2019 NCAP Annual Convention

September 26-27

Benton Convention Center
Winston-Salem, NC

Best Practices: Optimizing Health-Related Outcomes

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Volume 100 Number 2 Spring 2019

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• From the President •

Debra Kemp, PharmD

Tis the season to be jolly! No, not for Christmas in July as fun as that sounds. Tis the season to join in and celebrate our state’s recent pharmacy school graduates and all pharmacy residents nearing completion of their programs. Congratulations on this achievement! You have each worked incredibly hard to get to this point and should be proud of your accomplishments. Board exams and sleepless nights will soon be a memory as you embark on the next leg of your professional journey. Wherever the journey leads, NCAP is here to support you along the way.

The excitement that surrounds our profession this time of the year is invigorating, genuinely infectious, and is often what seasoned practitioners need to re-energize. We each have a unique story that when coupled with our training and passion positions us beautifully to not only impact but to also revolutionize patient care. To do so though, we must never lose sight of a basic question, ‘What can I do today to make a difference?’.

Despite the multitude of practice areas and specialties in our profession, I feel there would be a common theme in the initial answers – spend extra time counseling patients; intervene with the medical team to optimize therapy; help patients develop a standardized method for medication adherence; spend extra time with the learner at my practice site. What if we take a step back, and instead of thinking about this question in the context of our day to day practice site, we frame this question with the overall profession in mind? Imagine the power we would have as a unified group if we each did this. Enter NCAP and the heart of our association’s mission.

The past few months have been busier than ever within NCAP, and there is much to accomplish in the remainder of the year. Advocacy and membership efforts are well underway, along with numerous task force and educational initiatives. Some areas of particular mention:

Contact your local representatives to ask for their support for the following: HB659 Access to Care Bill, H.534/S.632 Pharmacy Benefits Manager Licensure Bill, S.546 Opioid Epidemic Act, and H.212/S1.51 Pharmacy Breaking & Entering Bill. Check the NCAP E-News for a summary of each.

Join us Friday July 12 for the 2019 Residency Conference at Novant Medical Center in Winston Salem, NC. This is an excellent opportunity for residents, preceptors, and residency program directors to prepare for the upcoming year.

Mark your calendar for the NCAP Annual Meeting September 26-27 at Benton Convention Center in Winston Salem. The meeting theme will be, Best Practices: Optimizing Health-Related outcomes (PHARM). Please check the NCAP E-News for submission deadlines.

If you are not already directly involved within NCAP, now is the time to do so. We can collectively work together today to make a difference. Let’s capitalize on the season of excitement! NCAP is OUR organization!

As always, email me at dwobbleton@gmail.com. I look forward to hearing from members.

Debra
A Different Type of “Call of Duty”

On the day that I carved out time to sit and write something for this column, there was breaking news on the Virginia Beach mass shooting. This tragic event happened one month after the mass shooting at UNC-Charlotte; and both events really gave me pause and derailed my writing. I found myself watching the coverage and contemplating the senseless loss of life. Having spent much of my career in academia, when I thought about the UNC-C shooting, I couldn’t help but be grateful that I was never in an active shooter situation; and perhaps because I have a college-aged daughter, anytime our nation experiences a campus shooting, whether it is at a high school or a college, I feel as though I lose a little bit of faith in humanity. As for the Virginia Beach shooting, for whatever reason, I just could not get that particular event out of my head. It may have been due to the marring of fond, early childhood memories of trips to Virginia Beach; or maybe it was because I have a number of friends and family from that area that could have easily been caught up in the chaos that fateful day. Regardless, I found myself consumed, thinking about event at odd hours, even doing online searches and asking others about their thoughts on the event; and since this shooting on June 1st, I have been grappling with my personal beliefs, versus my sense of professional obligation as a healthcare provider, as to whether or not, I should devote this column to the emotionally charged, and highly controversial issue of gun mortality.

The Virginia Beach and UNC-C events were both mass shootings. The typically accepted classification of a mass shooting is four or more people killed or wounded. Over the past decade, in the United States, there have been 22 mass shootings, in which each event resulted in not 4, but 8 or more deaths. Thirty-six percent of these most deadly shootings, have occurred within the past three years; and regionally, six of the ten deadliest shootings in 2019, have occurred in southern states. Although mass shootings gain national media attention, the sad truth is that these fatalities represent only a minority (< 2%) of all firearm deaths. Excluding suicides, in 2018, there were >42,000 gun-related deaths and injuries in the United States. Gun violence in our nation vastly outpaces that of other highly developed countries. Furthermore, 33% of homes with children have a firearm, and U.S. children between 5 and 14 years of age are >10 times more likely to die from an accidental gun discharge, as compared to children in other developed nations. In 2017, state comparison data from the Centers for Disease Control and Prevention showed North Carolina to have the 8th highest gun mortality in the nation; and in 2018, 58% of suicides in North Carolina were committed by firearm.

The 2nd Amendment to the U.S. Constitution was ratified in late 1791 as part of the Bill of Rights, and it simply reads: “A well regulated militia, being necessary to the security of a free state, the right of the people to keep and bear arms, shall not be infringed.” Despite the brevity of the statement, the interpretation of these 27 words has been far from simple. For some, the intent of the 2nd Amendment is related to the timing of the early formation of the states, and the right to form and arm a militia. At the time, militias, which are civilian raised forces to augment the regular army, were more commonly associated with the south; and by 1791, four southern states had already been formed. The thought was that if the power to arm a militia resided with Congress, and congressional leaders opted not to allow for the arming of a militia, well then there would be no legal ability for a state to arm and defend itself. Others believe the 2nd Amendment is about an individual’s right to bear arms, but it was not until 2008, that the U.S. Supreme Court upheld earlier state and federal court decisions, affirming the individual citizen’s right to own a firearm for the purpose of self-defense.

