

S O U T H D A K O T A P H A R M A C I S T

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133rd Annual Convention Lineup
Convention Registration Forms
Online Pharmacy Technician Training



SDPHA 133RD
JAM
SESSION

ANNUAL CONVENTION



September 13-14, 2019
The Lodge at Deadwood Convention Center

SUMMER EDITION 2019

**SOUTH DAKOTA
PHARMACISTS ASSOCIATION**

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www.sdpha.org

*The mission of the South Dakota
Pharmacists Association is to
promote, serve and protect the
pharmacy profession.*

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**PRESCRIPTION DRUG
MONITORING PROGRAM**

Melissa DeNoon, Director
Melanie Houg, Assistant

Calendar

*Please note: If you are not on our mass e-mail system check our
website periodically for district meetings and other upcoming events.
They will always be posted at: www.sdpha.org.*

JULY

- 4 Independence Day
- 4–5 SDPhA Office Closed
- 13–17 American Association of Colleges of Pharmacy
(AACCP) Chicago, IL
- 26 18th Annual GVR Society Open Golf Classic
Hartford, SD

AUGUST

- 24–26 NACDS Total Store Expo
Boston, MA

SEPTEMBER

- 12 South Dakota Board of Pharmacy Meeting
Deadwood, SD
1–5 pm
- 13–14 South Dakota Pharmacists Association
133rd Annual Convention
Deadwood, SD

*The SOUTH DAKOTA PHARMACIST is published quarterly – January / April /
July / October. Opinions expressed do not necessarily reflect the official
positions or views of the South Dakota Pharmacists Association.*

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DIRECTOR'S Comments

Amanda Bacon // Executive Director



Happy Summer! It's here!
It's really here!

I hope this finds you all well and enjoying some summer sunshine. It's such a great time to get out and experience all our great state has to offer. West River or East – there are so many fantastic recreational and sight-seeing opportunities in the 605. You don't have to go very far to find a place to relax, unwind and make great memories with friends and family!

133rd SOUTH DAKOTA PHARMACISTS ASSOCIATION ANNUAL CONVENTION – JAM SESSION

Speaking of great places to visit – if you don't yet have the 133rd Annual SDPhA convention on your calendar – you NEED to put it there! This year we are back at The Lodge in Deadwood in Deadwood, South Dakota. If the location wasn't enough to lure you, you need to check out the line up for this year. We have exceptional set of speakers again this year. We are fortunate to have so many experts in their fields right here, in our own back yard. In addition, Angela Kennecke will share her very personal experiences and story with us in her keynote address. Kennecke has been very open about the tragic death of her daughter at the age of 21 to fentanyl poisoning, as well as her mission to break down barriers to treatment.

Of course, our event always provides great opportunities to network with other professionals, meet many of the talented SDSU Pharmacy students, and learn about the latest and greatest in industry by stopping to visit with the many exhibitors who support our event each year by coming to visit with you! You'll also have time in the evenings to stroll the streets of historic Deadwood, and take in the Deadwood Jam – an annual gathering of fabulous musicians you don't want to miss! Gather your colleagues and hop on the trolley at the Lodge to take it all in – you'll be glad you did! Keep an eye on your email and our social media for more information about the Deadwood Jam, and of course our own Jam Session! You can find registration forms in this edition of the Journal, or [register online here](#).

SOCIAL MEDIA

Our social media pages continue to grow and expand – and we're seeing some great numbers as a result! That means

you're finding it a good resource, and that's the goal! As a reminder, our public [Facebook page](#) is really designed as a place for information you can easily share on your business pages – great, patient-centered information you can present to your patients with just a few clicks of your mouse. We have also developed an Instagram account for the same purpose – more development there is on the way soon!

Perhaps most important in the social media space is the [SDPhA Member News and Announcements](#) page. That's where you'll find news that impacts your profession on the daily – and up-to-the-minute information about convention and legislative issues.

PHARMACY TECHNICIAN UNIVERSITY

I remain amazed at the response we continue to receive to PTU. This online training module has really provided a much-needed opportunity to provide technicians vital training – at a very modest rate. Look for a dedicated landing page on our website soon which will have all the details regarding the program, as well as how to enroll. You'll find much of that information here in the Journal as well.

COMMERCIAL & LEGISLATIVE FUND

If you attended a Spring District meeting, odds are you heard us talk about the Commercial and Legislative Branch – how it works, and how it's funded. Now that we have entered a new fiscal year, you can expect to see a concerted fundraising effort regarding our C & L fund. This fund is the exclusive mechanism to pay for our lobbying efforts, and it relies, in large part, on your contributions. We need strong and continuous representation to protect the interests and concerns of pharmacists in South Dakota. The reality is, we cannot retain our Lobbyist Robert Riter and his partner Margo Northrup without this support. We are so grateful for each and every dollar donated – it's an investment in the future of the profession. You can [donate online when you complete your convention registration](#). Just check fill in the amount at the bottom of the form. You can [donate online independently](#) of registration as well. Please also remember to pay your district dues – it's a vital piece of keeping those up and running! Watch your email and the Facebook group page for more information.

Respectfully,

AMANDA BACON

SDPhA Executive Director

PRESIDENT'S Perspective

Erica Bukovich // SDPhA Board President



Greetings everyone!

