The Purdue University College of Pharmacy’s Center for Medication Safety Advancement (CMSA) was established in March 2010 with the purpose of developing systems to reduce medication errors, prevent and manage adverse drug events, and promote safe medication use practices. CMSA is committed to serving the citizens of Indiana, the nation, and the world through enhancing the discovery of safe medication use practices and delivering this knowledge to all who may benefit. Innovation and collaboration at the CMSA between faculty, staff, and students link actionable discovery to entrepreneurial delivery, ultimately helping achieve a vision of making safe medication use common practice.
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In 2006, a tragedy occurred in a prominent Indianapolis hospital. Multiple system failures led to a medication error reaching several very vulnerable patients who paid the ultimate consequences for the error. It was in this context that we sought help from the Lilly Endowment to form what has become the Center for Medication Safety Advancement.

It is our desire to be a catalyst for change to improve patient safety across the State of Indiana and beyond in order to prevent these and lesser tragedies. Achieving this goal requires partnerships with many sectors both within and outside of health care.

Since its inception, the center has developed an interdisciplinary approach to improving the safety of medication use. In this report you will read examples of such approaches. Each has been accomplished by creating a team of dedicated professionals with a common goal. We are under no illusion that we can solve all safety issues in our massive health care system. We believe, though, that we can be and are important catalysts to move us to a safer system of health care delivery. Nothing exemplifies this commitment more than our extensive work in the training of health care providers. Rooted in an academic institution, we recognize the far-reaching impact of training a cadre of change agents who go forth and impact the world. They touch lives members of our staff will never see.

You will find important metrics that we use to assess our impact. These help us to set and evaluate strategic priorities. We provide these recognizing that the most important examples of impact are likely to remain immeasurable. We may never know what tragedies our work has prevented. An old adage expresses it well — “not all that is counted counts, and not all that counts can be counted.” The response of our stakeholders convinces us that the work of the center truly counts.

CRAIG K. SVENSSON
Dean, College of Pharmacy
Professor of Medicinal Chemistry and Molecular Pharmacology
There are three key focus areas in Purdue University’s strategic plan — launching tomorrow’s leaders, promoting discovery and delivery, and meeting global challenges. In alignment with Purdue’s mission and vision, we strive to make safe medication use a common practice through pursuing opportunities to provide education and outreach into the global health care community.

In the past year, CMSA has trained more than 2,000 medical professionals across 12 different states and internationally in the practice of rationally redesigning systems for safety. Since our inception, we have educated more than 3,000 professionals around the world in therapeutic EFFECT
pursuit of meeting global challenges. The ability to take our shared knowledge beyond the classroom has been incredibly beneficial to our partners as they continue to pursue a true culture of safety in their institutions. These partnerships have come to mean more than simple delivery of content, but a pathway to launching tomorrow’s leaders in safe medication use practices. Our outreach and education program goes well beyond the didactic classroom approach as we endeavor to inspire passionate professionals who will not only learn about safety but will embrace it as a lifestyle change.

In furtherance of this bold vision, we have discovered numerous application-based simulations designed not only to enhance the understanding of safe medication use, but to provide a safe environment for experimentation and development of new practices. This discovery with delivery approach to learning has been central to our success in moving beyond educators and engaging with our peers as partners in medication safety.
MARGIE E. SNYDER
Co-Director,
Center for Medication Safety Advancement
As a pharmacist, scientist and educator, I am passionate about using science to improve the health of the community while teaching students and colleagues. I am particularly passionate about applying science to advance community-based patient care through community pharmacists. When I learned about practice-based research networks during my training, the concept — which connects scientists and clinicians in the community to engage in practice-based research — resonated with me as an opportunity to advance health through research in the community pharmacy setting.

I now serve as network director for the Medication Safety Research Network of Indiana (Rx-SafeNet), a practice-based research network of community pharmacies statewide that is administered by CMSA. Rx-SafeNet is currently collecting data for the first study, a project focused on better understanding the questions patients with heart failure have about their medications. Our goal is that this and future projects will result in information that community pharmacists can use to enhance their practice and patient outcomes.

In addition to partnering with community pharmacies through Rx-SafeNet, CMSA is collaborating on two other initiatives with the overall goal of improving care for community-based patients. One example is CMSA’s involvement in the Purdue-affiliated community pharmacy residency programs. CMSA faculty, staff and fellows serve as research, practice and teaching preceptors for these programs. CMSA is partnering with the Indiana Pharmacists Alliance to promote the growth of community pharmacy practice models via the development of a statewide pharmacist network. All of these collaborations support my personal passion for improving community health through science and education.
I was fortunate to have the opportunity to take the medication safety elective offered at Purdue with Dr. Kyle Hultgren. He facilitated a health care system simulation to give first-year and second-year professional students an overall impression of the health care system as it currently operates. This simulation set the tone for a semester-long discussion about medication safety. In the class I heard unfortunate stories about fatal, but preventable, errors. The class brought concepts to my attention not discussed in my usual course work.

After finishing the course, I began to ask about the medication safety practices at my Introductory Pharmacy Practice Experience (IPPE)
rotation sites as well as my summer internship. Medication safety is something that I do not have to wait until I receive my degree to start implementing. I asked about the reporting of errors and what processes we could utilize to make sure we executed the “Five R’s” (right patient, right medication, right time, right dosage, and right administration route). Ultimately, my interaction with CMSA inspired not only me, but also other professional students, to utilize medication safety in all their practice settings.