I cannot help but wonder what James Madison, the 2nd Amendment’s author, would have say about the amendment’s place in 21st century America. After all, in 1791 the premier weapon was a musket, which at best, a man might have been able to fire two rounds in a minute. Today, we have fully automatic and semiautomatic firearms that can empty a magazine of thirty rounds or more in a matter of seconds. You might be thinking
at this point, I am about to come down hard on gun ownership, but that is not the case. I was raised in the foothills of North Carolina. My father and uncles all owned guns, and they enjoyed hunting when they had the time. My father also owned a handgun. I personally do not own a gun, nor do I really want to own one; but, I understand why people may want a rifle for hunting or a handgun for defense. However, I do not think James Madison or any other forefather in the 1790’s could have ever fathomed the power of today’s weapons. Our country’s gun mortality statistics are justification alone for our society to enact more common sense gun laws, as well as to support a more concerted public health approach to gun safety. However, this column is not about which side of gun rights you or I support. Instead, my intent is to raise your sensibilities regarding gun mortality as a public health issue; and to get you thinking about the related role of healthcare professionals, organizations and associations; but more specifically, to explore the question, do we as pharmacists have a role, perhaps even an obligation, regarding gun safety and patients?

Historically, healthcare practitioners have provided important education for patients about the risks of injuries and best practices to minimize those risks. Informing patients about safety interventions such as seat belts, bicycle helmets, and gun safety are fundamental in the provision of preventive care. The American Pediatric Association position statement on gun safety encourages pediatricians to ask parents about whether they have a gun in the home, and to educate them on the safe storage of both the weapon and ammunition. Preventive care through safety counseling is viewed as an essential responsibility of physicians, but what about pharmacists?

When you take into consideration that public health is all about primary prevention to reduce the occurrence of disease, injury and disability, and you factor in that pharmacists are easily accessible and respected providers in their communities, then it is not too much of a stretch to recognize that pharmacists, in many practice settings, are strategically positioned to help with most public health needs. The public health role of the pharmacist has evolved greatly over the past couple of decades. It is now commonplace to see pharmacists screening and educating patients on diet and exercise, alcohol, illicit substances, and tobacco use, as well as other disease prevention and management strategies, including all things related to medication safety. Today, pharmacists regularly screen and monitor for diseases such as hypertension and diabetes. Pharmacists are also being called on to help screen for social determinants of health and to be more proactive in behavioral health. Of late, more pharmacists have felt compelled to do more for their communities around opioid-misuse prevention and intervention. Our role in public health is constantly evolving, and quite frankly, I believe this is because when pharmacists get involved, we tend to make a real difference.

Many of the national medical, nursing and psychiatry associations have established formal position statements on gun violence and gun safety. To date, none of the national pharmacy organizations have established a position on this issue. However, both APhA and ASHP have established position statements regarding the public health role of pharmacists. Using the algebraic formula if A = B, and B = C, then A = C, well then, if gun violence and education on gun safety is a public health need, and if pharmacist have a growing public health role, then pharmacists in certain settings can have an important preventative role regarding gun safety. Perhaps this role could be accomplished through community involvement on a personal level, or maybe a more direct professional approach by pharmacists could be achieved through patient education, digital messaging, bag stuffers or flyers in your pharmacy or clinic setting. I do not think we have to go so far as for the NCAP to create a formal position statement, nor do I believe every pharmacist will be able to engage on this issue, but I do believe there are ways that pharmacists can help with improving gun safety.

The American Public Health Association has called on all health professionals to help with community-based prevention efforts for both suicide and gun violence. I’ll close by saying, if you have a way to help with gun safety, then please help! I hope many of you will be spurred to action by this different type of “Call of Duty”. I would also like to know, how NCAP can support you in this effort? How can NCAP help pharmacists on the public health front, in general? One of NCAP’s strongest partnerships is with the NC DHHS Chronic Disease and Injury Prevention Branch (CDI). Are there tools and resources that CDI and NCAP can create or find for you? Are there education programs that we can develop for you or your patients? Please email me at penny@ncpharmacists.org or call me at (984) 439-1646. Your comments, thoughts and ideas are not only welcome, but necessary for helping advance our profession.

Pharmacy Proud,

Penny
The 2019-2020 North Carolina Legislative Session has proven to hold a number of challenging issues for the General Assembly, from larger debates on the budget and Medicaid expansion to an array of bills, including sixty-one healthcare bills introduced in the House. The following is an update on pharmacy-related bills.

H.659 Collaborative Practice / Improving Access to Patient Care Bill-- calls for modernizing our existing collaborative practice statute to better facilitate collaborative care between physicians and pharmacists. The bill was introduced by Rep. Wayne Sasser on April 9th. To date, we have raised awareness and have gained significant interest and verbal support from various members of the House, but as of June 19th, only Rep. Goodwin from District 1 (Eastern NC) and Rep. Pittman from District 83 (Cabarrus and Rowan Counties) have officially signed onto the bill. The bill currently resides with the House Health Committee for which the Senior Chair is Rep. Murphy (a physician from Greenville), and Representatives Dobson, Lambeth, Potts and White are Chairs. The most important outcome thus far is that, by introducing our bill, it has led to opening up important dialogue with the Medical Society. Normally, having only introduced a bill in the House, we would have had to make the cross-over date, to the Senate, by May 9th. However, because H.659 involves fees, the cross-over date does not apply. Therefore, our engagement with the Medical Society, is important this session, because if we can find common ground, there is still a small chance of passing this bill during this session, and definitely being better positioned for a run in the 2020 short session. We still need help from our members, their physician colleagues, and their patients. We need you to call or write your personal Representative, as well as the Senior Chair and Chairs of the Health Committee at this link, https://www.ncleg.gov/Committees/CommitteeInfo/

HouseStanding/26 and ask for their support of H.659. If you need talking points or more information on the bill click this link, https://www.ncpharmacists.org/content.asp?contentid=149. The more support we continue to build, the easier the process and the more likely we are to succeed during this assembly. Many of the representatives are truly interested, and they get the importance of this bill, but only after spending time educating them, so don’t stop, keep up the grassroots work for gaining support.

