Pharmacy’s future: Transformation, diffusion, and imagination

William A. Zellmer

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History is not concerned with predicting: the ability to predict would mean a closed and determined universe or, perhaps worse, a managed one. And if we know anything from our observation of the drama of history, it is that history is open, full of extraordinary potential and inexplicable turns and changes.

—Page Smith (historian)

The future has already arrived. It’s just not evenly distributed yet.

—William Gibson (science-fiction writer)

Introduction

Reflecting the premise that pharmacy is in the midst of a transformation “from a product-focused profession to one that is patient focused,” this article considers how that transformation may unfold over the next 40 years or so, the typical span of a professional career. The transformation probably will not march in a straight line toward some ultimate perfection. Rather, it is likely to follow a haphazard course, leading to a variety of practice models that have core traits in common with the early concept of clinical pharmacy. The pace of change may fluctuate between exhilarating advances and disappointing setbacks, depending on the forces in the environment and the quality of the profession’s leadership.

Beyond these “safe” generalities, this article does not attempt to predict the future of pharmacy. Instead, some ruminations are offered about the factors that may affect the trajectory of pharmacy’s transformation over the next four decades, based on history and the unevenly distributed future that is already here.

The themes of the article are transformation, diffusion, and imagination. After a brief reflection on the current state of pharmacy practice in the United States—the foundation for the future—clinical pharmacy is discussed from the perspective of knowledge about the diffusion of innovations. The article concludes with thoughts about monitoring progress in the transformation of the profession.

Transformation: Letting go of old dreams

Clinical pharmacy entails what Thomas Kuhn1 called a perceptual transformation—a paradigm shift. The traditional, real-world paradigm of pharmacy practice could be stated like this:

The pharmacist is responsible for ensuring that a patient receives the medicine ordered by the physician and that the medicine is safe to use.

The new paradigm could be phrased like this:

The pharmacist is responsible for helping a patient make the best use of medicines.2

This deceptively simple statement implies that the pharmacist (1) knows the patient (including the patient’s health status, literacy level, health-related values, living conditions, and social support systems) and (2) acts in collaboration with the patient’s other health care providers. That the pharmacist should be concerned about anything other than filling an order safely and accurately was a revolutionary idea. Revolutions are always resisted, so it is not surprising that the profession’s transformation is not yet complete.
40 years after the introduction of clinical pharmacy. The pioneers in clinical pharmacy education had hoped that the profession’s general practitioners would integrate the precepts of clinical pharmacy into their existing practices. The dream was that frontline pharmacists would take responsibility for ensuring that the patient is using the most appropriate medicine in the most appropriate way. While this dream is being realized in some exemplary community and institutional pharmacies, it is still far from reality in the vast majority of practice sites.

Most pharmacists in community pharmacies and outpatient pharmacies limit their activities to the rudiments of dispensing. In the hospital inpatient setting, most pharmacy departments are driven by a “production culture” rather than a patient care culture. Even in large hospitals, which have offered some of the most fertile ground for the adoption of clinical pharmacy, the order-review and -dispensing functions still consume a significant portion of pharmacists’ time.

In contrast with pharmacy education’s thorough embrace of clinical pharmacy, grassroots pharmacy practice seems to have suffered from a lack of vision and will. If there had been an authentic perceptual transformation among pharmacists—if clinical pharmacy had penetrated their hearts and minds—surely they would have reformed their practices to include much deeper engagement with the patient.

The inertia of the past notwithstanding, a large number of pharmacy practice leaders recognize that the old paradigm for pharmacy practice is not sustainable. This awareness is demonstrated most prominently in support for the 2004 vision statement for pharmacy practice developed by the Joint Commission of Pharmacy Practitioners (JCPP). National pharmacy organizations are collaborating in projects designed to achieve the JCPP vision. Other independent initiatives are designed to transform particular segments of practice.4,5

Both the retail drugstore industry and the hospital industry are devising new ways of preparing and delivering prescription medicines that do not necessitate the hands-on involvement of a high-priced pharmacist. Among the innovations that are setting the stage for reducing pharmacist involvement in dispensing are electronic prescribing, clinical decision-support systems, technician certification and licensure, robotics, and various telepharmacy applications (including remote order review6 and remote pharmacist supervision of technicians7).

