

Pharmacy without borders

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Even though I was at The Ohio State University (OSU) for 35 years, new beginnings are not really new for me. Some of you have heard me say, “The illusion of motion can be created two ways: by moving the object or moving the background.” At OSU, I held at least seven different positions, each of which required a different skill set and adjustments during the transition. I learned a lot in each of these jobs, so changes even within the same institution were something positive for me. For most of my career, motion was created by the background, not by me physically moving.

Much earlier in my life, however, motion was created by the object—that is, me—moving. Exactly 50 years ago, my family packed up and moved from our comfortable home in suburban Columbus, Ohio, to Geneva, Switzerland. “Four bags and a briefcase,” my father wrote in an essay about his year of study overseas. Four years earlier, we had moved to St. Andrews, Scotland, which was the first of many international experiences for both my sister and me.

Now I am in Phoenix, Arizona, after a long career in Ohio. Many are surprised, and some even impressed,

that I would make such an ambitious change so late in my career. It has been my quest to find the place where the right people can work collaboratively to improve the use of medicines.

Both of these types of experiences with the motion of life required developing the capacity to adapt to change, a tolerance for ambiguity, a sense of control over destiny, and an appreciation for the importance of interdependence that has shaped my personal life, professional career, and the thoughts about pharmacy that I will share tonight.

Some of you are old enough to remember the context for my inaugural address as ASHP president, “Synergism.”¹ It was written using a format based on a technique that my father taught to his seminary students: Take a theme and break it into three parts.² For “Synergism,” it was (1) commonness of vision, (2) harmony in difference, and capitalizing on change. Tonight, I would like to divide my thoughts into three parts based on a method of change management used during one of my jobs at OSU: (1) lighting the platform, (2) creating a vision, and (3) building a bridge.

Lighting the platform

“The status quo is a threat.” “Change is an opportunity.” How many times have you heard that? For most of us, change is OK as long as someone else does the changing. Most of us like to feel secure and comfortable knowing what will happen in the future. We need a compelling reason to make a personal change—“the platform has to be on fire”—before we willingly board a train to another place. If we wait too long, we may burn to death or suffer serious injury. Is pharmacy’s platform on fire?

I say yes. One way that I look for “smoke signals” is by reading two newspapers every morning, including the *Wall Street Journal*. While I was preparing this presentation, I read stories with the following headlines: “Wal-Mart widens drug discounts,” “Merck will cut about 15% of its U.S. sales force,” and “Wal-Mart expands \$4 generic program.” At meetings of the International Pharmaceutical Federation (FIP) and in personal communications from pharmacists in other countries, I have heard about the rapid and progressive deregulation of community pharmacy that threatens the livelihood of independent com-

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For 33 years he held positions at The Ohio State University (OSU), with the most recent being Clinical Professor and Director of the Latiolais Leadership Program at OSU, an interprofessional program focused on advancing leadership in pharmacy and improving the medication-use system to reduce adverse drug events.

For 21 years, he held pharmacy practice and administrative positions at OSU Medical Center and was responsible for the pharmacy residency program that produced 99 residents during his years as program director. During this time, a nationally recognized program for the reporting and analysis of adverse drug events was developed that led to improvements in the medication-use process at the medical center. This severity scale is now widely used in the health care industry, including serving as the basis for the system used by the United States Pharmacopeia.

During his 38 years of professional and academic service, Schneider has published more than 170 articles and abstracts in professional and scientific journals and 38 book chapters, edited 7 books, and given more than 500 contributed or invited presentations in 21 countries and the United States. He is a past president of the American Society of Health-System Pharmacists and past president of the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.), having served for 10 years as the first Editor in Chief of *Nutrition in Clinical Practice*, one of A.S.P.E.N.'s official publications. Active in international pharmacy, he is currently Chairman of the Board of Pharmaceutical Practice of the International Pharmaceutical Federation (FIP), having served as secretary and newsletter editor of the Hospital Pharmacy Section and chairman of the Congress Planning Committee for FIP.