H.534/S.632 Pharmacy Benefits Manager Licensure Bill--calls for PBMs to be registered with the NC Department of Insurance (i.e., licensed to do business in North Carolina). Licensure enables the state to hold PBMs accountable for abiding by our laws. The bill also contains further pharmacy protections by including a number of provisions, which address audits and reimbursement. This bill has not gained much traction in the Senate, thus far; however, there has been major support in the House, and H.534 is now being recommended to be included in a larger omnibus healthcare bill, being sponsored by House Rules Committee Chair Rep. David Lewis, the House Majority Leader Rep. John Bell, and Health Committee Member Rep. Wayne Sasser. As of June 19th, we do not yet have a bill number, but we have received word that this omnibus bill is ready and is likely to be posted next week. We do face some strong opposition, but we also have the support of some very influential members of the House. NCAP will continue to keep members informed on the progress of this extremely important piece of legislation. We need our members to continue to contact their personal representatives asking for their support.
H.212/S.151 Pharmacy Breaking & Entering Bill—has now passed in both the Senate and the House and it should be signed into law by Governor Cooper, soon. The enactment of this law will increase the penalty, to a Felony E, for criminals who break and enter pharmacies for the purpose of stealing controlled substances.

H.388/S.309 Immunization Expansion Bill—this bill, which expands immunization authority for pharmacists, adds three additional vaccines and lowers the age for flu vaccination. The bill has passed in both the House and Senate, and has been signed into law by Governor Cooper. A policy/protocol development committee with representatives from ACP, NCRMA, NCAP and various medical organizations is scheduled to begin meeting in late June. Their work is expected to be completed by August. NCAP members serving on this important workgroup are Courtney Humphries and Ouita Gatton.

The following are bills that NCAP has been monitoring:

H.450 Reduce Barriers to Improve NC Health & Safety—a bill calling for increased access to abuse-deterrent opioid analgesics and proper administration of step therapy protocols for prescription drugs. This bill is also being included in the larger omnibus healthcare bill mentioned above in the PBM bill update.

S.546 Opioid Epidemic Act—was introduced on April 2nd and currently resides with the Senate Rules Committee. This bill calls for the following changes:

• Eliminates state registration for buprenorphine prescribers
• Decriminalizes drug testing equipment used to detect contaminants in controlled substances
• Broadens objectives for syringe exchange programs
• Expands CSRS requirements to include reporting of gabapentin and naloxone
• Provides clarification of the role for the State Opioid Treatment Authority

Dr. Penny Shelton is the Executive Director for the North Carolina Association of Pharmacists. penny@ncpharmacists.org

NCAP would like to take this opportunity to thank the following people who helped organize and facilitate Legislative Day. We appreciate your help in making this day successful!

Mary-Haston Leary
Evan Colmenares
Bobby Rawls
Todd Jackson
Miranda Hill
Vinay Patel
Jennifer Sato

Thank you!
Join Us!

Legislative Town Hall
Featuring
SENATOR DANNY BRITT
SENATOR JAY CHAUDHURI
REPRESENTATIVE WAYNE SASSER
Sunday, July 28th
11:00am to 1:00pm
Cypress Manor at Cary
1040 Buck Jones Road, Raleigh, NC 27606

Please join Senator Danny Britt, Senator Jay Chaudhuri, and Representative Wayne Sasser for a Legislative Town Hall on the future of Independent Pharmacies in North Carolina. Lunch will be provided after the Town Hall.

RSVP for this event by registering with NCAP on line here.
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- EnvisionRxPlus (Preferred Provider)
- Express Scripts Medicare Value and Choice (Preferred Provider)
- Express Scripts Saver Plan
- Gateway Health (Preferred Provider)
- Humana Enhanced, Preferred Rx, and Walmart Rx Plans*
- Magellan Rx (Preferred Provider)
- MedImpact
- OptumRx (LCE Network-Preferred Provider)
- Prime Therapeutics
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- SilverScript Choice (Preferred Provider)
- SilverScript Plus (Preferred Provider)
- Symphonix Value Rx
- WellCare (Preferred Provider)
- And More

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Pharmacists in all clinical settings play an important role in the promotion of heart health and discussion of cardiovascular risk reduction with patients. Advances in both the prevention and treatment of heart disease in recent decades, such as the development of improved blood pressure and cholesterol-lowering therapies, have led to a sharp decline in cardiovascular mortality. Despite these advances, cardiovascular disease (CVD) remains a leading cause of death in the United States accountable for one in every four deaths. Nearly half of all Americans have at least one of the leading three risk factors for heart disease: hypertension, dyslipidemia, or smoking. North Carolina is no exception to the statistics with CVD accounting for 21% of all deaths in the state. CVD kills more women and men than any other cause, but it remains unclear whether differences in presentation and progression between each sex warrant additional distinctions in CVD management than recommended in current guidelines.

**CVD in men and women**

Sex and gender considerations in medical research have identified distinctions in the presentation, progression, and management of several disease states, including: urinary incontinence, pain, depression, human immunodeficiency virus, and gastrointestinal disorders. In younger adults, cardiovascular risk is disproportionately higher in men compared to women; although, as women reach 50 years of age, cardiovascular disease incidence is equal to or greater than in men. Sex-associated distinctions in disease progression have been attributed to biological (e.g. genetics and hormonal) and environmental (e.g. social, economic, and geographic) differences. Pharmacokinetic and pharmacodynamic changes between sexes, such as differences in fat and muscle mass, can affect drug response in men and women. Despite these understood distinctions, little is known regarding any changes in the impact on CVD treatment efficacy and safety. Including a diverse and generalizable study sample in clinical trials is widely recognized as important in order to represent and address public health concerns affecting a significant subset of the population. Historically, Caucasian males have largely made up a disproportionate representation in clinical trials. Concerns regarding lack of women in clinical trials began in the 1980s and pretext for the underrepresentation of women include reproductive concerns and potential hormonal confounders. In response, National Institutes of Health (NIH) and Food and Drug Administration (FDA) require adequate inclusion of women in clinical trials for grants and new drug applications. Even recently, despite this guidance, significant, landmark CVD trials such as ACORD (2008), PARADIGM (2014), SPRINT (2015), and FOURIER (2017) range in baseline study population female representation from 22-38%. Although most major cardiovascular clinical trials have included women, reported results and evidence regarding sex-specific risks and treatment are limited.