It may be time to let go of the dream of integrating or blending the old and new paradigms of pharmacy practice and concentrate the efforts of pharmacists on clinical practice. There is certainly abundant need in health care for pharmacists who are dedicated to ensuring optimal medication therapy outcomes.8

**Diffusion: Steps toward the future**

Research on the diffusion of innovations offers insights on what the coming years may hold for the transformation of pharmacy. In that research, innovation is defined as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption.” As summarized by Everett M. Rogers,9 this research shows that the following attributes of a new idea or concept, such as clinical pharmacy, influence its rate of adoption:

1. **Relative advantage**—the degree to which an innovation is perceived as being better than the idea it supersedes.
2. **Compatibility**—the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters.
3. **Complexity**—the degree to which an innovation is perceived as relatively difficult to understand and use.
4. **Trialability**—the degree to which an innovation may be experimented with on a limited basis.
5. **Observability**—the degree to which the results of an innovation are visible to others.

Those who are in a position to foster the adoption of clinical pharmacy can attempt to modify its individual attributes to make the innovation overall more attractive to potential adopters.

There are two ways to think about adopters of clinical pharmacy. **Internally**, within the profession, the adopters are pharmacists themselves; they are free to choose how they practice pharmacy. **Externally**, outside the profession, adopters are the employers of pharmacists (who influence or dictate how their pharmacists practice) and those who pay for health care services, whether individual patients, employers that offer a health insurance benefit, or taxpayers. These “external” potential adopters—employers of pharmacists and payers of services—are particularly relevant to this discussion because they will determine if clinical pharmacy practice is sustainable economically. It is one thing for a pharmacist to want to practice clinically; it is something altogether different for someone to be willing to pay a pharmacist for clinical services.

The external group can be stratified and analyzed based on the strength of the incentives for adopting clinical pharmacy, which relate directly to the various methods of financing health care in the United States. Consider, for example, a hospital that gets most of its revenue from fixed payments linked to patients’ diagnoses and severity of illnesses: The hospital’s executives have an incentive to ensure that the use of medicines is as safe, effective, and cost conscious as possible, and they may be willing to
incur the added cost of hiring clinical pharmacists if they believe that doing so will not improve the hospital’s overall financial margin. On the other hand, in a retail chain drugstore corporation whose revenue is related directly to the number of prescriptions it dispenses (with no reward for improving health outcomes), the executives have an incentive to minimize operating costs; they are not likely to include clinical pharmacy as a value-added service for the corporation’s prescription customers.

Table 1 conjectures about the perceptions of various “external adopters” toward the attributes of clinical pharmacy. The author’s intent is not to peg precisely a particular type of employer or payer but rather to illustrate the value of stratifying adopters for the purpose of understanding their varying perceptions of clinical pharmacy. The purpose of understanding a pharmacy’s potential perceptions of clinical pharmacy requires a combination of “push” and “pull” tactics. Examples of “push” tactics are (1) advocacy of laws, regulations, accreditation standards, and reimbursement requirements that mandate or induce pharmacists to perform certain clinical functions and (2) creation of peer pressure through consensus-seeking conferences or public relations programs designed by a pharmacy’s leader. “Pull” tactics include (1) advocacy of laws, regulations, accreditation standards, and reimbursement requirements that mandate or induce pharmacists to perform certain clinical functions and (2) creation of peer pressure through consensus-seeking conferences or public relations programs designed by a pharmacy’s leader.