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munity pharmacists, just like what we have seen in our own country during the past 50 years. This leads me to an observation that the job security for pharmacists based on traditional roles is not good. While one hears about a shortage of pharmacists, how long do you think a system that pays a person a six-figure salary to repackage medicines will continue? It was recently reported that remote-dispensing laws are being considered in Wisconsin to ease the pharmacist shortage and increase pharmacy service to underserved areas.³ The rapid growth of more efficient ways to fill prescriptions through mail-order pharmacy does not bode well for pharmacists who are too comfortable with the status quo.

What about hospital pharmacists? Your job security may depend on what you do in your practice. There are now more than 350,000 board-

certified pharmacy technicians in the United States, which exceeds the estimated number of registered pharmacists in our country. Pharmacists who perform traditional drug preparation and distribution tasks should start noticing some heat on the platform. Moreover, automation and new technologies are becoming more widespread in hospital medication-use systems.⁴ Robotic dispensing replaces the human element almost entirely and performs more accurately, and automated dispensing cabinets shift dispensing from pharmacy personnel to nurses. More stringent and enforceable standards of practice for the compounding of sterile preparations have prompted innovations, including robotic technologies, manufacturer-prepared intravenous drug products, point-of-care activated drug delivery systems, and outsourcing services, that will make

traditional tasks of compounding sterile preparations in hospitals and home care practices by pharmacists less common. Lest you get too comfortable about clinical roles for pharmacists, consider the impact of information technology with immediate access to drug information, computer prescriber order entry with decision support, and remote order review by off-site pharmacists. These innovations will reduce the need for large numbers of clinical pharmacists in a hospital. If a patient in an intensive care unit can be medically managed off-site and by intensivists with electronic access to clinical information or if radiographs can be read by a radiologist in India, why not outsource the review of orders for medicines and pharmacotherapy consultations?

We are certainly not the first to have our “business” threatened by change. In his book *The World Is Flat*, Thomas Friedman⁵ cited many examples of jobs that can be and have been outsourced to other countries where labor costs are considerably lower, as well as jobs that he could not have imagined being outsourced, including his own job as a journalist. After reading this, I started taking a critical look at what pharmacists do and realized that our platform really is on fire.

What do we do about this? Many of my colleagues take a defensive position and try to preserve the status quo. This is not always the most appropriate thing to do. My reasoning here is based on the science of complex adaptive systems. If you have not read Appendix B⁶ in the Institute of Medicine’s report *Crossing the Quality Chasm: A New Health System for the 21st Century*, I recommend that you do. Unlike mechanical systems where predictable outcomes can be engineered into a system, Plesk⁶ explained that complex adaptive systems are inherently not predictable because they involve the human element. Individuals working with

complex adaptive systems, including health care, are advised to think more like a farmer than an engineer. Just as the growth of crops depends on weather patterns that cannot be accurately predicted, the fate of patients and health care systems depends on variables that are equally difficult to foretell. Given the types of concerns the public has expressed regarding health care costs and quality, it is probably futile to work so hard to sustain practice models that others are telling us no longer make sense. We need to listen more closely to what people want, rather than telling them what they need. Adaptation occurs in complex adaptive systems in response to what is needed. This results in systems with fewer rules, policies, and procedures and a better understanding of how to create the conditions under which desirable outcomes evolve naturally over time. Thinking this way is not natural or easy for any of us, but one way to start is to create a compelling vision that is an alternative to the status quo.

