible to take the National Examination for Pharmacists.

In May 2010, we administered a survey to all first- through fifth-year students enrolled in the 6-year programs of two pharmacy schools—Josai International University and Toho University (which provides only a 6-year program). The survey investigated students’ perceptions of the status of “pharmacists” and pharmacists in Japan and of their ongoing pharmacy education. In total, 1551 students enrolled in the survey. Not all students had yet experienced practical training at clinical sites, and sixth-year students were absent.

Two-thirds of the students did not feel pharmacists had high visibility or high professional status in Japanese society (Table). Sixty-five percent of students agreed that pharmacists had limited fields of practice. The number of students with negative perceptions of pharmacists’ status increased with school year. Of course, this is part of society’s superficial understanding of the pharmacy profession. In addition, with advancing school years, students come to learn about the differences between the ideal and real situations of pharmacists.

Two-thirds of pharmacy students were satisfied with their educational program. However, the degree of satisfaction decreased with school year. Only one-third of students were satisfied with the relevance of practical training and subjects in school, suggesting that students in higher grades want to be trained further on practical and clinical issues. In Japan, pharmacist licenses can be renewed without any continuing education. About half of the students answered that a mandatory renewal system of pharmacist licensure was necessary, suggesting that students are aware that, to possess the advanced knowledge and skills needed to offer high-quality services to patients, continuous professional development is required.

In summary, Japanese pharmacy students are unsatisfied with the status of pharmacists in society. Moreover, they desire additional clinical training during the pharmacy education program and mandatory continuing professional development for licensure renewal.

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Table: Student Responses to Survey Items

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>First Year (n=310)</th>
<th>Second Year (n=338)</th>
<th>Third Year (n=312)</th>
<th>Fourth Year (n=282)</th>
<th>Fifth Year (n=309)</th>
<th>Total (n=1551)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacists have high visibility in Japanese society. n (%)</td>
<td>139 (45.7)</td>
<td>88 (26.3)</td>
<td>83 (26.6)</td>
<td>61 (21.6)</td>
<td>66 (24.2)</td>
<td>437 (28.4)</td>
</tr>
<tr>
<td>Pharmacists have a high professional status in Japanese society. n (%)</td>
<td>176 (57.9)</td>
<td>154 (46.0)</td>
<td>138 (44.2)</td>
<td>68 (24.1)</td>
<td>74 (24.0)</td>
<td>610 (39.6)</td>
</tr>
<tr>
<td>Pharmacists have limited fields of practice. n (%)</td>
<td>184 (60.5)</td>
<td>183 (54.6)</td>
<td>210 (67.7)</td>
<td>202 (71.9)</td>
<td>216 (70.4)</td>
<td>995 (64.7)</td>
</tr>
<tr>
<td>The scope of the educational contents in your program. n (%)</td>
<td>225 (73.1)</td>
<td>222 (65.9)</td>
<td>220 (70.7)</td>
<td>162 (59.6)</td>
<td>160 (58.4)</td>
<td>989 (63.9)</td>
</tr>
<tr>
<td>The relevance of practical training and subjects in the school. n (%)</td>
<td>132 (43.6)</td>
<td>128 (37.9)</td>
<td>76 (24.4)</td>
<td>79 (28.1)</td>
<td>106 (34.4)</td>
<td>521 (33.8)</td>
</tr>
<tr>
<td>Mandatory continuous education for the renewal of pharmacists’ licenses is necessary. n (%)</td>
<td>178 (58.9)</td>
<td>143 (42.8)</td>
<td>140 (45.2)</td>
<td>136 (48.4)</td>
<td>170 (55.4)</td>
<td>767 (50.0)</td>
</tr>
</tbody>
</table>

SA/A = strong agree and agree; SD/D = strong disagree and disagree; VS/S = very satisfactory and satisfactory; VU/U = very unsatisfactory and unsatisfactory. Because of some missing values, the sum of each school year’s numbers does not equal the total number of students in each school year.

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*Opinions, judgments, and data expressed or implied in this article are those of the author and do not reflect the policy or position of the American College of Clinical Pharmacy, and the American College of Clinical Pharmacy provides no warranty regarding their accuracy or reliability.
Pharmacist Education and Practice in Genomics

Major pharmacy organizations and stakeholders in the genomic education of pharmacists participated in the Pharmacist Education in the Era of Genomic Medicine Meeting held November 30 to December 1, 2011, and sponsored by the National Human Genome Research Institute (NHGRI), National Institutes of Health, and Department of Health and Human Services.