Pharmacy is fortunate to have a number of groups that work hard to foster the profession’s transformation, including national pharmacist associations, some state associations, research-oriented foundations, and some schools of pharmacy. They pursue this noble objective through a combination of “push” and “pull” tactics. Examples of push tactics are (1) advocacy of laws, regulations, accreditation standards, and reimbursement requirements that mandate or induce pharmacists to perform certain clinical functions and (2) creation of peer pressure through consensus-seeking conferences or public relations programs designed by a pharmacy’s leader. “Pull” tactics include (1) advocacy of laws, regulations, accreditation standards, and reimbursement requirements that mandate or induce pharmacists to perform certain clinical functions and (2) creation of peer pressure through consensus-seeking conferences or public relations programs designed by a pharmacy’s leader.

Table 1. Conjectures About Perceptions of Attributes of Clinical Pharmacy Among Various External Adopters; a Higher Total Score Suggests More “Readiness” To Adopt Clinical Pharmacy

<table>
<thead>
<tr>
<th>Potential Adopter</th>
<th>Perceptions of Attributes of Clinical Pharmacy*</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Advantage</td>
<td>Compatibility</td>
<td>Complexity</td>
</tr>
<tr>
<td>Hospital, reimbursement primarily case based, fixed rate</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Physician group in drug-intense specialty practice (e.g., organ transplantation)</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Specialty pharmacy, manages use of high-risk, high-cost drugs</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Employer, self-insured, high incidence of chronic illness in workforce</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Physician-based medical home</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Patient, multiple drugs, self-pay for clinical pharmacy services</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Independent pharmacy owner</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Medicare</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Employer, health insurance plan, young healthy workers</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Chain drugstore corporation</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Physician, primary care, fee-based payment</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*Scale of 0–5, where 0 = highly negative perception and 5 = highly positive perception. Attribute categories based on those described by Rogers. A higher total score suggests more “readiness” to adopt. Attribute scores reflect the judgment of the author. The intent of the table is to show that perceptions of the attributes of clinical pharmacy vary widely among potential external adopters of clinical pharmacy.
from the public health field, are beginning to apply social marketing techniques in this endeavor. (Social marketing is the application of commercial marketing strategies to the diffusion of a social good such as smoking cessation.)

Diffusion-of-innovations research suggests that highly targeted change-agency methods are more effective than diffuse, generalized approaches. The groups in pharmacy that are trying to shape the profession's future would do well to stratify the potential types of external adopters of clinical pharmacy according to their importance, analyze the perceptions of each important type, and customize their tactics accordingly.

Leadership is always a critical factor in the rate of adoption of an innovation. In any practice setting, without a champion, clinical pharmacy will be a nonstarter. An extremely important step in spreading clinical pharmacy is the nurturing of practice leaders, which is a key function of pharmacy residency training and various leadership development programs in pharmacy.

Imagination: Measuring progress
Because we are living through the zigzagging transformation of pharmacy, rather than observing the process from a distance that offers perspective, it is difficult to discern if progress is being made. This will not be any easier in the years ahead. Imagine if we had the benefit of a dashboard with several gauges that each measured a critical facet of the profession's transformation. Relevant data (which might have either positive or negative implications) could feed into an algorithm that would yield a numeric value for each gauge. The dashboard readings, which would permit continuous assessment of the direction, rate, and sustainability of the transformation process, would give the profession's leaders a rational basis for staying the course or for making course corrections. The metrics would also be of interest to practicing pharmacists who are concerned about the future of their profession.

What are some candidates for the gauges or indicators in this imaginary dashboard? What data would be relevant, directly or indirectly, for calculation of the gauge readings? Here are some ideas.

Indicator 1—Hearts and minds of pharmacists. The estimated proportion of pharmacists, including practice managers, who conduct their professional lives by the precepts of clinical pharmacy.

Comment: There cannot be a true revolution in pharmacy unless its practitioners believe in the new paradigm and are committed to live it in their professional practice.