Creating a vision

One of my staff members—who practices in the psychiatry field, by the way—once told me that I had a “delusional personality.” I suppose I can be criticized for spending a lot of time imagining a better future—guilty as charged. On the other hand, as my past residents and students know, what I do not like are “sad sacks.” Clif Latiolais told a wonderful story that helped me form this opinion: A person walking by a construction site was curious about what was being built and asked the first worker he saw, “What are you doing?” Without looking up, the worker replied, “I’m layin’ bricks, can’t you see that?” Undeterred, the person asked a second worker about the construction. This worker replied, “I am framing a building.” Still curious, a third worker was asked, who replied, “We are building a beautiful church.” Clif

Harvey A. K. Whitney Lecture Award

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Harvey A. K. Whitney (1894–1957) received his Ph.C. degree from the University of Michigan College of Pharmacy in 1923. He was appointed to the pharmacy staff of University Hospital in Ann Arbor in 1925 and was named Chief Pharmacist there in 1927. He served in that position for almost 20 years. He is credited with establishing the first hospital pharmacy internship program—now known as a residency program—at the University of Michigan in 1927.

Harvey A. K. Whitney was an editor, author, educator, practitioner, and hospital pharmacy leader. He was instrumental in developing a small group of hospital pharmacists into a subsection of the American Pharmaceutical Association and finally, in 1942, into the American Society of Hospital Pharmacists. He was the first ASHP President and cofounder, in 1943, of the *Bulletin of the ASHP*, which in 1958 became the *American Journal of Hospital Pharmacy* (now the *American Journal of Health-System Pharmacy*).

The Harvey A. K. Whitney Lecture Award was established in 1950 by the Michigan Society of Hospital Pharmacists (now the Southeastern Michigan Society of Health-System Pharmacists). Responsibility for administration of the award was accepted by ASHP in 1963; since that time, the award has been presented annually to honor outstanding contributions to the practice of hospital (now health-system) pharmacy. The Harvey A. K. Whitney Lecture Award is known as “health-system pharmacy’s highest honor.”

noted: “See what difference perspective makes?” The sad sacks will say the question should have been “What type of building are you building?” But that is another lesson—taught in *A Message to Garcia*⁷—for another time. What Clif was teaching is that we needed to have a vision, and a positive one, to be successful.

What kind of a vision is possible for pharmacy? One vision leads me to the title of this lecture—pharmacy without borders. What are our borders? There may be others, but let me suggest four. These four borders create a confined space that is getting in the way of pharmacists helping patients make the best use of medicines. They include

- Physical isolation of pharmacists within health care,
- Organizational structures based on departments and disciplines,
- Parochial and self-serving aims within the health care professions, and
- A chasm between practice and science.

Physical isolation. It has often been said that the community pharmacy is the most accessible point of the health care system. While this may be true, realizing this vision has been handicapped by two factors: (1) many community pharmacies are stores, not health care providers, and (2) all of them are isolated from other health care professionals and the information needed to manage drug therapy. Patients usually go to the community pharmacy well after a treatment decision has been made, and the pharmacist has neither clinical information nor access to the prescriber to identify, prevent, or resolve medication-related problems. This results in a gap between the potential efficacy of a medicine and its actual effectiveness in the clinical setting.

This isolation is not restricted to the community setting. In hospitals, more than 27% of pharmacies—44% of those with 300–399 beds and

fully 57% of those with at least 400 staffed beds—are located in the basement, physically separated from patients, their medical information, and other health care professionals.⁴ While progress has been made to enable pharmacists to practice in patient care areas, much still needs to be done to take pharmacy out of the basement. This not only applies to practitioners but to directors of pharmacy, many of whom toil away in basement offices faraway from and perhaps forgotten by the decision-makers who shape the strategic direction of the health system. One part of an envisioned future for pharmacists and pharmacy leaders is that they work closer to the others who care for patients and those who make strategic decisions so that their expertise better improves the use of medicines.

