Our MISSION

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.
PREPARING
Today’s Health Professionals

Nelson Mandela once said, “Education is the most powerful weapon which you can use to change the world.”

If we are to be successful in making our healthcare delivery system as safe as possible, education will be a critical component. This is why at the Center for Medication Safety Advancement (CMSA), we have placed a strong emphasis on the education of health professionals. We are committed to transforming individuals into change agents in their respective areas of practice.

As you will note from this report, our educational outreach involves students, postgraduate trainees, fellow professionals and international partners. Opportunities through internships and elective rotations have enabled us to create a cohort of students well versed in safe medication practices. There is also a need for highly focused, well trained experts in medication safety.

This need is being filled by our postgraduate training opportunities for graduate pharmacists. But how does one reach an entire generation of health professionals already in practice?

In this report, you will read of several initiatives we have enacted to reach practitioners around the world and equip them to be advocates for patient safety. Using modern technology and good old face to face interactions provides several platforms through which we are preparing today’s busy health professionals.

We are committed to doing all that we can to make that a reality and recognize that education may be the most effective tool at our disposal.

CRAIG K. SVENSSON
Dean, Purdue College of Pharmacy
Professor of Medicinal Chemistry and Molecular Pharmacology
It is often said that teachers learn as much from their students as do the students from their teachers. This has truly resonated with the staff at Purdue’s College of Pharmacy Center for Medication Safety Advancement (CMSA) this past year.

Providing education on safe medication use practices has been a cornerstone of the CMSA mission since inception. And the training of our next generation of safe medication use experts remains a top priority at CMSA.

Our Medication Safety Fellowship program is entering its fifth year in 2016 with past graduates spread across the country in a diverse batch of practice settings from health systems to industry. We also continue to aid the College of Pharmacy in developing and refining a core course in the Doctor of Pharmacy curriculum on medication safety.

Certainly fellow professionals and students continue to propel our program, but data also has an exciting and significant impact on our medication safety educational advancements. Last year, CMSA launched the SafeRx large dataset tool and continues to watch it grow in size and utility. We continue to utilize large volumes of data on adverse drug events as well as internally reported data to form predictive models of where future events may occur. Finally, the most important contributors to our education program remain our partners.

Without the inquisitive nature of each person who reaches out to us or the unique perspective they bring to medication safety, we would not be in the excellent position that we are in to continue our pace of new discovery. These discoveries that we make today provide the fuel for tomorrow’s educational opportunities.

**KYLE E. HULTGREN**  
Director  
Center for Medication Safety Advancement
GLOBAL LANDSCAPE of Medication Safety

A preeminent center of knowledge must have a global focus and influence. The CMSA made a strategic decision to advance medication safety efforts globally. This focus began in 2014, matured in 2015 and will most certainly continue to bear fruit in 2016. Indeed, transformational steps have begun to thrust the CMSA into a leadership role at the national and international level.

In 2015, CMSA continued to demonstrate a purposeful commitment to improving the safety of medication use throughout our global community. Our collaborations with colleagues in Europe and the Middle East continue to provide a framework for building and disseminating medication safety initiatives around the world.

The team at CMSA continues to forge international relationships, using these mutually beneficial partnerships to launch learning and discovery initiatives in the support of CMSA. This has allowed our organization to establish an increasingly international presence, helping demonstrate meaningful improvements in medication safety education and awareness.

With visits to Asia and South America added in 2016, the expansion of medication safety research and education is already underway.

Ultimately, it is vital that we understand the landscape of medication safety internationally; most importantly, however, we look forward to continuing to build meaningful and impactful relationships with champions of medication safety around the globe.

JOHN B. HERTIG
Associate Director
Center for Medication Safety Advancement
Transformational Change for BETTER PATIENT CARE

Transformational change is designed to be organization wide and is enacted over a period of time. Through transformational change, step change performance improvement occurs, organizational capabilities expand, and optimized behaviors sustain and drive desired outcomes.

Purdue’s Center for Medication Safety Advancement (CMSA) has continued its Multiple Award Task Order Contract (MATOC) through 2015, partnering with the Veterans Administration (VA) to impact a variety of transformational change objectives.

During the past year, the VA issued 28 Requests for Proposals (RFPs) to participating universities under the MATOC. In response, CMSA submitted 20 RFPs for competitive consideration and was the successful recipient of 19 contract awards with a resultant potential value of over $10 million if all option years are realized.

