

Mortars & Pestles,

Maps & Compasses,

Vaccines & Syringes

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Thank you. I remember well my induction into the Alpha Beta Chapter of Rho Chi at Duquesne University in Pittsburgh in 1979. Mitchell Borke was our Rho Chi Chapter Advisor and Bruce Martin our dean. I remember my college years with great affection.

It is a distinct honor to receive this recognition and provide this address today. As I reviewed addresses presented by previous recipients, I was struck by how many honorees were educators, most often deans of pharmacy.

I've never been a dean, but I did give myself the title of chancellor once, chancellor of Immunization University. But it's a little too soon to explain that story quite yet.

Now, I have had what is known as a nontraditional career. That is the polite way of saying I've often done what few others were foolish enough to try. I've had some interesting experiences and more than my fair share of accomplishments.

But the task of the moment is what story about myself can I tell you that would be useful to you, you, the students and recent graduates and the faculty? I think it might be how I kept educating myself after graduation, year after year, level after level. Never stop educating yourself and educating others. And it's also about the people who touched me and, in turn, who I touched.

A catchy phrase these days in education circles is "life-long learning." I am the poster child for life-long learning. And two kinds of learning at that: book learning and people smarts. Why do the humans do what they do?

I offer you Lesson #1: Try real hard to understand why people do what they do. Indeed, what I tell people is that my work is 10% immunology and 90% sociology. Why do clinicians offer vaccines, or not? Why do people accept vaccines or not? Why should we try to understand human nature? Because if you understand why people do what they do, you can anticipate how best to help them.

I received a great pharmaceutical education of the late 1970s, and I'm grateful for it. I cannot but pause to recognize my mentor at Duquesne, Alvin M. Galinsky. Dr. Galinsky (or Doc, as we invariably called him) had a prime interest in industrial pharmacy, which I acquired a deep and enduring interest in as well. I learned skills with mortars and pestles to start and then took drug formulation up to the industrial level.

At the time, Duquesne's curriculum had a required course titled "Public Health." Given all that came later in my life, you would think that course would have made a major impression on me. But somehow I wasn't ready for its lessons. However, the degree of memorization required for its tests sticks with me to this day. For whatever reason, this student and that course did not resonate. Grabenstein and his rendezvous with Public Health remained in the future.

Influence of U.S. Army Pharmacy

I financed my college education with an Army Reserve Officer Training Corps (ROTC) scholarship. As graduation approached, I focused on being commissioned as a Second Lieutenant and then fulfilling my 4-year service obligation. Later, I found it

curious that I did not seriously consider asking for a waiver to attend graduate school at the time, but that is what happened.

So, after graduation, I proceeded to active-duty military service with the U.S. Army Medical Service Corps. My first operational assignment came a few months later, at Walter Reed Army Medical Center (WRAMC) in Washington, DC. My first professional duties came in inpatient pharmacy operations. The first staff I supervised, at age 23, consisted of seven pharmacists and technicians, one of whom was younger than I was. The following year, my responsibilities doubled. And then doubled again. In 1983, I took on the role of clinical pharmacist for Walter Reed's Allergy-Immunology Clinic. One of my roles was "commandant" of the 8-week program to train U.S. Army & Air Force medics to become allergy-immunology technicians.

Walter Reed's allergy-immunology clinic had an unassuming refrigerator full of specialty drugs that few people had much drug information on. It was the vaccine and antibody refrigerator. An experienced Army medic, Master Sergeant Jerry Wallace, God bless him, explained to me that the Nation's vaccine policies were established by way of recommendations of the Advisory Committee on Immunization Practices (ACIP), advisors to the Centers for Disease Control & Prevention (CDC). So I started collecting package inserts and then recommendations from the ACIP. Then, I started doing projects assessing pharmacists as advocates for vaccines and antibodies.

People came on their own to our clinic to get flu shots each fall. So, I created a form so we could assess them for all their vaccine needs all at once.^{1,2,3} Most of the hospital's staff focused on pediatric vaccination – I focused on adult vaccination. The status quo was that a few people had the key detailed vaccine information – we worked

hard to disseminate that information across the organization, both vertically and horizontally. More important than doing the projects, I wrote them up and published them.^{4,5}

Lesson #2: If you do something innovative (in pharmacy practice), share it widely! Publish it, present it, show others, brag about it, share it! That is how a profession advances.