**CVD guidelines and sex**

Cardiovascular guideline recommendations for men and women have few distinctions. The Seventh and Eighth Joint National Committee (JNC 7 and JNC 8) and the American College of Cardiol-
ogy (ACC) and American Heart Association (AHA) do not differ in treatment recommendations for adult men and women with hypertension, other than in women who are or plan to become pregnant. The guidelines reference few studies and sub-group analyses with notable sex-associated differences in antihypertensive efficacy and safety; however the significance of these distinctions is yet unclear. Based on the literature currently available, there is limited evidence to suggest different blood pressure goals or antihypertensive medications should be preferentially used in women.

In the treatment of high blood cholesterol, the atherosclerotic cardiovascular risk calculator takes into account sex in the estimate of cardiovascular risk. The cholesterol guidelines identify CVD risk factors and concerns specific to women such as pregnancy, pregnancy-related disorders (e.g. preeclampsia and gestational diabetes) and premature menopause. Although atherosclerosis generally presents later in women than men, statin therapy has been shown to be effective in both sexes and treatment recommendations are similar in women and men.

Similarly, guidelines for the treatment of myocardial infarction (MI) discuss differences in presentation, and often delay in initial treatment, of MI in women as compared to men, but does not specify differences in management.

Recommendations for the prevention of stroke in atrial fibrillation remain based on the CHA2DS2VASc score. This risk tool provides a stroke risk score from 0-9 and takes into account sex (i.e. 1 point for female sex). However, recent treatment recommendations do not change based on sex in younger individuals; patients at low risk of stroke (i.e. CHA2DS2VASc score of 0 in men or 1 in women) do not require anticoagulation. When selecting oral anticoagulant, clinicians may use the SAMETT2R2 tool to identify patients most likely to achieve optimal time in therapeutic range on a vitamin K antagonist. The SAMETT2R2 score considers sex (female sex equals 1 point), along with other characteristics, which may predict poorer anticoagulation control. Patients with scores greater than two may achieve better results on a novel oral anticoagulant or may require more frequent monitoring.

Although nearly all of these guidelines recognize at least some sex-associated distinctions in CVD risk and presentation, little exploration into the cause (e.g. anatomical, hormonal, social) and significance of these distinctions has been published. Further exploration of these sub-group analyses with intentionally designed CVD outcome trials is needed for optimized CVD management in our mothers, sisters, daughters, and wives.

**Conclusion**

There is limited evidence to support differences in the management of CVD in women as compared to men. Many CVD trials are limited by smaller sub-groups of women which are insufficiently powered to detect sex-associated differences in safety or efficacy. As we approach the age of personalized medicine, greater emphasis on identifying sex-related differences in cardiovascular trials will benefit all of our patients.

**References**


8. SPRINT Research Group, Wright JT, Williamson JT, et al. A randomized trial of intensive versus standard blood-pres-


Dr. Emily Ghassemi is a Clinical Assistant Professor of Pharmacy Practice at Campbell University College of Pharmacy. Her clinical site is the Southern Regional AHEC, in Fayetteville, NC. ghassemi@campbell.edu

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An update to the American Geriatrics Society Beers Criteria for Potentially Inappropriate Medication Use in Older Adults (last updated in 2015) was published in February 2019 in Journal of the American Geriatrics Society. Its goal was to improve medication selection and reduce adverse drug events in senior adults.

An expert panel with representatives from nursing, pharmacy, and medicine reviewed updates to the geriatric literature to revise recommendations, rationale, level of evidence, and strength of recommendation as appropriate for each of the five types of criteria: 1) medications that are potentially inappropriate in most older adults; 2) medications that should typically be avoided in older adults with certain conditions; 3) drugs to use with caution; 4) drug-drug interactions; and 5) drug dose adjustment based on renal function.

As with prior iterations of the Beers Criteria, the 2019 update is targeted primarily at practicing clinicians and is intended for use in older adults across the continuum of care, from ambulatory to acute to institutional settings, with the notable exception of hospice or palliative care settings. For the 2019 update, 1422 references were selected for full-text review, and 377 were abstracted into evidence tables. Of these, 67 were systematic reviews/meta-analyses, 29 were controlled clinical trials, and 281 were observational studies. Some noteworthy changes from previous versions of the Beers Criteria are highlighted below:

### Removals from the Beers’ List of Drugs

<table>
<thead>
<tr>
<th>DRUGS</th>
<th>REMOVALS</th>
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<tbody>
<tr>
<td>H2 receptor antagonists (H2RAs)</td>
<td>H2RAs were removed from the list of medications that should be avoided in patients with dementia or cognitive impairment. Evidence supporting adverse cognitive effects of H2RAs is weak; furthermore, the panel feared that since chronic PPIs were added to the Beers Criteria in 2015, therapeutic options for older adults with GERD had become excessively limited. Of note, H2RAs remain on the list of drugs to avoid in delirium. Also, while not explicitly noted in the Beers Criteria, clinicians should remain mindful that doses of ranitidine and famotidine should be adjusted in patients with CrCl &lt;50 ml/min.</td>
</tr>
<tr>
<td>Aripiprazole</td>
<td>Aripiprazole was removed as a preferred agent for treatment of psychosis in patients with Parkinson Disease. Pimavanserin, quetiapine and clozapine are acceptable options for this indication, though each clearly carries its own set of limitations and concerns.</td>
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Additions to the Beers’ List of Drugs

<table>
<thead>
<tr>
<th>Drug</th>
<th>Information</th>
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<tbody>
<tr>
<td>Glimepiride</td>
<td>Glimepiride now joins glyburide as a long-acting sulfonylurea to be avoided due to its potential to cause prolonged hypoglycemia.</td>
</tr>
<tr>
<td>Serotonin-norepinephrine reuptake inhibitors (SNRIs)</td>
<td>SNRIs were added to the list of medications to avoid in patients with a history of falls or fractures. It is worth noting that there are some situations where the benefits of SNRIs continue to outweigh the risks for patients who fall.</td>
</tr>
<tr>
<td>Rivaroxaban</td>
<td>Rivaroxaban joins dabigatran as a direct oral anticoagulant that should be used with caution in adults 75 years and older due to heightened risk for bleeding.</td>
</tr>
<tr>
<td>Tramadol</td>
<td>Tramadol was added to the list of medications that may be associated with hyponatremia secondary to Syndrome of Inappropriate Antidiuretic Hormone.</td>
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<tr>
<td>Dextromethorphan/quinidine</td>
<td>Dextromethorphan/quinidine, a combination drug studied in 2016 for treatment of agitation or aggression in patients with Alzheimer’s dementia, was added to the list of medications to be used with caution based on limited efficacy (in the absence of pseudobulbar affect, for which this drug was already approved) and significantly elevated risk for falls and drug-drug interactions.</td>
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Other Changes to the Beers’ List of Drugs