Organizational structures. Aside from where pharmacists work, there are also problems with where pharmacists fit in the organization of most health systems. Directors of pharmacy have too often been relegated to manager status in health systems, rather than an executive level. This is not true for physicians and nurses; why should it be true for pharmacists? It is astonishing, considering the complexity of the interactions among the medical, nursing, and administrative staff and pharmacy that are required to effectively manage medication use, control the substantial budget for medicines, and assist in evaluating the complex and expensive new technologies that have the potential to improve medication use.⁸ An envisioned future would have pharmacists at the senior executive level within the health system so that they can bring their expertise to managing and improving the medication-use system, which affects every patient in the hospital.

Moreover, departments in the health system are organized by disciplines, not by the care that is provided. This pits individual departments,

such as nursing and pharmacy, against each other for influence, resources, and practice roles. In their book *Reengineering the Corporation*, Hammer and Champy⁹ proposed a different way to visualize an organization based on the essential processes needed to ensure success rather than on traditional departments. They did not recommend eliminating departments but rather to consider them as “centers of excellence” from which persons with certain relevant expertise can be selected to work on teams. Each team is led by a process “owner” with a focus on improving that process of the organization.¹⁰ With such an approach, there is more commitment to the outcome of the process than the interests of the individual departments.

One such process in health care organizations is medication use. Medication use is a complicated process that includes many steps and handoffs and involves, at the least, three different disciplines: (1) physicians, who make diagnoses and treatment decisions, (2) pharmacists, who review these decisions and provide medicines, and (3) nurses, who administer medicines and monitor the response to treatment. All three often work too independently.¹¹ An envisioned future for health care is one in which a primary focus of health care providers is the process of medication use—not the department in which they work.

Parochialism. Such an envisioned future might also require less self-promotion and rivalry among the health professions. The focus of professional organizations should be the body of knowledge and the systems of care that are needed to improve and optimize the care of patients—in our case, the use of medicines. An envisioned future might include associations of health care professionals who collaborate more freely on the processes of care and less on advocacy for their own professional interests.

Practice–science chasm. For the past 50 years, there has been an increasing gap in pharmacy between the basic sciences and clinical practice. This gap has been the result of a shift from the physical to biological sciences as the basis for the practice of pharmacy. There is a lack of synergy—even tension—among scientists and clinicians in academia and among professional associations. As a result, there has been relatively little ongoing communication among scientists and practitioners within pharmacy. This is just not tolerable with the current emphasis on evidence-based medicine, and it is not logical to continue this with the increased understanding of genomics and the growing interest in personalized medicine. An envisioned future will more quickly translate science to practice due to the closer relationship among pharmaceutical scientists and pharmacists.

Building a bridge

Nice ideas from a person with a delusional personality, but how do we get there? Another of my pet peeves is the armchair quarterback. You know the type: the pundit that tells everyone how bad things are, who may even have ideas about what should be done but is nowhere to be found when it comes to figuring out how to get there. The most important part of change management—and the most difficult—is getting from the current state to the envisioned future. This is where the real challenge lies. Great leaders find ways to energize others and build the bridge needed to realize the vision.

Some of my ideas for building this bridge came from my clinical practice experience in specialized nutrition support. Let me explain. In 1968, a way was found to access the central venous system so that concentrated nutrients could be infused into patients who could not eat.¹² The surgeons at the University of Pennsylvania who developed this

technique had problems with the sterility and compatibility of these nutrition formulations when they were mixed in a laboratory setting. The surgeons sought the expertise of pharmacists at the Hospital of the University of Pennsylvania so that these sterile preparations could be compounded, which resulted in a breakthrough in medical technology.¹³ As the use of specialized nutrition support became more commonplace, there was recognition of the need for the expertise of dietitians and nurses to ensure effective, safe, and efficient use of this risky and expensive treatment.