About the same time I began my literature searches, I started testing my literary talents by writing articles about allergen extracts and immunizations for pharmacy journals and newsletters. I really came to appreciate my eighth-grade English teacher who taught me to diagram sentences and to enjoy expressing myself in writing. Colleen Buckley, thank you, most sincerely.

I have a million great stories from my Army days, the professionals of my types I worked with, the opportunities to serve many great Americans. To all the pharmacy faculty who have helped prepares today's pharmacists in the Army, Navy, Air Force, and Coast Guard, I offer sincere thanks.

How to Train Leaders

But let's fast-forward to 1988. The Army in its wisdom had stationed me in West Germany, in a small city named Bremerhaven. Bremerhaven may be best known to Americans for that line in "The Sound of Music," when Captain von Trappe is ordered to Bremerhaven to take command of a ship. In my case, I was ordered to take the post of director of pharmacy for the small US hospital there. We had two inpatient wards:

obstetrics and everything else. Our pharmacy provided the full range of inpatient services, plus filling 200 ambulatory prescriptions per day.

In my free time, I enrolled in masters in education program through Boston University's Overseas Program focusing on adult education. An evenings and weekends program – great fun and great learning. BU's roving professors were very engaging in teaching us how adults learn. I'm using those skills now – adults learn more readily when you tell them stories related to your subject matter.

I decided to get double benefit from some of my course exercises, as I used them to start writing a curriculum on leadership skills suitable for pharmacy students. That should generate some puzzled looks, so allow me to explain.

During my college years, I had been very active in my pharmacy fraternity, Phi Delta Chi.⁶ I was elected chapter president, regional officer, national officer – a string of positions over 27 years. It was repeatedly rewarding to me, as I sensed there was more to being a pharmacist than just what was taught in Mellon Hall, Duquesne's pharmacy building.

Major parts of my collegiate experience in Phi Delta Chi came from professional projects, such as giving presentations in city high schools about drug abuse and sexually transmitted diseases (we called it venereal disease at the time) or performing blood-pressure readings in community pharmacies. What I realized is that my fraternity was teaching me people skills: understanding what makes people tick, human nature, why people do what they do, how to motivate others to accomplish a goal.

Lesson #3: If you have people skills, you can get more accomplished, by building teams.

In 1989, I thought I could combine my masters in adult education with the Fraternity's desire to formalize the way it teaches leadership skills to pharmacy students and new graduates. So in 1989 I wrote a set of lesson plans for pharmacy students, in aggregate called the Leader Development Seminar (LDS). We included modules on group development, team building, goal setting, conflict resolution, team problem-solving, and situational leadership. I insisted that the first word be Leader, not Leadership, because we were training individual people in how to act personally and collectively, not merely reviewing some bookish principles of leadership theory.⁷

I was influenced by my Army ROTC activities from 10 to 15 years earlier, where we literally had impromptu trainings in forests in state parks or Army bases on how to use a map and compass or other skills. And I was highly influenced by ROTC decision-making scenarios called Leadership Reaction Courses. These were sets of fast-moving situations that challenge cadets to think on their feet to accomplish a mission.

The Fraternity's Leader-Development Seminar was (and is) a 4-day immersion course.⁷ It's still offered each even-numbered year, now under the banner of PLEI, the Pharmacy Leadership & Education Institute. PLEI is the 501(c)(3) foundation Phi Delta Chi started in 1996. PLEI's mission is to offer leadership training for students and pharmacists throughout the profession, well beyond just the Fraternity, in a variety of lengths and formats.

One of PLEI's latest curricula is titled "Finding Balance," to help new graduates accommodate and thrive amid the many competing personal and professional responsibilities they face. The objectives are for participants to develop and enhance

their leadership skills, exploring new areas in understanding organizational and personal behavior.

Participants are to examine their current interpersonal skill sets, explore how to develop a vision and goals for personal success, and use role-playing to assess how effective leadership can transform personal and professional lives and satisfaction. It's about coping with reality, balancing family and job.