<table>
<thead>
<tr>
<th>Category</th>
<th>Information</th>
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</thead>
<tbody>
<tr>
<td>Sliding scale insulin (SSI)</td>
<td>The recommendation to avoid the use of SSI remains unchanged; however, the rationale was revised to clarify the definition of SSI (i.e., regimens containing short- or rapid-acting insulin only, dosed according to current blood glucose, without concurrent use of a basal insulin.)</td>
</tr>
<tr>
<td>Older Adults with Heart Failure</td>
<td>Clarification was added around use of certain medications in older adults with heart failure. For example, non-steroidal anti-inflammatory drugs, cyclooxygenase-2 inhibitors, dronedarone, and thiazolidinediones may be used safely, but with caution, in patients with excellent control of heart failure symptoms. These drugs, however, should be avoided if the patient is symptomatic or decompensated.</td>
</tr>
<tr>
<td>Aspirin for primary prevention</td>
<td>The age at which use of aspirin for primary prevention of cardiovascular disease or colorectal cancer should be reconsidered was lowered from 80 to 70 (see additional information in this issue regarding the ASPREE trial.)</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>Previously the list of drug-drug interactions and the list of medications that require dose adjustment in renal impairment specifically excluded antibiotics. Selected antibiotics have now been added to those lists:</td>
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<tr>
<td></td>
<td>▪ Drug-drug interactions: trimethoprim-sulfamethoxazole (TMP-SMX) and phenytoin due to increased risk of phenytoin toxicity; warfarin and ciprofloxacin, clarithromycin, erythromycin, TMP-SMX due to increased risk for bleeding; TMP-SMX and angiotensin converting enzyme inhibitors or angiotensin receptor blockers due to increased risk for hyperkalemia</td>
</tr>
<tr>
<td></td>
<td>▪ Renal dose adjustments: ciprofloxacin dose should be reduced at CrCl &lt;30 ml/min due to increased risk of central nervous system adverse effects and tendon rupture; TMP-SMX dose should be reduced at CrCl 15-29 ml/min and avoided at CrCl &lt;15 ml/min due to increased risk of kidney injury and hyperkalemia</td>
</tr>
</tbody>
</table>

Reference

Dr. Tasha Woodall is the Associate Director of Pharmacotherapy – Geriatrics at the Mountain Area Health Education Center and an Assistant Professor of Clinical Education, UNC Eshelman School of Pharmacy.
Tasha.Woodall@mahec.net

Note from the Editor:
The following resource is recommended to pharmacists who work with senior adults and/or their caregivers.
https://www.healthinaging.org/medications-older-adults
Cannabidiol (CBD), the non-psychoactive & most prevalent cannabinoid found in hemp, plays a significant role in the endocannabinoid system with current clinical efficacy confirmed for use in anxiety, cognition, movement disorders, and pain.1

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As one of the major drivers of healthcare costs and poor health outcomes in the United States, medication non-adherence is a primary target of payers (motivated by the Centers for Medicare and Medicaid Services (CMS) star measures) for both quality improvement and cost reduction in value-based care. Approximately 50% of patients who have chronic health conditions do not take their medications as prescribed, while the overall prevalence of medication non-adherence in adults is about 75%. Beyond adherence, ensuring that patients’ medication regimens embody the most appropriate medications for them individually presents an opportunity to further improve value. Pharmacists receive the most education and training in medication management, yet they are often inefficiently utilized as a resource in the U.S. healthcare system.

While numerous studies have been conducted to evaluate enhanced community pharmacy services, the vast majority of these have been conducted to evaluate the use of the services independently and have demonstrated improvements in adherence and health outcomes. Enhanced community pharmacy services include medication synchronization where all a patient’s medications are filled on the same day, multi-medication packaging, and medication therapy management (MTM) services provided by pharmacists to help patients understand their disease state(s) and medications. However, similar research to evaluate the effectiveness of combining multiple services has been limited. The Study to Measure the Impact of Pharmacists and Pharmacy Services on Medication Non-Adherence (STOMPP), published in 2018 in Innovations in Pharmacy, adds to the body of evidence supporting use of multiple pharmacist-delivered services.

The STOMPP study was a prospective, multi-site, randomized clinical trial that evaluated medication adherence and health outcomes utilizing combined community pharmacist services. Enrolled in the study were 61 adult, English-speaking patients with type 2 diabetes. Enrolled patients were assigned to one of four groups for a 12-month time period:

1. Pill bottles (PB): Received medications in pill bottles with no MTM
2. Blister Packaging (BP): Received synchronized medications in blister packaging with no MTM
3. PB + MTM: Received medications in pill bottles and MTM at 6 & 12 months
4. BP + MTM: Received synchronized medications in blister packaging and MTM with option for home delivery if needed

The focus of the study was on medication adherence and resulting health outcomes. MTM services were provided twice in the year of the study, compared to a typical Medicare patient that would receive one annual comprehensive medication review (CMR). Medication adherence was measured using Proportion of Days Covered (PDC) and pill counts; health outcomes measured were hemoglobin A1c (HbA1c), body mass index (BMI), systolic blood pressure (SBP), and diastolic blood pressure (DBP).