As I write this, summer has officially arrived in South Dakota. I hope this finds you enjoying this beautiful state of ours!

This summer the SDPhA Board has been hard at work with events on the horizon this fall and beyond. Earlier this month the Board met in Custer State Park for the annual retreat. The Board was pleased to

receive applicants for awards and appreciates those who presented names. This is a great way to recognize those around you, and I encourage everyone to take the time to evaluate potential nominees each year. We are consistently impressed at the great contributions in the workplace and community. Please know that while only one winner will be announced for each category, we are incredibly proud of each and every one of you!

At retreat, the Board also continued work on the by-laws to bring to update them in regard to new requirements for non-profit organizations such as ours, and to also make them more applicable to the organization today. Please watch for more detail on this as we work to bring this to the membership for consideration. I would personally like to thank each member of the Board and Amanda, as well as Margo Northrup and Robert Riter (SDPhA lobbyists and legal counsel) for contributing to this effort.

We also had a great opportunity to plan for our next event, the **SDPhA Annual Convention Sept. 13-14, 2019**. Early bird registration just opened, so please consider joining us for a *Jam Session* in Deadwood. We are pleased to have Angela Kennecke bring us the Keynote address this year. Her personal story of turning heartbreak into action to help educate people on substance use disorder is one you don't want to miss. You'll find the return of perennial favorites topics, too - such as New Drug, Law, Board of Pharmacy

Updates and Immunization CE as well as a newer favorite - Pharmacy Hot Topics. This event is shaping up to be one you don't want to miss! Of course, this is also a time for the business of the organization and we look forward to bringing together pharmacists, technicians, and students for learning and collaboration. Make plans now to join us!

As we look forward to Convention, this will also mark the end of my year as President. I thank each and every one of you for your support throughout my time on the Board. I would like to thank the Board Members I have served with over the years for your tireless efforts, lively conversation, and most of all for your friendship. If you are reading this and have ever thought of serving on the Board, District officer, or any other capacity, don't hesitate to reach out to those serving to learn more about how to get involved. It takes each and every one of us working together, and I know our great leaders will do just that going forward!

In closing I would like to take this opportunity to recognize Eric Grocott for his contributions to the organization during his tenure on the board. He has travelled many miles and contributed countless hours to the profession over the years all while just getting started in the profession. Last but not least, I would also like to recognize Amanda for all of the work she does to keep things moving forward and the Board members and membership informed. Thank you for all the things you do each and every day!

With that I will sign off and remind each of you to head out to the website to register for Convention. See you in Deadwood!

Respectfully,

ERICA BUKOVICH

SDPhA Board President

South Dakota BOARD of PHARMACY

Kari Shanard-Koenders // Executive Director



BOARD WELCOMES NEW REGISTERED PHARMACISTS/ PHARMACIES

Congratulations to the following candidates who recently met licensure requirements and were licensed as pharmacists in South Dakota: Lori Anderson, Kaya Borg, Bailie Carlson, Hadley Cropsy, Brittany Elgersma,

Nicholas Elgersma, Michael Erickson, Abigale Ferdinand, Allyson Helms, O'Dell Hicks, Chelsea Hoffman, Megan Ingebrigtsen, Darren Kueter, Kayla Guy, Robert Martz, Lauren Metzger, Ruth Minzel, Slater Nash, Kiara Oltman, Austin Oyen, Nicole Rasmussen, Sydney Rechtenbach, Brandon Reiff, Christopher Rochon, Cheslea Scholten, Michael Spiese, Jenny Vitzthum, Shelby Wagner, Khia Warzecha, Amanda Weeden, Allison Weinacht, Kenton Welbig, Corena Wenner, and Jacob Wormer. Three full-time pharmacy licenses were approved and issued during the period. They are Winner Regional Healthcare Center dba Winner Family Drug, Winner; Homer's Pharmacy dba Nelson Drug (Change of Ownership) Arlington; Yankton Drug Company Inc. dba Yankton Rexall Drug (Change of Ownership) Yankton; and 3C Pharmacy Inc dba Prairie Hills Pharmacy, Belle Fourche. One part-time license was approved for Regional Health Home Plus LTC (AMDD) Pharmacy-Fountain Springs Health Care, Rapid City.

USP UPDATE

by Inspector Tyler Laetsch

The United States Pharmacopeia (USP), has updated chapters regarding compounding compliance. Chapters <795> Pharmaceutical Compounding - Nonsterile Preparations, <797> Pharmaceutical Compounding - Sterile Preparations, and <825> Radiopharmaceuticals - Preparation, Compounding, Dispensing, and Repackaging have been published as of June 1st and will become enforceable as of December 1, 2019. Along with these chapters, USP<800> Hazardous Drugs - Handling in Healthcare Settings will become enforceable on December 1, 2019 as well. The Board of Pharmacy Office is currently in the rule writing process to address these changes and additions. You can obtain a copy of these chapters from the USP website at: <https://www.USP.org>.

HAZARDOUS WASTE RULE CHANGE

by Inspector Tyler Laetsch

To reflect changes made to the federal EPA rules, the State of South Dakota Department of Environment and Natural Resources is in the process of updating the state administrative rules regarding hazardous waste. These changes will impact pharmacies and healthcare facilities regarding hazardous waste disposal. The notice and public hearing information can be found at the department's website: <https://denr.sd.gov/public/default.aspx>.