Data types: (a) the proportion of pharmacy students who were selected by schools that give heavy weight to applicants' ability and desire to lead change, (b) the proportion of pharmacy students who accept "scholarships" (preemployment agreements) from retail drugstore corporations, (c) the proportion of new pharmacy graduates who pursue residency training in clinical practice, (d) the vacancy rate for positions in traditional pharmacy practice versus clinical practice, and (e) the proportion of practice managers in health care institutions who deploy their pharmacist resources preponderantly to clinical activities.

Indicator 2—Public demand. The extent to which people who use medicines seek the advice and consultation of pharmacists.

Comment: This is the ultimate test of the viability of clinical pharmacy.

Data types: (a) the number of states that license pharmacists for two different types of practice, "supply chain integrity" and "clinical practice," (b) the number of states that require pharmacists to prove clinical competency periodically before licensure renewal, (c) the number of hospitals and health systems that require advanced credentials (such as residency training and board certification) for clinical pharmacy practice, (d) dollars spent by pharmacist organizations on public information campaigns that explain how to find a pharmacist qualified to provide medicine-use consultation, and (e) the number of messages in the pharmacy "blogosphere" that call for better educational preparation of pharmacists.

Indicator 4—Provider status. The extent to which (a) health benefit plans reimburse pharmacists for drug therapy management services and (b) physicians expect pharmacists to provide this service.

Comment: Currently, a major goal of pharmacy is to obtain provider status under Part B of Medicare,
which would allow pharmacists to bill for drug therapy management services provided to Part B beneficiaries. Before that legislative victory is achieved, other third-party payers and health benefit plans will accord pharmacists provider status in their programs.\textsuperscript{13,14} Physicians have very low expectations of pharmacists, and it will be an immense challenge to get them to expect pharmacists to be involved in helping manage their patients’ drug therapy.\textsuperscript{15}

Data types: (a) the number of public health benefit programs that pay pharmacists for drug therapy management services, (b) the number of self-insured employers who pay pharmacists for drug therapy management services, (c) the number of “medical homes”\textsuperscript{16,17} “accountable care organizations,”\textsuperscript{18} and physician group practices\textsuperscript{19} that employ pharmacists or contract with pharmacists for drug therapy management services, and (d) the results of periodic assessments of the physician “pharmacist-expectation index.”

**Indicator 5—The leading edge.** Strength of the continuing evolution of clinical pharmacy practice.

Comment: One measure of the vibrancy and sustainability of clinical pharmacy is the extent to which it continues to refine and reinvent itself, which would be expected to occur especially in academic health science centers and in integrated health care systems, such as the Veterans Health Administration, often through the leadership of faculty members of schools of pharmacy.

Data types: (a) the number of articles published on innovative pharmacist services related to personalized medicine and other breakthroughs in the diagnosis and treatment of disease, (b) the number of articles published on expanded pharmacist chronic-care services in integrated health care systems, (c) the number of published articles on new models for clinical pharmacy practice in acute care, (d) the number of favorable economic analyses of clinical pharmacy published in the peer-reviewed biomedical literature, (e) the number of schools of pharmacy that have formal programs for developing economically sustainable, real-world clinical pharmacy practice models, and (f) support for new clinical pharmacy services by health care accreditation and quality-improvement bodies.

**Indicator 6—Pharmacist salaries.** Mean annual compensation of licensed pharmacists.

Comment: Any significant change in the pharmacist supply–demand balance will affect pharmacist salaries. Over the past 40 years, primarily because of regulated pharmacy-staffing requirements and the growth of the retail chain drugstore industry, pharmacist salaries have increased at approximately twice the rate of general inflation. The 2009 parity in the salaries of primary care physicians and pharmacists may not be sustainable. Pharmacist salaries, or the rate of growth in their salaries, may decline if a reduction in dispensing positions is not matched by growth in clinical opportunities. Moderation of pharmacist salaries could help put pharmacists in a more favorable position, vis-à-vis nurse practitioners and other physician extenders, for leadership of drug therapy management clinics in hospitals and health systems.

Data type: salary survey results.

**Indicator 7—Private practice.** The proportion of pharmacists who earn their living primarily through private clinical practice serving a multiplicity of clients, including individual patients and health benefit plans.