The Growing Vaccine Literature

Next, let me tell you some lessons from my glorious publishing career. First, you need to understand that the first manuscript I ever wrote was rejected by the journal I submitted it to. Undaunted, I polished it, resubmitted it, and eventually saw it reach print.⁴

From my base at the Army Hospital in Bremerhaven, I experimented with using prescription databases to identify people who needed vaccination. It worked. People with diabetes need to be vaccinated against influenza and pneumococcal disease. People with diabetes receive insulin or oral medications from their pharmacist. The patient names and addresses are in the prescription databases. Pharmacists can encourage them to be vaccinated, verbally and by mail. Simple. Effective. We did it and we wrote it up.⁸

In late 1989, I submitted a paper I hoped would be considered a guest editorial to Neil Davis, emeritus editor of the journal *Hospital Pharmacy*. The paper advocated use of combined tetanus-diphtheria toxoids (Td) instead of plain tetanus toxoid.⁹ I bumped

into Dr. Davis at the ASHP Midyear Clinical Meeting in Atlanta that year and summoned the courage to ask him if he had had a chance to consider my draft manuscript. To my utter amazement, he asked me if I would like to edit a column for his journal about immunologic drugs. Thus was a column born that eventually saw 91 serial articles over 12 years.

I knew there was no comprehensive reference book in print that adequately dealt with vaccines, the immune globulins, or some of the obscure immunologic drugs. Those books that did discuss immunologic drugs did not give much detail. Only slowly did I realize that my files could give rise to a book that would resolve these gaps.

After returning to the United States in 1989, the Army sent me to graduate school at the University of North Carolina (UNC) at Chapel Hill for a master's degree in Pharmacy Administration.^{10,11} I opened channels of communication with Bernie Olin, then editor-in-chief of Drug Facts and Comparisons, in November 1989. But the proposal didn't quite gain traction.

But I persevered. I grew tired of just promising myself to undertake the project. So in October 1991, I started writing the text of the manuscript. By May 1992, I had a coherent manuscript. In August 1992, I signed the contract with Facts and Comparisons, now Wolters Kluwer Health. In May 1993, we celebrated the first edition of *ImmunoFacts: Vaccines & Immunologic Drugs*.^{12,13} Of course that odyssey continues to this day. Even now, we are preparing the 2012 edition, the 37th revision of the big book.

Could Pharmacists Vaccinate? Would They?

While I was working on *ImmunoFacts*, I thought "wouldn't it be great if pharmacists someday were major vaccinators." Nah, I thought, it'll never happen. It's too high a mountain. Instead, I decided to devote myself to drug information. But I was wrong about the height of that mountain. The profession evolved to the point it was ready to take on the clinical challenge of helping vaccinate major portions of the American people. The profession grew and the mountain shrank.

How did it happen? Well, let's fast forward again, to 1996. The Army sent me off to graduate school once again, back to UNC—Chapel Hill to get my PhD. UNC is blessed by having the pharmacy school literally next door to the school of public health. So my major was in pharmaco-epidemiology – the measurement science in public health, applied to medications. Naturally, the medications I applied it to were the vaccines.^{14,15,16,17}

I had been back in Chapel Hill for about a month or two. I was in UNC's Beard Hall when a telephone call came in from APhA headquarters in Washington, DC. 'Could you please build us a vaccination curriculum for community pharmacists? We would like to present it in the fall in Mississippi.' The call came in late August 1996: please have it ready by late October 1996. Two months. Something never done before. I agreed in a heart beat.

Let me tell you how busy those two months were. I flew to Jackson, Mississippi, in August 1996 for an exploratory visit, to discuss legal and educational issues with the Mississippi Board of Pharmacy, Mississippi Pharmacists Association, and University of Mississippi. It was clear they all had high expectations for the glorious program I had

pledged to write. The weekend was carefully picked so that it did not conflict with any Ole Miss home football game. And, lo and behold, come the first weekend of November 1996, we had a success. We trained 67 people with great satisfaction scores at the end of the weekend.

But we all knew that the more important part was whether the training took hold. Was it practical? Did it contain the pieces pharmacists would need to do something very different? Lo and behold, it worked by those measures too. Of the 67 pharmacists, 48 were vaccinating within the first 6 weeks, giving over 500 doses of vaccine. So we were elated with this success rate.

Next, it was time to transform the program from a collection of slides to something polished that could be replicated on a much larger scale. That was the point where we transitioned to an 8-hour self-study booklet, plus slides and support materials for a 12-hour on-site program.¹⁸ This program rolled out in 1997 in Des Moines, then Dallas, Little Rock, Lansing, Knoxville, Montgomery, and on and on: A total of 350 trainees by October 1997. By the end of 1997, more than 1,000 pharmacists across the country had been trained to immunize. We could see in the faces of the attendees, especially the independent pharmacists, that it was changing their professional lives.