PDMP UPDATE

by PDMP Director, Melissa DeNoon

When interpreting a patient's PDMP report, it is important to have knowledge and understanding of morphine milligram equivalents (MME) and to be able to communicate with physicians on this subject. As you know, MME is defined as the amount of oral morphine an opioid dose is equal to when prescribed. The daily MME value helps identify patients who may benefit from closer monitoring, reducing or tapering of opioid doses, co-prescribing of naloxone, or other measures to reduce overdose risk. South Dakota's PDMP platform vendor utilizes the Centers for Disease Control and Prevention's (CDC) published MME conversion factors to calculate the reported daily MME values in a patient's report, which do exclude buprenorphine prescriptions. Commonly prescribed opioids' conversion factors are included in the chart below:

OPIOID	CONVERSION FACTOR
<i>doses in mg/day except where noted</i>	
Codeine	0.15
Fentanyl transdermal <i>in mcg/hr</i>	2.4
Hydrocodone	1
Hydromorphone	4
Methadone*	3
Morphine	1
Oxycodone	1.5
Oxymorphone	3
Tramadol	0.1

*Calculating MME in clinical practice may involve an alternative sliding-scale approach.

Source: <https://www.cdc.gov/drugoverdose/resources/data.html>

Daily MME can be calculated using this formula: strength per unit X (total number of units in the prescription/days of supply) (X) MME conversion factor = MME/day. For example, a patient has a prescription for oxycodone/acetaminophen 5/325 #30 with directions to take 1 tablet every 4 to 6 hours as needed for pain: 5mg X (30/5) X 1.5 = 45 MME/day. If a patient is on more than one opioid, each opioid's daily MME is added together to obtain the patient's total daily MME. The CDC recommends in its **CDC Guideline for Prescribing Opioids for Chronic Pain - United States, 2016** that prescribers should start opioids at the lowest effective dose and reassess evidence of the patient's benefits and risks when they are considering increasing the dose to ≥ 50 MME/day (e.g., ≥ 50 mg hydrocodone; ≥ 33 mg oxycodone). Prescribers should also avoid increasing to doses ≥ 90 MME/day (e.g., ≥ 90 mg hydrocodone; ≥ 60 mg oxycodone) or carefully justify their decision to titrate the dose to ≥ 90 MME/day. Please visit **SD's Avoid Opioid website** for additional provider and patient information.

2019 MEDICARE PART D PRESCRIPTION OPIOID POLICIES

by PDMP Director, Melissa DeNoon

The Centers for Medicare and Medicaid Services (CMS) finalized new Medicare Part D drug plans policies to follow starting January 1, 2019. CMS focused on these distinct populations of Medicare Part D opioid users: new opioid users (opioid naïve), chronic opioid users, high risk opioid users, and users on concurrent medications that may lead to increased risks. The policies include improved safety edits at the pharmacy and drug management programs for patients determined to be at-risk for misuse or abuse of opioids. Patients excluded from these interventions are those being treated for cancer-related pain, those in palliative and hospice care, and residents of long-term care facilities. CMS expects Medicare Part D drug plans to implement several new edits at the pharmacy when opioid prescriptions are processed:

1. A hard edit limiting initial opioid fills (opioid naïve) to a seven-day supply. Subsequent prescriptions filled during a plan's typical 60-90 day review window will not be subject to this limit.
2. A care coordination edit will trigger when a patient's cumulative morphine milligram equivalents (MME) per day across all their opioid prescription(s) is ≥ 90 MME. Some plans only have this alert when a patient is

obtaining opioid prescriptions from multiple prescribers and/or pharmacies. This is not a prescribing limit and decisions to taper or discontinue therapy are decided by and agreed to by both the patient and prescriber.

3. Soft edits will trigger when a patient is on concurrent opioid and benzodiazepine therapy and for duplicative long-acting opioid therapy. In these cases, pharmacists should conduct safety reviews to determine if therapies are safe and clinically appropriate.
4. An optional hard edit may be implemented when a patient's cumulative daily MME is ≥ 200 MME. As with the care coordination edit, some plans may only have this alert when a patient is obtaining opioid prescriptions from multiple prescribers and/or pharmacies and this is also not a prescribing limit.

These policies promote partnerships among pharmacists, prescribers, patients, and Medicare Part D prescription drug plans. Pharmacists play a key role in helping their patients understand the potential risks associated with opioids, how to use prescription opioids more safely, and what steps patients need to take to gain or maintain access to needed opioid medications. For more information on these new guidelines, visit www.CMS.gov.

SD PDMP ENHANCEMENTS COMING SOON

by PDMP Director, Melissa DeNoon

The South Dakota Prescription Drug Monitoring Program (SD PDMP) will soon be rolling out our 2018 Comprehensive Opioid Site-based Program Grant projects. These projects include facilitation of statewide Gateway integration and enhancement of PMP AWARxE with the NarxCare Enterprise platform.