Medication safety is a growing field in the profession of pharmacy and CMSA is leading the way by educating future pharmacists about how to establish medication safety in whatever environment they practice. Through my work with Dr. Kyle Hultgren and Dr. John Hertig, I have been able to learn the importance of creating an environment of medication safety, reporting all errors, and working to improve the system, not blame the person. I hope to continue to implement safe practices throughout my professional career to better overall patient care.
CMSA is committed to serving the people in Indiana, and beyond, through focused efforts on ensuring the best use of medicines. One of our key pillars in this pursuit is the creation of partnerships to advance safe practice on a wide scale.

These collaborations are unique and range from working on global partnerships designed to link discovery with delivery, to working together with organizations like the Indiana Hospital Association to further education, outreach and engagement efforts in the name of furthering patient safety.

One of my most gratifying partnerships has been with the West Central Indiana Patient Safety Coalition (WCPSC). As one of 10 patient safety coalitions that link more than 100 hospitals and health systems throughout the state, WCPSC is a forum for institutions to rally behind advancing safe and quality care. Though the coalition is relatively young, I am proud of the spirit of cooperation and teamwork exhibited. CMSA provides ongoing administrative support, project management skills and professional expertise to ensure that our partners at the coalition make the most of this critically important forum.

I am confident that through these types of collaborations, CMSA has formed invaluable partnerships that have, and will continue to, improve the lives of patients through safer medication use.
The Community Practice Research Fellowship with an emphasis in medication safety has been established as a two-year training program designed to provide licensed pharmacists with a foundation in scholarship and practice in community pharmacy. This program established by CMSA emphasizes activities related to the community pharmacist's role in enhancing medication safety. Through my fellowship, I have had the opportunity to continue refining my clinical practice skills, develop experience in practice-based research, and teach pharmacy students and community pharmacy residents.

I am gaining foundational knowledge both in and out of the classroom in research methods and medication safety that will help me imple-
ment practice-based research projects on my own. Gaining experience from so many different perspectives — as a student, teaching residents and students, participating in community research, and developing innovative programs — has given me an amazing opportunity to advance and consolidate my knowledge and skills.

Often medication safety is not a focus in community pharmacy, since patients are at home and not under our direct supervision. This results in fewer opportunities to make systems interventions and improvements.

For that reason, I see a greater need for research in this area. Our health care system must find a way to ensure that patients are using medications safely at home. This is why community pharmacists play such a critical role in patient education.

My passion has always been community pharmacy practice. Through my relationship with CMSA, I have been given the incredible opportunity to help advance practice and improve medication safety in a setting that I love.
Innovation is at the heart of CMSA’s mission. Innovation also stands as one of our three key value pillars, ensuring we are always delivering the most current and up-to-date information in support of improving safety. The current CMSA initiatives and major projects all capture this innovative and entrepreneurial spirit. Whether it is integrated clinical services networks, engaging educational activities or evaluation of the next generation of medication safety metrics, CMSA is always looking to discover and deliver the next key advancement in safety.

One of these exciting projects is the design and implementation of a mobile tablet-based application that can be used to study current medication use processes as well as analyze various root causes for process failures. We have again partnered with our faculty to ask important research questions of this technology to make sure not only that we are educating in an engaging matter, but that this simulation modality is truly creating practice competencies in the professionals being trained. Using this tablet application system, we are able not only to educate students on best-known practices, but also to track large amounts of data that can be used to determine specific patterns that may or may not be indicative of safe practices.

As we look to the coming year, our most important innovation will continue to be our partnerships with our peers. This is truly our most valued asset and we look forward to each and every opportunity to learn from the excellent work of our peers as we all strive together to make medication use safe.
Through thoughtful consideration, CMSA arose from its precursor with a mission to optimize safety within any aspect of the health care system involving medications. To highlight the examples you have just read, CMSA has trained more than 3,000 professionals worldwide emphasizing systems redesign for safety — engagement with delivery.

CMSA has participated in teaching within the core and elective curriculum of Purdue’s College of Pharmacy. Students have learned the complexities of the health care process and how effective teamwork can minimize risk — learning with delivery.

Including but not limited to veterans affairs, the West Central Indiana Patient Safety Coalition, Rx-SafeNet, Indiana Clinical Pharmacy Services Network or our affiliation with community partners in advancing postdoctoral residency training, our activities focus on identifying reproducible and transferable safety enhancements — discovery with delivery.

Reinvented, energized and poised for unique future impact, CMSA has just begun to tap into its potential.

**STEVEN R. ABEL**
Associate Vice Provost for Faculty Affairs
Associate Dean for Clinical Programs
   Bucke Professor of Pharmacy Practice
College of Pharmacy
3,000 HEALTH CARE PROFESSIONALS trained in performance improvement and patient safety

81 HEALTH SYSTEMS WORKING WITH CMSA

FIVE INTERNATIONAL HOSPITALS VISITED
171,904 MILES TRAVELED to discover, educate and implement systems to improve medication safety and care to patients

92 HOURS TRAINING PURDUE STUDENTS

22 Rx-SafeNet PHARMACIES
FOR A consultation

Be sure to explore our newly released website. This completely redesigned Web portal serves as your gateway to some of the most up-to-date medication safety information. The website explains CMSA, details many current projects, updates as new presentation and publications become available, and even hosts our new medication safety blog, which is constantly updated with hot topics.

WWW.PHARMACY.PURDUE.EDU/CMSA
CMSA GRATEFULLY ACKNOWLEDGES THE SUPPORT OF the lilly endowment