By 1975, a multidisciplinary organization called the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) was established to meet the needs of health care professionals, including dietitians, nurses, pharmacists, and physicians, who provide specialized nutrition support to patients. The organization focuses on the knowledge and skills needed to competently provide nutrition support and the interprofessional system of care needed to effectively provide that support to patients. It requires a team of health care professionals to do this well, each of whom brings both unique knowledge and perspective and willingly performs tasks that ordinarily might be performed by a member of the team from another discipline. As a result, during the more than 30 years since its founding, A.S.P.E.N. has evolved from a multidisciplinary to an interdisciplinary organization.¹⁴

What are some of the components needed to build a bridge from the current state to an envisioned future? Based on my experiences, I suggest the following:

- Get out of the basement,
- Assume a leadership role for essential processes in health care,
- Help create transdisciplinary health care, and
- Foster translational science.

Changing locations. The location and configuration of the place where pharmacists work need to change. For example, to resolve issues related to the physical isolation of our outpatient clinic pharmacy at OSU, we designed a “model pharmacy” as an interprofessional practice that included a physician, nurse, and pharmacist practicing in one physical area located at the college of pharmacy. It was simply not possible to create a pharmacy that was sufficiently comprehensive as a health care provider with only pharmacists, pharmacy students, pharmacy residents, and pharmacy technicians. No matter how many protocols we developed, staff training programs we implemented, or attempts we made to produce and access clinical information, the scope of our services as a traditional pharmacy was too limited.¹⁵ We needed to cross the professional borders and include a physician and a nurse with access to clinical information and be able to bill for these health care services. The resultant University Health Connection has been very successful in improving health and health care for faculty and staff at OSU.

In the hospital setting, there is a trend away from the use of centralized unit-dose systems, which have been shown to reduce medication errors, toward decentralized systems that employ automated dispensing cabinets.⁴ There are conflicting data and opinions regarding the safety of these decentralized systems, which are compromised by nurses obtaining medicines without a double check by a pharmacist and the need for nurses to manipulate doses obtained from the automated dispensing cabinet. It is likely that systems, including bar-code bedside administration systems, will be configured in such a way that error rates are equal to or lower than the centralized unit-dose systems that they are replacing. Regardless of the medication-use system employed, new hospitals should not be constructed with pharmacies

located in the basement. Moreover, pharmacists interviewing for executive positions should insist on being part of the senior executive team, with a role in the strategic direction of the health system.

Assuming leadership. Pharmacists in general, and senior pharmacy leaders in particular, should make time to participate and take a leadership role in work with other health care professionals to improve processes that are critical to the care of the patient. The pharmacy department should be the center of excellence from which the human resources needed to improve the processes of care can be found. The most important of these for pharmacists is the medication-use process. The proposed vision for FIP states: “Wherever and whenever decision makers discuss any aspects of medicines on a global level, FIP is at the table.” Let me rephrase this as a vision for pharmacy: Wherever and whenever decision makers discuss any aspect of medicines in health systems, pharmacists will be there.

Fostering transdisciplinary health care. The title of my lecture is dangerously close to one presented by Max Ray¹⁶ as the 13th John W. Webb Visiting Professor designate—“Shared Borders: Achieving the Goals of Interdisciplinary Care.” His presentation advocated interdisciplinary care, defined as active coordination of care and services across disciplines. He also introduced the term “transdisciplinary practice.” This refers to team members from different disciplines sharing knowledge and skills, resulting in the traditional boundaries between professions becoming less rigid. With this model, members of the health care team can work on problems not typically encountered by or seen as the responsibility of their discipline. I have seen this evolve with dietitians, nurses, pharmacists, and physicians on nutrition support teams, within A.S.P.E.N., and in the University

Health Connection. This model of care requires health care professionals who are competent, cooperative, collaborative, and trusting.

Doug Hepler¹⁷ used a good metaphor to explain this concept to an international audience in Tokyo. He contrasted the game of U.S. football to football in the rest of the world, which Americans call soccer. In U.S. football, each player has a specific position. The quarterback calls the plays, and each player in each position must do something very specific for the play to work. In a soccer game, each player has a position, but there is considerable flexibility as to what each one does based on the circumstance. Our health care system needs to look more like a soccer game than a football game.