It is well established that PDMPs collect a considerable amount of important data; however, evidence suggests that prescribers and pharmacists do not use them because they require additional steps that are not in the clinical workflow. The statewide Gateway integration project will address these program challenges as integration achieves in-workflow, one-click access to patient profile reports without the need to log out of the pharmacy management system or electronic health record and into the PDMP with a password that requires changing every ninety days. PMP Gateway is Appriss Health's solution and managed service

(continued)

BOARD SPONSORED DRUG TAKE BACK SITES HAVE EXPANDED!!

Please check out the new list of those sites which have newly installed MedDrop receptacles for medications which are no longer needed. The Board appreciates the collaboration and thanks all of the pharmacies who have agreed to house a receptacle.

MEDDROP PHARMACY LOCATIONS

PHARMACY NAME	CITY	COUNTY	SETTING
Lewis Family Drug #31	Milbank	Grant	Retail
Lewis Family Drug #73	Chamberlain	Brule	Retail
Lewis Family Drug #68	De Smet	Kingsbury	Retail
Lewis Drug	Madison	Lake	Retail
Lewis Drug Southgate	Sioux Falls	Minnehaha	Retail
Lynn's Dakotamart	Pierre	Hughes	Retail
Turner Drug	Bowdle	Edmunds	Retail
Lewis Family Drug #58	Viborg	Turner	Retail
Cornwell Drug	Webster	Day	Retail
Randall Pharmacy	Redfield	Spink	Retail
Lewis Family Drug #72	Mitchell	Davison	Retail
Lewis Family Drug #38	Clear Lake	Deuel	Retail
Hoffman Drug	Platte	Charles Mix	Retail
Heritage Pharmacy	Freeman	Hutchinson	Retail
Salem Community Drug	Salem	McCook	Retail
Bon Homme Pharmacy	Tyndall	Bon Homme	Retail
Dunes Family Pharmacy	Dakota Dunes	Union	Retail
Family Pharmacy of Mobridge	Mobridge	Walworth	Retail
Hy-Vee Pharmacy #1633	Sioux Falls	Minnehaha	Retail
Hy-Vee Pharmacy #1039	Brookings	Brookings	Retail
Hy-Vee Pharmacy #1820	Vermillion	Clay	Retail
Hy-Vee Pharmacy #1871	Watertown	Codington	Retail
Hy-Vee Pharmacy #1899	Yankton	Yankton	Retail
Lewis Drug #4	Huron	Beadle	Retail
Lewis Drug #7	Sioux Falls	Minnehaha	Retail
Lewis Family Drug #60	Canton	Lincoln	Retail
Lewis Family Drug #70	Flandreau	Moody	Retail
Lewis Family Drug #66	Beresford	Union	Retail
Medicap Pharmacy #8394	Hartford	Minnehaha	Retail
Prairie Pharmacy Corsica	Corsica	Douglas	Retail
The Medicine Shoppe	Rapid City	Pennington	Retail
Winner Family Drug	Winner	Tripp	Retail
Community Memorial Hospital	Burke	Gregory	Hospital
Custer Regional Hospital	Custer	Custer	Hospital
Lead-Deadwood Regional Hospital	Deadwood	Lawrence	Hospital
Rapid City Regional Hospital	Rapid City	Pennington	Hospital
Spearfish Regional Hospital	Spearfish	Lawrence	Hospital
Sturgis Regional Hospital	Sturgis	Meade	Hospital

(continued from page 7) for integrating PDMP information, clinical tools, analytics, and functionality into pharmacy management systems and electronic health records. Grant funds will pay all PMP Gateway fees for prescribers and pharmacies in SD for the two-year grant period.

The NarxCare Enterprise platform was developed by Appriss Health to provide a more comprehensive approach to addressing substance use disorder (SUD) and aids prescribers and pharmacists in clinical decision-making, provides support to help prevent or manage SUD, and gives states the platform they need to take the next step in battling against opioid misuse, abuse, diversion, and addiction. NarxCare analyzes multi-state PDMP data and a patient's controlled substance prescription history to provide patient risk scores and an interactive visualization of usage patterns to help further identify potential risk factors. Practitioner decisions are based on objective insight into potential drug misuse or abuse and provide patients with the care they need. This enhancement extends beyond just identifying patients at risk, which is the first step to impacting the increasing prevalence of SUD, to providing tools and resources to better support patient needs: MAT locators, CDC information sheets, and the ability for care teams to communicate enabling coordination of care. Grant funds will pay the fee for this enhancement and when enabled, SD's PDMP will be provided with the NarxCare Enterprise platform deploying NarxCare analytics, visualizations, and clinical intervention tools to users accessing PMP AWARe through both the web portal and through the PMP Gateway clinical workflow integration service.

Respectfully Submitted for the Board,

KARI SHANARD-KOENDERS

Executive Director

BOARD MEETING DATES

Check our website for the time, location and agenda for future Board meetings.

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PDMP DATA ACCESS

<https://southdakota.pmpaware.net/login>

PDMP DATA SUBMITTERS

<https://pmpclearinghouse.net/>

NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

www.NABP.pharmacy

THE 18TH ANNUAL

GVR SOCIETY OPEN GOLF CLASSIC

JULY 26 • 7:30AM
CENTRAL VALLEY GOLF COURSE •
HARTFORD, SD

FOR INFO AND REGISTRATION
VISIT SDSHP.COM

SOUTH DAKOTA Society of Health-System PHARMACISTS

Joe Berendse, PharmD, BCPS, BCACP // SDSHP President



Greetings from the South Dakota Society of Health-System Pharmacists!