In addition to representatives from the American College of Clinical Pharmacy (ACCP), representatives were present from the Academy of Managed Care Pharmacy, Accreditation Council for Pharmacy Education, American Association of Colleges of Pharmacy, American Association of Pharmaceutical Scientists, American Pharmacists Association, American Society for Clinical Pharmacology & Therapeutics, American Society of Consultant Pharmacists, American Society of Health-System Pharmacists, and National Alliance of State Pharmacy Associations. Also in attendance were representatives from medicine, nursing, and physician assistants as well as the National Coalition for Health Professional Education in Genetics, National Cancer Institute, Centers for Medicare & Medicaid Services, U.S. Food and Drug Administration, and IMS Health.

In view of the recent advances in genomic discoveries, together with the direct-to-consumer marketing of genetic and pharmacogenomic tests available at local drug stores, the meeting was convened to define the current landscape of pharmacist education in genomics; identify core educational needs; and plan next steps to strategically address pharmacy education at various stages of health professional education.

Improved health outcomes from genomic discoveries will only be realized if the health care community is aware of and can translate these findings to clinical practice. In his address, Greg Feero, M.D., Ph.D., Special Advisor to the Director, NHGRI, stated that because pharmacy services exist across the health care funnel from primary care to specialty care, “[p]harmacists are well positioned to ensure maximal societal benefits of genomic discovery.”

ACCP has long recognized the pharmacist’s role in providing individualized medicine. As the human genome project was being developed in the early 1990s, ACCP recognized pharmacogenomics as a factor that would promote change in pharmacist roles and responsibilities:

Pharmacogenomics—the application of principles of pharmacogenetics to the development of optimal regimens for treatment or prevention of disease—also may result in new pharmacist roles. It is likely that knowledge of a particular patient’s genetic profile will be used in the future to individualize drug selection and dosing, or to predict adverse effects. Pharmacists may be required to assist in the interpretation of diagnostic genetic tests and to use their knowledge of pharmacokinetics and pharmacodynamics to optimize drug therapy for a specific patient. The greater degree of complexity associated with this mode of drug selection may further increase pharmacists’ roles on the patient care team. In addition, one would expect that the evolution of pharmacogenomics will increase the need for patient and health care provider education regarding drug therapy.

In addition, statements on the knowledge and application of pharmacogenomics in designing patient-specific drug therapy plans were delineated in the clinical pharmacist competencies. Today, clinical pharmacists assimilate pharmacogenomics into daily practice, and several generate new knowledge paramount to pharmacogenomic research and optimal patient outcomes. Further educational efforts will enhance pharmacists’ knowledge and the application of genomic discoveries in various practice settings.

Call for Papers

Individuals are invited to submit articles for publication in future issues of the newsletter on the following departments:

- Clinical Pharmacy Practice
- Clinical Pharmacist or Clinical Practice Profile
- Patient Care
- Research and Practice
- Pharmacy Education
- Continuing Professional Development

For more information and to submit an article, see www.accp.com/docs/international/InformationForAuthors.pdf.

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Book Highlights

Pharmacogenomics: Applications to Patient Care, Second Edition

Written by national experts in pharmacogenomics from different practice areas, disciplines, and research environments, the second edition of Pharmacogenomics: Applications to Patient Care combines the basics of pharmacogenomics with disease-specific applications to give practitioners a solid foundation for understanding the basic science of pharmacogenomics and the skills for integrating pharmacogenomics into daily clinical practice.