The nature of many of these awards leverages subject matter experts, educational facilitators, performance improvement focus efforts and recognized change leaders in healthcare system transformational change. Change efforts have been operationalized at all levels of the VA system with a commitment and plan to sustain these change efforts going forward.

Transformational change initiatives are tangible and relevant to front line staff and management systems supporting the initiatives. This alignment enables the process improvement and transformational change initiatives to have the maximum potential and enduring impact in the continuing improvement of high quality patient care systems.

The Purdue CMSA is a fortunate, willing and committed partner in this joint effort.

CATHERINE R. SCOTT
Education Program Manager
Center for Medication Safety Advancement
COLLABORATING to Advance Medication Safety

What makes a process safe? The number of steps? Built in redundancy? Its simplicity?

CMSA researchers asked these questions as we embarked on a collaborative partnership with BD Rx Inc. to study the process of intravenous push medication administration.

Our goal was to identify components of the process that lead to increased or decreased safety. But to do this right, we knew we had to take it out of the lab and into the real world.

We understood that practice based observations would yield information that was much more applicable than data obtained in a controlled environment.

With that in mind, our researchers traveled across the country to learn more. We visited practice sites that were dedicated to improving patient safety as evidenced by safety benchmarks such as Joint Commission accreditation and Magnate status and used a validated direct observation tool to collect data about IV push drug administration.

It has been an exciting journey thus far, and we are learning more about this important topic with each step of the way.

CMSA has enjoyed working with BD Rx and looks forward to collaborating with other industry partners to continue to make safe medication use a common practice.

CHELSEA M. ANDERSON
Project Manager
Center for Medication Safety Advancement
CMSA
By the Numbers
2015-16

# SafeRx DATA POINTS
3,275,958
FAERS REPORTS
192,562
NDC ENTRIES LISTED

7 PUBLICATIONS

25 Performance Improvement Certifications

31 State and National PRESENTATIONS

4 International PRESENTATIONS

43 CMSA Working PARTNERS
ONE MISSION:
Making Safe Medication Use
COMMON PRACTICE

199 PROCESS IMPROVEMENT
Programs Supported

25 STATES
3 COUNTRIES
Impacted by CMSA

ONE REGISTERED COPYRIGHT

173 CONTINUING EDUCATION HOURS
Provided in Medication Safety

23 Students / Interns TRAINED
When Great Answers Lead to BETTER QUESTIONS

More frequently than not, a good research question and process lead to fascinating answers. Even more interesting can be the new questions that those answers may bring to the forefront. In 2014, CMSA was presented with a question about which drugs may present truly innovative drug development opportunities for pharmaceutical manufacturers.

To answer this question, CMSA developed a database called SafeRx, which contained millions of data points from the Food and Drug Administration (FDA) Adverse Event Reporting System (FAERS). The answer to our initial question did indeed bring us a whole host of new and interesting questions.

In 2015, CMSA furthered the work on the SafeRx database through expansion of the dataset with the addition of even more publicly available data. New and innovative links between medication adverse event reports and additional datasets have provided a platform for more meaningful and insightful queries. The expansion of the database has brought logistical and performance challenges as well.

The expansion of SafeRx over the next three years will include harnessing the power of social media. An expanded SafeRx will allow for the identification of adverse medication events in untapped datasets that are likely to yield rich and meaningful information about how people use medications.

CMSA’s mission of “making safe medication use common practice” has continued to lead the organization to new and innovative ways of answering tough questions and ultimately asking even better questions.

DANIEL D. DEGNAN
Senior Project Manager
Center for Medication Safety Advancement
Purdue’s Center for Medication Safety Advancement is the ideal environment for postgraduate pharmacy residents in their first or second years to further explore medication safety.

As part of the visiting resident program, Amanda and Will Ifeachor completed rotations at CMSA as part of their PGY2 residencies at the Indianapolis VA Medical Center. In addition to traditional learning experiences, such as presentations, journal club debates and topic discussions, each completed phases of larger projects directly related to improving safe medication use.

Amanda analyzed results from a statewide Hospital Self Assessment as part of the American Society of Health System Pharmacists (ASHP) Pharmacy Practice Model Initiative (PPMI). The most common gaps in pharmaceutical care reported by critical access hospitals in Indiana were compared with national data in order to determine focus areas for pharmacy advancement.

Will assisted in drafting a formal response to the newly proposed USP 800 guidelines, while also creating an issue brief regarding the medication Zohydro®.