Summer is in full swing here in South Dakota – the longest day of the year has come and gone, and the Fourth of July is right around the corner! To start us off right, SDSHP recently held two summer social events on June 26th. One was held at Remedy Brewing Company in Sioux Falls,

and the other event was held at Lost Cabin Beer Company in Rapid City. We had great turnout at both events, with pharmacists, pharmacy technicians, and student pharmacists gathering for food and drinks. SDSHP will be planning another set of social events for Pharmacist's Month in October, so be on the lookout for more details later this year!

Our Board of Directors has recently approved SDSHP's 2019-2020 strategic plan. This strategic plan will help guide SDSHP's efforts until the 2020 Annual Meeting next April. One highlight of our strategic plan is that we aim to explore online platforms to more effectively deliver continuing education to our members – pharmacists and technicians alike. We will be in touch about these efforts throughout the course of the year!

SDSHP is also pleased to launch the SDSHP Grant Program, which is intended to partially fund residency projects that align with our mission and vision. PGY-1 and PGY-2 pharmacy residents in South Dakota are eligible to apply, and additional application instructions will be distributed in early July. We hope the grant fosters innovation, elevates patient care, and promotes the profession of pharmacy. Finally, we are pleased to congratulate the awards and accomplishments of two of our members: Tadd Hellwig and Tom Johnson.

- **Tadd Hellwig** was named as an ASHP Fellow (FASHP) during the 2019 ASHP Summer Meetings in Boston. Members who have achieved FASHP status have demonstrated prolonged commitment to ASHP and the education of its members.
- **Tom Johnson** has been slated for an ASHP National Position as candidate for ASHP President. The full slate of candidates has been announced and is available on the ASHP website. ASHP members are encouraged to vote in online elections from July 1st through July 30th – check your ASHP e-mail address for details.

UPCOMING EVENTS

The 7th Annual SDSHP Statewide Residency Conference will be held on Friday, July 12th at Cedar Shore Resort in Oacoma. Pharmacy residents throughout the state are invited to this conference, which provides the residents an opportunity to network with others and gain knowledge on topics that will benefit them throughout the residency year. Thanks to our resident liaison – Avery Aldridge – for her efforts in coordinating the event!

The 18th Annual Gary Van Riper Society Open Golf Classic will be held at the Central Valley Golf Course in Hartford on Friday, July 26th. This event supports SDSU student pharmacists by providing academic scholarships and funding for travel to the ASHP Clinical Skills Competition in December. Please note that this event is open to all golfers; golfers do not need to be members of SDSHP or even work in a pharmacy to play! If you are interested in registering online, please visit the *Events* tab on SDSHP.com.

We invite you to stay engaged by visiting SDSHP's website at www.sdshp.com. There you can learn more about SDSHP and find a current list of upcoming events!

Respectfully submitted,
JOE BERENDSE
PharmD, BCPS, BCACP
SDSHP President

SOUTH DAKOTA STATE UNIVERSITY COLLEGE of PHARMACY and ALLIED HEALTH PROFESSIONS

Jane Mort // Dean, College of Pharmacy & Allied Health Professions



Greetings from the College of Pharmacy and Allied Health Professions!

As we enter into the summer break, I want to share the outstanding achievement of our 77 graduates who received their Doctor of Pharmacy hoods on May 3rd! At the hooding ceremony we honored their accomplishments and learned of their employment plans that

included a PGY1 residency placement rate of 82.2% which is far above the national average of 64.4%.

The College is committed to advancing health care, and over the last quarter these efforts have been funded through grant dollars. Specifically, Dr. Pinto received a second year of funding for a contract with the South Dakota Department of Health. This five-year CDC funded project has generated approximately \$1.2 million in the first two years to impact the provision of care in communities across South Dakota. Over the next few years, this innovative project will receive additional funding to facilitate expansion of community pharmacy practice, and these results will be shared throughout the United States and beyond. In addition, Dr. Chamika Hawkins-Taylor along with Dr. Jennifer Ball and Ms. Mary Beth Fishback were awarded a one-year planning grant in the amount of \$200,000 from Health Resources and Services Administration for a project entitled *Development of a multi-sector care network to optimize access to care for rural patients with opioid use disorder*. This project also includes faculty from the College of Nursing and the College of Arts, Humanities and Social Sciences. These two projects are evidence that our faculty are using their creative and innovative approaches to help solve critical healthcare needs, and these efforts are not only being recognized but financially supported.

While we are on the topic of our faculty, I want to make sure to point out all of their outstanding achievements that I have listed in the accompanying table. It is a true honor to work with such a talented and committed group of faculty and staff!

In order to optimize the functioning of the College, we will be incorporating a third department into our structure. The Allied and Population Health Department will include Medical Lab Science and Master in Public Health programs, along with our social and administrative science faculty. Bringing these programs and faculty members together will better support these academic programs, create synergy among the faculty members, and enhance research efforts. This change will go into effect July 1.

Please stop by the College if your summer plans bring you back to campus. We would enjoy giving you a tour of our facilities and *catching up*.