The results on PDC are clear—medication synchronization combined with blister packaging works to increase adherence dramatically. Patients in the blister packaging group (with or without MTM services) had the most noticeable change in adherence scores when compared to pill bottle groups, achieving adherence scores greater than 45% above baseline. These patients reached PDC >0.80, categorized as the cutoff for high adherence, almost immediately upon enrollment and continued to increase up to 0.90 by the end of the study period. The pill bottle only group ended the study with a 0.56 adherence rate, and even the pill bottle + MTM group only achieved 0.68 PDC at the end of 12-month study period. Of note, while the PB + MTM group’s PDC dropped at 6 months (where no MTM intervention had happened at 3 months) after an initial increase from baseline to 3 months, PDC
improved once again after the 6-month MTM session with a pharmacist. This observation may indicate an argument for an increased frequency of MTM services to improve adherence. All of the PDC score data are in Table 1.

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<th>Table 1: Average Proportion of DaysCovered (PDC) Scores</th>
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<td>Baseline</td>
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<td>3 months</td>
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HbA1c
HbA1c reductions from baseline to 6 months and from baseline to 12 months in both MTM groups were significant. The cohort assigned to pill bottles with no MTM provided was the only group with no significant reductions in A1C from baseline to 12 months. Both MTM groups also reached the ADA goal of <7% (dropping by almost 2%), while patients in the blister packaging group got close to the <7% goal by the 12-month time point (dropping by 1.4%). The pill bottle only group did not reach goal at 12 months. The complete A1C results are in Table 2.

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<tr>
<th>Table 2: Comparison of Average Hemoglobin A1C Scores (A1C % ± SD)</th>
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<td>Baseline</td>
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Body Mass Index (BMI)
The differences in BMI were not significant across groups. Scores for patients receiving the blister packaging continuously improved over the course of the year; however, the improvement was more gradual than patients in the MTM groups. The lowest average BMI score occurred in the blister packaging plus MTM group.

<table>
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<th>Table 3: Comparison of BMI Scores Across Groups Over Time</th>
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Blood Pressure
Most patients in this study were at goal at baseline for their blood pressure—according to the JNC 8 guidelines. No statistically significant differences were found for systolic or diastolic blood pressure, however, at the end of 12 months, the patients in the BP + MTM group showed the lowest average SBP. Sub-group analyses were performed on a small group of patients (n=17) who were not at goal at baseline. The results are too small to indicate statistical significance, but most patients in the two blister packaging groups reached systolic blood pressure goals sooner than patients in the bottle groups and a higher number of patients in the BP groups reached goal DBP compared to the other groups, indicating the potential impact of medication synchroniza-
The findings from this study support the use of multiple pharmacy services simultaneously—the patients with the best PDC scores and most improvement in health outcomes were the patients utilizing all three pharmacy services included in the study. However, there are many other pharmacy services that pharmacists offer that could improve health outcomes. Expansion of community pharmacy-based patient care services is a natural complement to pharmacy’s traditional role as the primary access point for medication dispensing. Offering the combination of medication synchronization, blister packaging, and MTM services are one effective way to leverage the pharmacist’s ability to add tremendous value to healthcare.

Valuable Takeaways

Synchronizing medications and using blister packaging was correlated with an improvement in medication adherence, as compared to the conventional pill bottle.

MTM services to help patients understand their medications and disease state(s) were correlated with improvements in clinical health outcomes.

The STOMPP study provides evidence that use of an Adherence Pharmacy practice model—a model that combines use of medication synchronization, blister packaging, MTM services, and the availability of delivery services—may improve outcomes to a greater degree than one intervention alone.

More research is needed to identify additional barriers to adherence and further improve the Adherence Pharmacy practice model.

Focuses for your Pharmacy

Community pharmacies are now held responsible for patient adherence and their pharmacy star ratings—receiving financial incentives for better performance. It is becoming less financially feasible to use conventional pill bottles due to their history of poor adherence and health outcomes, particularly in patients with chronic conditions. Referring to the findings of this study, a strategic focus for pharmacies would be to offer more services that can improve medication adherence. The Adherence Pharmacy practice model is the preferred choice at this point, but pharmacies can begin by offering any of the services individually. The blister cards and pouches are great substitutes to conventional pill bottles, while also providing benefits to the patient’s health. Beyond the performance metrics and health outcomes, extra unique services like these can increase patient retention and loyalty to your pharmacy. Every side of the healthcare system could benefit from these services—from the payers to the pharmacy to the patients.

References


medication therapy management services: The Minnesota experience. JAPhA 2008; 48(2), 203-214.


Dr. Bryce Platt is a Postdoctoral Fellow, Population Health Management at Omnicell. Btplatt3@gmail.com
This study guide contains pertinent federal- and state-level statutes and regulations for the practice of pharmacy in North Carolina. There are 75 “Test Your Knowledge” questions spread throughout the sections of the study guide, and as an added bonus, the guide contains a mock test with 80 practice questions. The book will be shipped in the form of a binder with loose leaf pages for ease of highlighting and note taking. Purchase your copy today for $99 plus $10 shipping and handling.
NCAP Annual Meeting to Hold its 4th Annual Poster Session!
The NCAP Annual Meeting scheduled in Winston Salem, NC on September 26th and 27th will host its 4th annual poster session. Presenting a poster at NCAP is an excellent opportunity to share your research with pharmacy practitioners all around the state! Selected abstracts will be published in the North Carolina Pharmacist: The Official Journal of the North Carolina Association of Pharmacists. Submissions by practitioners, students, and residents are welcome!
The poster session will take place Friday, September 21st from 11:15am-12pm.
Categories:

**Original Research:** Clinical or educational research appealing to an audience of pharmacy professionals in North Carolina. May include health services, pharmacotherapy, medication safety, or patient outcomes. Abstract Headings: Objective, methods, results, conclusions

**Quality Improvement Evaluations:** Assessments of quality improvement measures such as medication use evaluations or process improvements. May include ideas and practices new to system, or practice setting. Abstract Headings: Objective, methods, results, conclusions

**Case Report or Series:** Description of a unique patient case or series. May include novel indication, dose or administration of a medication. Abstract Headings: Introduction, case(s), discussion

**Word Count:** 300 words (excluding author names and title)

Abstracts describing ongoing research will be considered with partially completed data. Descriptions of planned research without any data will not be accepted. Abstracts will be evaluated based on readability and organization, relevance, and potential impact to pharmacy practice.