Being on rotation concurrently with fellows, residents and students allows for lively discussions where each learner is able to reference their own healthcare perspectives.

**AMANDA IFEACHOR**  
Former Visiting Resident  
Center for Medication Safety Advancement

**WILL IFEACHOR**  
Former Visiting Resident  
Center for Medication Safety Advancement
ENABLING LEADERS
through Industry Fellowships

As healthcare providers, one of our primary responsibilities is beneficence, which is to do no harm. It is our duty to ensure that the care patients receive is both efficacious and safe. Regardless of what setting a pharmacist practices in, a foundational understanding of medication safety will serve them, and ultimately their patients, well. The Medication Safety Fellowship facilitated by CMSA and Indianapolis-based Eli Lilly and Company is an excellent avenue to pursue those goals.

The fellowship is a one- or two-year learning-based program designed to prepare pharmacists for careers in clinical, academic or industrial settings. As the 2015-2016 fellow, Janelle spent six months teaching and researching at CMSA and six months doing pharmacovigilance work at Lilly.

Throughout the year, the fellow develops an understanding of medication safety principles and has the opportunity to partner with various individuals and organizations to disseminate information to improve care.

With researchers at Indiana University Health, the CMSA team is currently working to develop and validate a risk score for bleeding in patients taking novel oral anticoagulants and integrate that score into clinical decision support systems.

Ultimately, this work will help to reduce the incidence of this particular adverse event for patients. The fellowship at CMSA and Lilly provides first-hand experiences to enable the fellow to build the knowledge and skills necessary to establish themselves as a leader in medication safety.

JANELLE R. LENZ
Medication Safety Fellow
Center for Medication Safety Advancement
PARTNERS IN HEALTH:
CMSA and SmartPharma

SmartPharma is a firm specializing in commercial and strategic consulting for biotechnology and biopharmaceutical companies. Since inception, we have worked with products from proof of concept to commercial launch across a variety of different therapeutic areas.

We have enjoyed partnering with members of Purdue's Center for Medication Safety Advancement (CMSA) to provide insight as to how they might leverage their experience and expertise in safe medication use practices to help advance drug discovery and development with an emphasis on safety.

A recent collaboration between SmartPharma and CMSA leveraged data analysis, practice based assessments, and regulatory screening to help a client ensure business decisions include sound medication safety information.

Importantly, our relationship with CMSA and Purdue goes beyond project based agreements. We actively participate in College of Pharmacy advisory groups, take summer interns and Advanced Practice Experience students from the Doctor of Pharmacy program, and contribute to teaching formal seminars and lectures.

We value our ongoing relationship with CMSA, and look forward to future opportunities to help ensure safe medication use.

KATIE MACFARLANE
Managing Partner
SmartPharma LLC
Balancing THE BOOKS

Upon our founding, Purdue’s Center for Medication Safety Advancement (CMSA) was tasked with becoming a financially self sustaining engagement arm of the College of Pharmacy. We are proudly entering our fourth full year of financial independence, drawing no funding from the College for any of our work.

Additionally, CMSA continues to return money to the University through significant contributions to the Facilities and Administration fund in recognition of the generous support of countless University officials and administrators who work tirelessly to enable programs such as CMSA to be successful.

In 2015, CMSA had just over $5 million in total revenue brought in through a variety of partners and funding sources. More importantly, we utilized 100% of these funds in pursuit of developing and disseminating safe medication use practices.

We take pride in knowing that all funding that flows through CMSA ultimately ends up making a positive impact on patient care.

While the majority of funding comes from our partners who believe in our team and our mission, this segment would be incomplete without continuing to thank the Lilly Endowment for its founding support and ongoing endowment to this organization.

LISA E. ROARK
Account Manager
Center for Medication Safety Advancement
2015 CMSA REVENUE

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<th>Revenue Source</th>
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<tbody>
<tr>
<td>Funding from Partnerships</td>
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<td>Endowment Income</td>
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<tr>
<td><strong>Total</strong></td>
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For a **CONSULTATION**

We encourage you to explore our CMSA website and bookmark it as a gateway to some of the most up-to-date medication safety information available. The site explains CMSA, details many current projects, and links you to new presentations and publications as they become available. Stay closely tuned to our medication safety blog, a great source of hot topic information.

[https://medsafety.pharmacy.purdue.edu](https://medsafety.pharmacy.purdue.edu)

CMSA gratefully acknowledges the generous support of

**THE LILLY ENDOWMENT**