Closing the science–practice gap. Finally, we need to bridge the gap between the basic sciences and practice in pharmacy. There is a plaque on the wall at the Translational Genomics Research Institute at the Phoenix Biomedical Campus where my new office is located. It states “From bench to bedside—TGen’s scientific benches have been named in honor of these contributors and their loved ones.” Closing the science–practice gap is easier said than done; however, there are some ways that this can be accomplished.

For example, before I left the college of pharmacy at OSU, we planned to have a regular collegewide seminar for all graduate students instead of each division having its own. To increase the chances of benefiting the community of graduate students and faculty, a directive that the content of the seminar be made applicable to the wider audience was created. Further, FIP’s Board of Pharmaceutical Sciences and Board of Pharmaceutical Practice are working more closely together by sponsoring joint symposia on topics of mutual interest, such as genomics and personalized medicine, counterfeit medicines, and the environmental aspects of phar-

maceuticals. Perhaps it is time for the associations representing pharmacy practitioners to work more closely with those representing pharmaceutical scientists.

Translational research is currently an important issue within health care.¹⁸ According to the Institute of Medicine (IOM), there are two types of translational research.¹⁹ The first is the transfer of new understandings of disease mechanisms gained in the laboratory into the development of new methods for diagnosis, therapy, and prevention and their first testing in humans. The second type is the translation of results from clinical studies into everyday clinical practice and health decision-making. It has been suggested that the “laboratory” for the second type of translational research is the community and ambulatory care settings, where population-based interventions and practice-based research networks bring the results of the laboratory-based research to the public.²⁰ The new road map developed by the National Institutes of Health calls for the reengineering of the clinical research enterprise and a transformation of translational clinical science and novel interdisciplinary approaches that will advance science and enhance the health of the nation.²¹ Speeding the translation of findings in the laboratory to the clinical setting is an important social obligation for both scientists and practitioners. It appears that the time is right for this to begin.

Conclusion

We simply cannot afford to think inside the space defined by our present borders, to be protective of roles that have lost or are losing their value. Neither can other health care professionals, who are frankly no better than we are, continue to do so. Making health care better will require some fundamental changes that have been well stated by others before me, including the many re-

ports of the IOM Committee on the Quality of Health Care in America. A chapter in Friedman's⁵ *The World Is Flat* is titled "The Great Sorting Out." In this chapter, the suggestion is made to move from a primarily vertical "command and control" system to a more horizontal "connect and collaborate" system. Friedman called this the "value creation" model that involves, in his words, "blowing away more walls, ceilings and floors at the same time."

Much of what we do in our current model of health care in general, and pharmacy practice in particular, is inefficient and artificially constrained by friction. We simply cannot afford to sustain this model of health care or pharmacy practice. One way to make health care better and improve the use of medicines is by having pharmacy without borders.

I hope that my words have left you with a renewed sense of the importance of change, a vision of where that change may take us, and some thoughts about how we might get there. Let me close with some words that a hospital administrator told the staff during the reengineering project at OSU Medical Center 14 years ago: "When an opportunity arises, don't be the last in line." Let me add to that: "Be the first in line."

Acknowledgments

My former boss and mentor, Clif Latiolais, used to tell us: "It is not hard to be successful by working

hard; there is very little competition!" He obviously taught us a lot more than that, including associating oneself with others who have talent, initiative, and "the big E"—enthusiasm for excellence. I have been fortunate to have had mentors, colleagues, employees, residents, and students with these attributes, many of whom are here to share this evening with me. These people are literally too numerous to list—you know who you are.

The people who are less subject to choice are family. I certainly have been blessed by wonderful parents; my sister, Carolyn; my wife, Candy; and my children, Gretchen and Karl—all of whom, except my parents, are with me here tonight.

Each of you is part of me. I would not be standing here tonight without each of you.

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