Best regards,

JANE MORT

Dean,
College of Pharmacy & Allied Health Professions

FACULTY AND STAFF ACCOLADES: SOUTH DAKOTA AWARDS

- Dr. Wendy Jensen Bender was awarded the *South Dakota Society of Health System Pharmacists (SDSHP) Pharmacist of the Year Award* at the SDSHP Annual Meeting.
- Dr. Shafiqur Rahman received the *South Dakota Education Association's Human and Civil Rights Award*.

UNIVERSITY AWARDS

- Dr. Tadd Hellwig was chosen as the *College of Pharmacy Students' Association Teacher of the Year*

COLLEGE AWARDS

- Dr. Jennifer Ball received the *Excellence in Research and Scholarly Activity Award*
- Dr. Josh Reineke received the *Excellence in Teaching Award*
- Ms. Rachel Chamblin received the *Pharmacy Staff Award*
- Ms. MaryBeth Fishback received the *Community Engagement Award*

PROMOTIONS

- Rank of *Full Professor* was achieved by: Dr. Dan Hansen; Dr. Tadd Hellwig; Dr. Stacy Peters; Dr. Hemachand Tummala
- Rank of *Associate Professor* was achieved by: Dr. Amy Heiberger

ACADEMY of STUDENT PHARMACISTS

Natalie Sovell // SCAPP/APhA-ASP SDSU Chapter President



Hi SDPhA! The Student Collaboration for the Advancement and Promotion of Pharmacy (SCAPP) has just finished up a busy 2018-2019 year! Our new executive board was inducted into office in April. Our organization has leaders that represent APhA-ASP, NCPA, SSHP, SCCP, and PPAG. The new executive board is featured below. In June, our executive board will attend a retreat at Dr. Brittney Meyer's

cabin on Lake Poinsett to prepare for the upcoming year. In July, our new SCAPP president-elect, Allyson Wirfs, will attend the national APhA-ASP Summer Leadership Institute in Washington, D.C. We are excited to find out what she can bring back to our chapter from attending this event!

Our theme for this year will be involvement. This theme represents our organization's dedication to helping retain members throughout the year and to make sure everyone

is able to play a part in SCAPP. SCAPP has around 40 student leaders, ranging from sophomore pre-pharmacy students to final year student pharmacists. Many of our student leaders are heavily involved in other pharmacy organizations as well.

At the end of the year, our chapter was proud to announce that our student pharmacists completed a grand total of 1,538 patient care screenings in the areas of blood glucose, blood pressure, cholesterol, immunization, and osteoporosis. We are excited to continue to advocate for the pharmacy profession by providing patient care screenings in our community. On Friday, August 30th, 2019, our chapter will once again provide screenings at the South Dakota State Fair in Huron. Funding for this event has been made possible through SDPhA in promotion of our *More Than A Count* campaign.

Respectfully,

NATALIE SOVELL

SCAPP/APhA-ASP SDSU Chapter President 2019-2020



SD ASSOCIATION of PHARMACY TECHNICIANS

Jerrie Vedvei, CPhT // SDAPT President



The South Dakota Association of Pharmacy Technicians board has been busy preparing for this Fall's Annual CE Day and Meeting.

Please mark your calendars and encourage your technicians to attend Oct. 5th. There will again be three locations to accommodate everyone around the state. Rapid City Regional Hospital in Rapid City, Avera Hospital in Sioux Falls and the DDN Offices

in Pierre at the Capitol building. This year there will be speakers at each location with DDN services we are able to make sure each location will see each of the speakers.

THIS YEAR'S PRESENTERS ARE:

1. For required Law CE, Kari Shanard-Koenders, R.Ph. and executive director of the South Dakota Board of Pharmacy.
2. For the required Safety CE Spencer Mehmman, a second year resident at Rapid City Regional, from Illinois with be presenting from Rapid City on Chemo drugs, spills (the containment, decontamination process, etc.).
3. Alyssa O. Howard, Pharm D, Pharmacy Coordinator of the Community Memorial Hospital Avera in Redfield & Marshall County Healthcare Center Avera, Britton will be presenting on Thyroid.
4. Travis Anderberg, Pharm D, Co-Owner of Miller Rexall Drug will present on the Technician's role.
5. The Sioux Falls are Department of Criminal Investigation will share all the latest trends of the not so legal activates.

Please be watching your emails for updated information and please pass it on to your technicians. Technicians are not getting the information, so we need your help in assuring it is passed on. Our association depends on its membership to keep growing.

We have a website that is being updated. www.SDAPT.org, and of course we have a Facebook page where all technicians are welcome to post and participate.

This year is election year, so we are looking for officers, Vice President, Secretary & Treasurer. If you have a person you think would be great please contact John Thorns, SDAPT Vice President and Chair of the nominating committee. His email is John.Thorns@cigna.com.

Thank you to all of the Pharmacies and Pharmacists for your support of SDAPT.

Sincerely,
JERRIE VEDVEI
SDAPT President

MEMBERSHIP & CONFERENCE REGISTRATION FORM

MEMBERSHIP INCLUDES

- Annual Continuing Education Conference October 5th in Pierre, satellite locations Sioux Falls and Rapid City (light breakfast, beverages and snacks provided) There will be a speaker/s at each location.
- One year's subscription of The South Dakota Pharmacist Journal and discounted rates for the South Dakota Pharmacist Association Annual Meetings
- An awesome opportunity to network with others in your profession ~ 5 CE's will be earned by attending including the required law and safety CE's.