Comment: A potential barrier to this development is a movement away from fee-for-service reimbursement, as part of health reform, toward the payment of capitated rates to a health care provider organization for the care of enrolled patients, along with payment incentives related to quality of care. However, even in such a system, there will need to be a mechanism to pay specialists for episodic care, which suggests that there will be an opening for contractual relationships with clinical pharmacists. Also, pharmacists may be able to persuade health benefit plans that the cost of regular pharmacist consultations with patients who use many medicines will be offset by improved outcomes, including a reduced overall cost of care.

Data types: (a) the number of hospitals, hospitalist groups,\textsuperscript{20} medical homes, accountable care organizations, and physician group practices that contract with clinical pharmacists who are in independent practice, (b) the number of independent pharmacist group practice organizations, and (c) the number of clinical pharmacists who advertise their services to the public.

**Indicator 8—Pharmacy technicians.** The extent to which pharmacy technicians have autonomous responsibility for managing dispensing systems in drugstores and health care institutions.

Comment: It has been generally accepted in pharmacy for some time that it is necessary to develop a well-defined category of technical workers in order to free pharmacists for clinical practice. A logical extension of this line of thinking is to expect that technicians will eventually practice without the supervision of pharmacists, particularly if their education and training are upgraded and standardized.

Data types: (a) the number of states that require pharmacy technicians to have completed nationally standardized education and training, (b) the number of states that allow qualified technicians to control the pharmacy dispensing process, and (c) the number of members in professional organizations for pharmacy technicians.

**Indicator 9—Corporatization.** The extent to which some type of big business (e.g., retail chain drugstores,
drug wholesalers, pharmacy benefit management companies) “captures” clinical pharmacy.

Comment: The corporatization of community pharmacy has reduced it to a faint shadow of its potential. This has also occurred in the highly consolidated long-term-care pharmacy consultation business. When clinical pharmacy begins to flourish economically, it too may become subject to the forces of corporatization and thereby become sapped of its vigor.

Data type: acquisition and merger of clinical pharmacy group practices.

Indicator 10—Wild cards. Unanticipated game-changing events.

Comment: This gauge, which is simply a flashing yellow light in the center of the dashboard, is a cautionary signal about unexpected events that may propel or stymie the profession’s transformation. History is replete with examples of unforeseen events that bolstered or dashed the prospects of a group. A few examples of wild-card developments that could affect pharmacy’s future, positively or negatively, are (a) sustained global economic decline, (b) the Oprah effect (i.e., celebrity endorsement of the profession after some heroic feat by a pharmacist), (c) scientific breakthroughs that make medicine use exquisitely safe and effective (notably antiviral and antiretroviral agents), (d) widely publicized pharmacist perfidy that brings longstanding disgrace to the profession.

Summary. The above discussion of 10 gauges for a pharmacy-transformation dashboard is, of course, fanciful. Nonetheless, imaginary thinking of this nature can have concrete value if it stimulates pharmacists and pharmacy students to (1) visualize new possibilities for the profession, (2) ponder collective actions that need to be taken in order to achieve pharmacy’s potential, and (3) identify indicators of change that they will monitor personally.

Conclusion
The odds seem excellent that over the next 40 years, there will continue to be a need for a health expert who is competent and eager to help people make the best use of medicines. Whether pharmacists will in fact satisfy this need on a broad scale may have more to do with eagerness than competence—pharmacy education already equips pharmacists with the basic tools for clinical practice. Will some combination of fear (fuelled by diminished opportunities in traditional practice), imagination (fuelled by vision, altruism, and compassion), ambition (fuelled by a desire for greater prestige), and incentives (fuelled by dollars) propel pharmacists toward a genuine perceptual transformation? Even if pharmacy continues to be blessed with wise and assiduous leaders, its full promise will be realized only if a perceptual transformation occurs within individual pharmacists.

What a fascinating story will unfold in the coming decades!

References
10. Ibid. p 219-66.