Please submit your name, your credentials, and your abstract to Dr. Charlene Williams at Charlene_Williams@unc.edu. Deadline: July 15, 2019. Status of submissions will be communicated to authors by August 9, 2019.

Abstracts will be printed as submitted in the North Carolina Pharmacist: The Official Journal of the North Carolina Association of Pharmacists. Edits to abstracts cannot be made after submission. Note: Poster presenters MUST register for the Convention for the day of presentations. There will be no discounted registration, honorarium or speaker fee.

**Example of a structured abstract:**
Category: Original Research
Title: Evaluation of Compliance with National Guidelines for Insulin Initiation
Authors: Kira Harris, PharmD, BCPS, CDE1,2, Jacqueline Olin, MS, PharmD, BCPS, CPP, CDE, FASHP, FCCP2
Institution: Crown Point Family Physicians, Charlotte NC; Wingate University School of Pharmacy, Wingate NC
Objective: The primary purpose of this study was to determine compliance with the American Diabetes Association recommendation to initiate insulin in patients with an A1c>10% at an outpatient family medicine clinic in 2014. Secondary objectives were to determine if initiation of insulin within 3 weeks of an A1c ≥ 10% increased the rate or decreased the time to achieve an A1c<7%, and to determine if pharmacist involvement increased

Call for Posters
the rate of reaching an A1c<7%. 

Methods: The medical records of 121 patients with type 2 diabetes mellitus (T2DM) and an A1c≥10% from January 1, 2014 to December 31, 2014 were reviewed. Patients already receiving insulin or those without a follow-up A1c were excluded. Data collected included patient demographics, duration of diabetes, baseline and follow-up diabetes medications, baseline and follow-up A1c values, as well as pharmacy referrals. 

Results: Fifty-five patients with a mean age of 55 years, a mean duration of diabetes of 6.4 years, and a mean baseline A1c of 11.7% were included. Most patients were receiving no therapy (29%), monotherapy (27%) or dual therapy (29%) at baseline. Insulin was initiated in 5 patients (9.1%, p<0.05) within 3 weeks of the qualifying A1c. Another 5 patients (p<0.05) received insulin at some point during the study. An A1c<7% was achieved in 35.6% of patients not receiving insulin, 20% of patients receiving immediate insulin, and no patients who received insulin after 3 weeks. The mean time to A1c<7% was 6 months for patients not on insulin and 3 months for those receiving immediate insulin. Thirty-three percent of patients who met with a pharmacist reached an A1c<7% compared to 30% of patients who did not. 

Conclusion: Adherence with insulin initiation guidelines and rate of achieving A1c<7% in patients with A1c≥10% is low and increasing pharmacy involvement may increase the rate of reaching goal A1c. 

Call for Round Table Discussions 

NCAP Annual Meeting to Hold “Best Practices” Round Table Discussions! 
In keeping with this year's Annual Meeting theme, Best Practices: oPtimizing HeAlth-Related out-coMes (PHARM), there will be a session dedicated to discussions on best practices from all settings from around the great state of North Carolina. Attendees will have the opportunity to participate in up to three round table discussions, lasting about 20 minutes each. We are looking for practitioners who would like to share their experiences as they facilitate an interactive small group discussion. If you are interested in facilitating one of these discussions, please send your name, your credentials, your contact information, and a brief overview (no more than 200 words) describing your topic. Your overview should include 1-2 objectives. The round table session is scheduled for Thursday, September 26th from 2:30 – 3:45pm. 

Call for Pearls 

NCAP Annual Meeting to Hold Clinical Pearls Session! 
NCAP is pleased to offer a clinical pearls session at the Annual Convention, scheduled September 26th and 27th at the Benton Convention Center in Winston-Salem. Attendees will have the opportunity to participate hear up to four clinical pearls, lasting about 10 minutes each. We are looking for practitioners who would like to share their clinical pearls with attendees. If you are interested in presenting a pearl, please send your name, your credentials, your contact information, and a brief overview (no more than 200 words) describing topic, including background about the relevance of your pearl. The clinical pearls session is scheduled for Thursday, September 26th from 4-5pm. 

Call for Articles 

The North Carolina Pharmacist is the official journal of the North Carolina Association of Pharmacists that seeks to advance the care of patients and the pharmacy profession. It is published online quarterly. It is a peer-reviewed publication that is intended to inform, educate, and motivate pharmacists, from students to seasoned practitioners, and pharmacy technicians in all areas of pharmacy. 

North Carolina Pharmacist is currently accepting articles for publication consideration. We accept a diverse scope of articles, including but not limited to: original research, quality improvement, medication safety, case reports/case series, reviews, clinical pearls, unique business models, technology, and opinions. 

Click on Guidelines for Authors for information on format and article types accepted for review. Articles written by students, residents, and new practitioners are also welcome. Mentors and preceptors – please consider and advise your mentees and students to submit their appropriate written work to North Carolina Pharmacist for publication.
Don’t miss this opportunity to share your knowledge and experience with the North Carolina pharmacy community by publishing an article in North Carolina Pharmacist.

Any questions? Please contact Tina Thornhill, PharmD, FASCP, BCGP, Editor, at tina.h.thornhill@gmail.com.

Call for Peer Reviewers

The North Carolina Pharmacist is currently seeking pharmacist volunteers to serve as peer reviewers. The journal is published online quarterly and is intended to inform, educate, and motivate pharmacists, from students to seasoned practitioners, and pharmacy technicians in all areas of pharmacy. Peer review helps to validate research and increases networking possibilities.

We are especially interested in pharmacists with expertise in the following areas:

- Anticoagulation
- Business
- Cardiology
- Compounding
- Hematology
- Immunizations
- Informatics
- Nutrition
- Oncology
- Hospice/Palliative Care
- Pharmacy Law / Legislative Issues
- Surgery

If you wish to be considered as a reviewer and/or want more information, please email Tina Thornhill, PharmD, FASCP, BCGP, Editor, at tina.h.thornhill@gmail.com.