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PAST MEMBER OF SDAPT: YES _____ NO _____ NEW MEMBER _____

PLEASE LIST ANY OTHER STATE OR NATIONAL PHARMACY ORGANIZATION(S) YOU BELONG TO: _____

ARE YOU WILLING TO SERVE ON A COMMITTEE? YES OR NO _____ COMMITTEE: _____

PLEASE CHECK ONE: _____ \$35 MEMBERSHIP AND CONFERENCE

PLEASE CIRCLE THE LOCATION YOU WILL ATTEND: PIERRE SIOUX FALLS RAPID CITY

_____ STUDENTS MAY ATTEND FOR FREE: WHERE ARE YOU CURRENTLY ENROLLED: _____

DUE NO LATER THAN SEPTEMBER 25, 2019 (A LATE FEE OF \$10 WILL BE CHARGED)

MAKE CHECKS PAYABLE TO: SDAPT

MAIL CHECK AND REGISTRATION FORM TO: SDAPT Secretary: Hope Showalter, 921 S Williams Ave, Sioux Falls, SD 57104

- Please note, this form is for the South Dakota Association of Pharmacy Technicians only. Please do not confuse this form with the SD State Technician registration form that is required by the South Dakota Board of Pharmacy.



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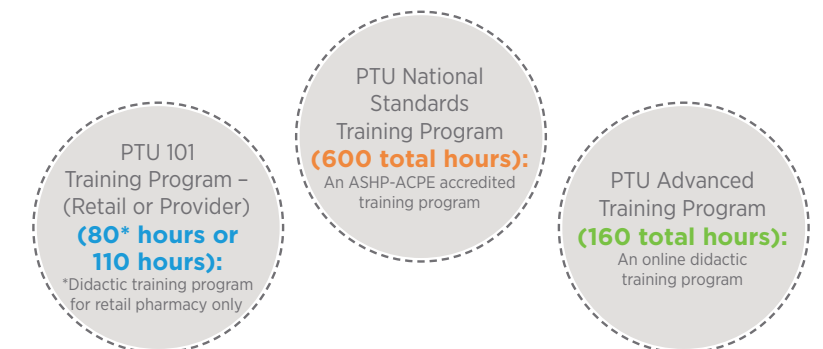
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EXHIBITOR Form



133rd Annual Convention South Dakota Pharmacists Association

September 13-14, 2019 | The Lodge at Deadwood Convention Center

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Before August 24, 2019	\$150	\$75	\$20	\$75	\$125	Free	\$225	\$ _____
After August 24, 2019	\$175	\$100	\$20	\$100	\$140	Free	\$250	\$ _____

1-Day Registration**

	SDPhA Member	Spouse or Guest	Children	SDAPT Member	Pharmacy Technician	Pharmacy Student	Non-SDPhA Member	
Friday, September 13, 2019	\$100	\$50	\$10	\$50	\$90	Free	\$150	\$ _____
Saturday, September 14, 2019	\$50	\$50	\$10	\$50	\$50	Free	\$75	\$ _____

Extra Tickets

	SDPhA Member	Spouse or Guest	Children	SDAPT Member	Pharmacy Technician	Pharmacy Student	Non-SDPhA Member	
Friday Lunch	\$15	\$15	\$10	\$15	\$15	Free	\$15	\$ _____
Saturday Breakfast	\$15	\$15	\$10	\$15	\$15	Free	\$15	\$ _____

I would like to sponsor a student. I have included an additional gift of _____ \$ _____

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Total Due \$ _____

** Full Registration includes all educational sessions, exhibits, meals and evening events.
** 1-Day Registration includes educational sessions, exhibits, meals, and evening event, if applicable.

Please send payment and registration to:
South Dakota Pharmacists Association, PO Box 518, Pierre, SD 57501
Tax ID#: 46-019-1834

eProfile ID:

For Hotel Reservations Call: 605-336-0650
The Lodge at Deadwood
100 Pine Crest Lane, Deadwood SD 57732
Request South Dakota Pharmacists Association Block

Convention Registration Cancellation Policy:

- Cancellations will be accepted without penalty prior to September 1, 2019.
- A \$25 fee will be applied to all cancellations after September 1, 2019.
- Refunds will be issued after October 1, 2019.



133rd Annual Convention South Dakota Pharmacists Association

September 13-14, 2019 | The Lodge at Deadwood Convention Center

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We also accept MasterCard, VISA or AMEX with
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The South Dakota Pharmacists Association is a non-profit 501 (c)(6) organization serving member pharmacists, technicians and students. Specific goals of our annual meeting are to showcase existing and emerging pharmaceutical treatment options, new technology and enhance educational opportunities.

Exhibitor: \$600 / \$750

- 6 ft. table for tabletop exhibits
- Electricity (upon request / fee)
- 1 convention registration
- Exhibitor/sponsor recognition

Silver: \$1,500–\$2,499

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- 4 convention registrations
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Exhibit Area

The exhibit area will be at The Lodge at Deadwood Convention Center in Deadwood, SD. Lunch will be available for both the exhibitors and all convention attendees. Set-up may begin Friday morning from 8-10am. All materials must be removed by 3pm that afternoon.