Lesson #4: Balance book learning and practical realities in a busy pharmacy practice.

Where are we in spring 2011, 15 years later? APhA reports that over 147,000 pharmacists (and student pharmacists) have been trained since 1996. In 2009 alone, pharmacists administered over 16 million vaccinations.

That self-study manual I wrote in 1997 remains the professional work I am most proud of.¹⁸ I've published over 300 articles, book chapters, and whole books. And that self-study manual is the one I'm proudest of. It has had more impact to help public health than anything else I've written. Both thorough and succinct; intricate and clear. It balanced book learning with the practical realities of a busy pharmacy practice. If I do say so myself.

Vaccination in 24 Time Zones

Now let's fast forward one more time, to 2005. By this point in my Army career, I was directing vaccine policy and implementation for the Pentagon -- for the five Armed Services -- Army, Marine Corps, Navy, Air Force, and Coast Guard. The people entrusted with protecting these troops against infectious threats by means of vaccines weren't getting enough formal training in their school houses. So we saw a great need to deliver decentralized training to thousands of medical personnel. Oh, by the way, those medical personnel are deployed on bases across five continents, and aboard ships at sea – hundreds of ships at sea. Spread across all 24 time zones.

We needed the training to be modular, on demand, with options for those already trained as physicians or nurses or medics. For example, physicians with no vaccine experience suddenly in charge of an immunization clinic. Or nurses, or pharmacists, or medics.

So my Army team and I created Immunization University.¹⁹ That's Imz U, for short, designed to enhance the skills of healthcare workers from a variety of

professional and paraprofessional backgrounds. Immunization University offers training on vaccine products and immunization services through distance learning and on-site classes.

The Immunization University logo (Figure 1), with its torch as beacon, emphasizes educational efforts. The motto is "Each Immunization an Excellent One," summarizing the obligations of medical leaders and clinicians alike. I thought "every immunization" would sound boastful. To me, "each immunization sounded like a fitting goal. The banner reads "Scientia * Tutela * Salveo." The three inspirational words on the banner came from our web designer, Andrew Brown, a very smart web geek and guitarist in a first-rate rock-n-roll garage band.

Never having any formal training in Latin, I assumed when Andrew first showed me his draft logo that the words referred to Science, Teaching, and Healing. I got one of them right. Andrew wanted to anticipated what I would want to cite as our keystones, our guidons, so he looked up the Latin words for Knowledge, Protection, and Health and thus we had Scientia * Tutela * Salveo. He got all three of them right.

I'm still trying to get ESPN (an all-sports television channel, for those of you who don't get out much) to cover our athletic teams. I thought the Imz U mascot should be an armadillo. Why? Well, armadillos wear their armor on the outside. In contrast, of course, vaccines increase your armor on the inside.

Anyway, as creator of Immunization University, I got to pick my own title. I conceived it; I organized it and got it underway, so I called myself Chancellor of Immunization University, jokingly, of course. After all, we did cover 24 time zones,

which no pharmacy school I know of can claim. I'm quite sure that I was the lowest paid chancellor in all of American education.

Applying the Lessons

Let me ask the students some questions. Where will you go next? Community practice? Hospital? Academia? Industry? Somewhere 'nontraditional'?

How will you handle the professional challenges you'll find? You have book smarts, or you wouldn't be in Rho Chi. Where will you acquire your people smarts? Where will you practice and improve your people smarts? How will you get things done within organizations and institutions?

Healthcare reform, medication therapy management, and many, many other challenges confront our profession. Who will lead institutions, organizations, companies to change? Who has the vision of what the profession of pharmacy needs to change into? Who will transform our pharmacies into the caring places the public needs them to be?

Pharmacists didn't vaccinate in 1980 when I graduated from pharmacy school. They do now, big time. Things changed.

Pharmacy students didn't take leadership classes in 1980. They do now – well, a few hundred Phi Delta Chi students do each year and some others do. But not enough. Not nearly enough. But that can be changed.

We need leaders who can excite and attract followers. Leaders need to be patient: from 1983 to 1996, nobody was following me in terms of immunization.

We need leaders who can take risks and engage in the messy public square.
We need leaders we know have our best interests at heart.

We need pharmacists who can tell stories to explain what they see, their vision.
We need pharmacists who can assess their colleagues and their bosses and boards of directors, as well as they can assess a patient.