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- PhRmaCare – Web-based solution for pharmacy regulatory and compliance management
On February 28 and March 1, 2019, the Chronic Care and Health-Systems Practice Forums came together at the luxurious Rizzo Center in Chapel Hill for their second annual joint clinical meeting. Ten hours of continuing education were offered over the course of two days. Plenary programs focused on updates in diabetes and continuous glucose monitoring, infectious disease management, post-fracture care, blood pressure targets for older adults, opioid alternatives, and newly approved drugs. Breakout sessions for Chronic Care attendees focused on symptom management for palliative care populations and innovative solutions to meet the Centers for Medicare and Medicaid Services regulatory requirements in long-term care facilities. Leaders and other stakeholders in Chronic Care from across the state also engaged in conversations with exhibitors and discussed advocacy needs from a senior care practice perspective with NCAP Executive Director Penny Shelton. One of the first orders of business will be to continue the work started two years ago proposing regulatory changes to allow for the use of emergency kits in assisted living environments. If you are interested in getting more involved with NCAP’s advocacy efforts and/or the Chronic Care Practice Forum, please email the forum executive committee chair, Tasha Woodall, at Tasha.Woodall@mahec.net.
Check us out on social media for more pictures!
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CONNECT ONLINE: 

PTCB has moved to an online-only application process for pharmacy technicians applying for certification and recertification. For more information, please visit www.ptcb.org.
Dr. David Phillips is the Director of Clinical Services at Blue Ridge Pharmacy in Asheville, North Carolina, which provides premier pharmacy services for extended care facilities throughout North Carolina, South Carolina, Tennessee, and Kentucky. In addition to these responsibilities, Dr. Phillips currently provides consulting services for three continuing care retirement communities. He is an active member of the North Carolina Association of Pharmacists (NCAP) currently serving as President-elect and has held past positions including at-large member of the Board of Directors and the Chair of the Chronic Care Practice Forum. During the 2019 NCAP Chronic Care & Health-Systems Conference, Dr. Phillips was presented with the NCAP Chronic Care Pharmacist of the Year Award. Dr. Phillips is a preceptor for APPE students from the University of North Carolina Eshelman School of Pharmacy and Wingate University School of Pharmacy. He also serves as a preceptor for PGY1 and PGY2 residents. Prior to joining Blue Ridge Pharmacy, Dr. Phillips spent three years at the University of Missouri-Kansas City at MU School of Pharmacy in Columbia, Missouri, where he served as a Clinical Assistant Professor of Pharmacy Practice. He taught students in both didactic courses and experiential rotations in internal medicine at the Harry S. Truman Memorial Veterans’ Hospital. Dr. Phillips received his degree from the Raabe College of Pharmacy at Ohio Northern University in 2009. He completed a pharmacy practice residency at Grandview Medical Center in Dayton, Ohio, in 2010. In his free time, Dr. Phillips enjoys spending time with his family and friends and being outdoors. His hobbies include woodworking, home brewing, hiking, camping, running, and CrossFit.

Gina Upchurch is the founding Executive Director of Senior PharmAssist in Durham, North Carolina. Senior PharmAssist promotes healthier living for Durham seniors by helping them obtain and better manage needed medications and by providing health education, Medicare insurance counseling, community referral, and advocacy. Gina received her pharmacy and public health degrees from UNC-Chapel Hill, where she currently holds adjunct appointments after completing her pharmacy residency in geriatrics.

Senior PharmAssist opened its doors in 1994 and since that time,
Community Care Practice Forum Member Spotlight

Jennifer Knowles, PharmD

The Community Care Practice Forum is proud to highlight the work of Dr. Jennifer Knowles. Jennifer graduated from Campbell University in 2008 and has been practicing community pharmacy in her hometown of Wallace, NC ever since. She appreciates the opportunity to live and work in a small town because of the strong relationships she is able to build with her patients and their families. As a pharmacist at Realo Discount Drugs in Wallace, Jennifer oversees valuable clinical services such as vaccination clinics, medication synchronization, adherence packaging, and delivery. She takes pride in working for an independent pharmacy chain that allows her and her staff to truly spend time counseling patients and caregivers when they are picking up for themselves, their family members, or their fur babies.

The Community Care Practice Forum is proud to highlight the work of Dr. Jennifer Knowles. Jennifer graduated from Campbell University in 2008 and has been practicing community pharmacy in her hometown of Wallace, NC ever since. She appreciates the opportunity to live and work in a small town because of the strong relationships she is able to build with her patients and their families. As a pharmacist at Realo Discount Drugs in Wallace, Jennifer oversees valuable clinical services such as vaccination clinics, medication synchronization, adherence packaging, and delivery. She takes pride in working for an independent pharmacy chain that allows her and her staff to truly spend time counseling patients and caregivers when they are picking up for themselves, their family members, or their fur babies.

Jennifer demonstrates her commitment to her patients, community, and to the profession of pharmacy on a daily basis and during difficult times. Especially when Hurricane Florence’s flooding devastated their small community last year. Many of her patients were living in shelters with only a handful of personal belongings and some moved to live with family because their home was under water. Jennifer and her staff continued to provide care to their customers where ever they were located and aided the American Red Cross in helping others whose pharmacies had not reopened. Their Realo family of drugstores came together and donated necessary items such as, clothes, pillows, and blankets to help people in their community find comfort in the shelters. They also donated cleaning supplies and totes to help families gut out their homes.

Since 2013, Jennifer has served as a preceptor for student pharmacists from Campbell and UNC. She says, “I love knowing I can play a part in the education of a future pharmacist, and I have learned that they are the best way to keep you updated on your new drug knowledge! When flu vaccination season starts, I really enjoy having a student so they can perfect their immunizing technique.” She has also worked with local businesses and Duplin County Schools for almost 10 years administering the influenza vaccine, Tdap and Pneumovax to teachers, staff and other citizens of the community. She travels to each location and sets-up an immunization clinic to help keep the staff protected from vaccine-preventable illnesses.

Thank you, Jennifer, for your contributions to your patients, community, colleagues, and the profession of pharmacy! You are an example for all of us and we are so proud to showcase your work.
CAREER CENTER

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