Chapters include:

- Pharmacogenomics Basics
  - Applications of Genomics in Human Health and Complex Disease
  - The Rich Life of a Poor Metabolizer—Tribute to Werner Kalow, M.D.
  - Pharmacogenetics: A Historical Perspective
  - Pharmacogenetics of Oxidative Drug Metabolism and Its Clinical Applications
  - Phase II Drug-Metabolizing Enzymes
  - Drug Transporter Pharmacogenetics
  - Drug Target Pharmacogenetics
  - Pharmacogenomics in Drug Discovery and Drug Development
- Pharmacogenomics Applications in Treating Disease
  - Pharmacogenomics of Solid Tumors
  - Pharmacogenomics of Hematologic Malignancies
  - Warfarin Pharmacogenetics
  - Infectious Diseases
  - Cardiovascular Diseases
  - Psychiatry
  - Respiratory Diseases
  - Transplantation
- Ethical, Legal, Social, and Regulatory Issues
  - Ethical, Legal, and Social Challenges to Applied Pharmacogenetics
  - Cost-effectiveness, Economic Incentives, and Reimbursement Issues
  - Ethical and Privacy Issues in Pharmacogenomic Research
- Fundamentals of Applied Human Genomics
  - Principles of Genetic Medicine
  - Applied Molecular and Cellular Biology
  - Analysis of the Human Genome and Proteome
  - Bioinformatics

Also available is the Pharmacogenomics: Applications to Patient Care Self-Assessment Tool. This online tool includes more than 230 questions designed to assess how well the reader has accomplished the learning objectives from each chapter. Once tests are submitted, the test taker receives his or her test score as a percentage of correct responses; information on which answers were correct and which incorrect; and the explained answers for that individual test.

Pharmacogenomics: Applications to Patient Care and the self-assessment tool are must-have resources for all practitioners seeking to optimize individualized drug therapy and patient outcomes but facing the challenge of learning and keeping up with the seemingly limitless amount of pharmacogenomics information available.

More information on these resources is available at www.accp.com/bookstore/th_02pg.aspx.
A Message from the Editor

Dear Colleagues:

This issue of *ACCP International Clinical Pharmacist* features three articles that are very much in sync with the priorities of the American College of Clinical Pharmacy (ACCP)—to promote the professional development of, advocate for, and position clinical pharmacists.

The December 2011 report released by the Office of the Chief Pharmacist of the U.S. Public Health Service summarizes clinical and economic evidence in support of the various direct patient care services provided by clinical pharmacists. It argues for the recognition of pharmacists as health care providers and the exploration of new compensation models to sustain these patient-centered, quality improvement, cost-effective services. The article on “U.S. Surgeon General Supports Recognition of Pharmacists as Health Care Providers” summarizes the report and a letter released by the U.S. Surgeon General in support of the report.

The article “Pharmacist Education and Practice in Genomics” describes initiatives led by the National Human Genome Research Institute to educate pharmacists practicing in various settings to incorporate genomics into their daily practice. This, again, highlights the value of pharmacists and the services they provide across the health care continuum.

The article on “A Survey of Students’ Perceptions of the Pharmacy Profession in Japan” represents the views of pharmacy students. Survey findings highlight the significance of and need for (1) adequate clinical practice opportunities during professional education to equip future pharmacists for their prospective roles and (2) continuing professional education opportunities for practicing pharmacists to maintain lifelong competence. The article also highlights the need to educate the general public on the pharmacy profession and pharmacists’ evolving roles.

*ACCP International Clinical Pharmacist* editorial staff invite you to use this newsletter as your voice to reflect on changes occurring in the pharmacy profession worldwide and share with the international pharmacy community key initiatives and innovative practices taking place at your institution or in your home country.

Sincerely,

Wafa Y. Dahdal, Pharm.D., BCPS (AQ Cardiology)

Mark Your Calendar

**ACCP Updates in Therapeutics® 2012**
April 27–May 1, 2012
Reno, Nevada

**2012 ACCP Annual Meeting**
October 21–24, 2012
Hollywood, Florida

Preparatory Review Courses for Pharmacotherapy and Ambulatory Care Pharmacy Specialties to Be Offered This April

ACCP Updates in Therapeutics® 2012 featuring The Pharmacotherapy Preparatory Review and Recertification Course and The Ambulatory Care Pharmacy Preparatory Review and Recertification Course will be held from April 27 to May 1 in Reno, Nevada. Each of these two 5-day preparatory courses offers a comprehensive review of pharmacotherapeutic and practice topics relevant to the Pharmacotherapy and Ambulatory Care Pharmacy specialties, respectively. These courses are highly recommended for practitioners preparing for board certification as well as for seasoned practitioners seeking the most up-to-date information that is essential for optimal patient care and contemporary pharmacy practice.

More information on these courses is available at [www.accp.com/meetings/ut12/](http://www.accp.com/meetings/ut12/).