We need pharmacist-leaders. Pharmacists who try real hard to understand why people do what they do. Pharmacists who share innovative practices widely.
Pharmacists who get things accomplished, by building teams. Pharmacists who balance book learning with the practical realities of busy pharmacy practices.

Some people in this room [reading this address] have those skills today. Some have the potential and need opportunities to practice their people skills. Some of your colleges can teach the theory of how to lead. But where will you go for practicums? Who will build that network? Who will offer leadership training? Who will take up the challenge to be a leader? Will it be you? Will it be your organization?

If we want leaders we need to formalize the effort to train them. If we want experts in pharmacokinetics, we train them. If we want experts in drug information, we train them. The U.S. Army conducts five levels of leadership training, after graduation from ROTC or West Point -- five levels of full-time training. Pharmacy needs something similar – leadership training needs to be accessible from every pharmacy college, if we are enable what the profession needs.

My Hero: Elmer J. Traut

As I close, I want to tell you about one of my heroes: A man named Elmer J. Traut. Elmer started in pharmacy school at Northwestern University, and then transferred to the University of Michigan. When those pharmacy students in Ann Arbor formed the honor society in 1922 that would come to be called Rho Chi, Elmer J. Traut was elected its first secretary (Figure 2). A few years later, in 1925, he was elected national president of the growing concern that was Rho Chi in those days.^{20,21}

Elmer did research on pepsin as a student, then went on to work as a research chemist and director of quality control with the Kellogg Toasted Corn Flakes Co., of Battle Creek, Michigan.⁶ But do you know why Elmer is one of my heroes? While he was national president of the Rho Chi scholastic honor society for pharmacy, Elmer Traut also edited the *Phi Delta Chi Song Book*.

In 1921 he had contributed "two very good songs" to the Fraternity, thus proving his skill, and so he was entrusted with editorial leadership of the full Fraternity *Song Book*.⁶ Now, how is that for well-balanced and well-rounded? Scholar, scientist, and fraternity man. Understood enzymes and understood what makes people tick. Well balanced. My hero. And notice that you've honored the Rho Chi Chapter at Albany College of Pharmacy today for their chapter project to promote being well-balanced professionally and personally.

Humbly, I would like to suggest that we have a lot to emulate in Elmer J. Traut. Be excellent at science. Be dynamic in understanding people – whether those are the people you work with or the people you work for or the people you care for.

Finally, I'd like to thank you all for this recognition. I would also like to thank all my teachers and professors over the years. They have not been the only influences in

my life, but they have been early and very substantial influences. I should also say that there were innumerable teams that preceded me, accompanied me, led me, and followed me at each of the steps I've described for the last few minutes. You might be bored to hear their many names, but that does not diminish their preparation, their contributions, and their implementation.

Just think about it: I've administered maybe a dozen or two vaccinations in my life time. This is a photograph of me giving the first injection of my life, live, in front of that audience in Jackson, Mississippi. Fortunately, it's a still photo, so you can't see my hands shaking. More importantly, I have been extraordinarily fortunate to have enabled tens of millions of vaccinations to be administered. I am what is called a servant-leader.

My other heroes are the many, many pharmacists who picked up syringes and gave body armor to the people they serve and care for. And I cannot help but thank my wife, Laurie, who is home influencing our kids. Imagine what she has to put up with, dealing with the likes of me for so many years.

I titled this presentation "Mortars & Pestles, Maps & Compasses, Vaccines & Syringes." Perhaps I should put the title in context. From a remarkable heritage of healing arts, my pharmacy education gave me a skill set to deliver medications to people who need them. My first professional employer showed me how to navigate with a map and compass both literally and figuratively, as I learned how to lead and how to gather a team to accomplish a mission. And my way of offering leadership was through vaccination, putting prevention first.

Please vaccinate. Please vaccinate the ones you love. Please be vaccinated yourself. Ladies and gentlemen, thank you very much.

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Table 1. Four Lessons Offered

Lesson #1: Try real hard to understand why people do what they do.

Lesson #2: If you do something innovative (in pharmacy practice), share it widely!

Lesson #3: If you have people skills, you can get more accomplished, by building teams.

Lesson #4: Balance book learning and practical realities in a busy pharmacy practice.

Figure 1. Logo of Immunization University



Figure 2. Elmer J. Traut in 1921.



Source: University of Michigan. *The Michiganensian*. Ann Arbor, 1921: p 169.

To Editor: omit if too blurry. Have no other source.