Exhibit Hours

The exhibit area will be open Friday, September 13, from 11:30am to 1:30pm.

Exhibit Space

Exhibit space includes one 6 ft, skirted table for tabletop exhibits, two chairs, electricity (additional cost), two convention registrations and exhibitor/sponsor recognition.

Enhanced Experience

SDPhA is providing an enhanced experience with pharmacists through our exhibitor signature card. When a pharmacist, student or technician completes his/her signature card by visiting the exhibits, he/she will be entered in a drawing to win a significant prize at the end of display time.

Setting Up

Setup takes place Friday morning, however, exhibitors are welcome to ship materials directly to the hotel up to three days prior to the SDPhA Convention. Exhibitors are asked to load and unload their materials in a timely fashion, move them to their table (or to vehicle when loading out), then promptly move their vehicle to an appropriate parking location.

Hotel Reservations

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For more information:
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at 605-224-2338 or
email sdpha@sdpha.org

CONTINUING EDUCATION *for* PHARMACISTS

Proton Pump Inhibitors: Overview, Safety Profile, and Appropriate Use

Knowledge-based CPE

Course Author: Khia Warzecha, Pharm.D.
PGY1 Pharmacy Resident
Sioux Falls VA Health Care System
Sioux Falls, SD

GOAL

To provide pharmacists with timely information regarding proton pump inhibitor therapy, updated safety profile concerns, and access to best practice standards.

LEARNING OBJECTIVES

1. Summarize the statistical data on the popularity and the use of proton pump inhibitors (PPIs) in the United States;
2. Identify the mechanism of action, indications for use, drug interactions, and primary side effects most commonly associated with proton pump inhibitor therapy;
3. Evaluate recent literature regarding the potential for the development of hypomagnesemia, *Clostridium difficile* infections, bone fractures, and vitamin B-12 deficiencies with the long-term use of proton pump inhibitor medications.
4. Utilize *American Gastroenterological Association (AGA) Clinical Practice Update* on best practices for PPI use to counsel patients on the appropriate use of proton pump inhibitor medications and provide therapy recommendations for their safe and effective initiation and continuation to prescribers.

OVERVIEW

Proton pump inhibitors (PPIs) comprise a class of acid-blocking medications which are commonly prescribed to treat specific gastrointestinal disorders. PPIs have grown enormously in popularity in the U.S. and throughout the world since the introduction of the first PPI, omeprazole, in 1989.

The Food and Drug Administration (FDA) approved an Rx-to-OTC switch for omeprazole magnesium in 2003 for the treatment of frequent heartburn.

By 2015, proton pump inhibitors had become the most widely prescribed class of medications in the world, hitting 100 million prescriptions per year in the U.S. alone.¹

Proton pump inhibitors have become the standard of care for specific acid-related disorders and have an excellent safety profile for short-term use. Treatment typically involves an 8 - 12 week course of therapy, but it is becoming increasingly prevalent for patients to develop chronic user profiles, all the while lacking an appropriate indication for long-term use.

Recent literature indicates that individuals taking PPIs chronically may be at an increased risk of serious adverse effects such as hypomagnesemia, *Clostridium difficile* infections and fractures. Several studies have shown a plausible association between PPI use and clinically important adverse consequences. Healthcare providers should be cognizant of the potential risks when evaluating ongoing PPI therapy.²

Proton pump inhibitor medications approved by the FDA are currently available in a variety of prescription and OTC formulations. (See Table 1)

TABLE 1
Currently available enteral Over the Counter PPI medications:

omeprazole
lansoprazole
dexlansoprazole
rabeprazole (Aciphex, Aciphex Sprinkle)
pantoprazole (Protonix)
esomeprazole

*Note: Additional formulations are available as OTC combination products, prescription-only products, and for parenteral use.
Chart adapted from: https://www.medicinenet.com/protonpump_inhibitors/article.htm*

INDICATIONS

Proton pump inhibitors target parietal cells. These epithelial cells are located within gastric glands in the stomach and normally secrete hydrochloric acid (HCl) and intrinsic factor to aid in various digestive processes. Proton pump inhibitors markedly reduce

the production of gastric acid secretions through competitive inhibition mechanisms within parietal cell H⁺/K⁺ ATP pump channels.

The potent reduction in gastric acid effectively treats a variety of gastrointestinal disorders. These acute disorders include duodenal and gastric ulcers, erosive esophagitis, gastrointestinal reflux disorder, and helicobacter pylori eradication.

PPI dosing varies by agent, therefore dosing recommendations for each medication in this class should be carefully evaluated for patient-specific, agentspecific recommendations.² Those PPIs approved for OTC use are available in lower dose formulations, and are labeled with dosing recommendations for a limited use duration.

DRUG INTERACTIONS

Proton pump inhibitors are associated with numerous potential drug-drug interactions. These interactions may vary among the different agents within this class of medications, so patient information should be carefully reviewed to identify potential drug interactions specific to each of the currently available products being considered.

Proton pump inhibitors undergo hepatic metabolism utilizing the CYP2C19 enzyme. This biotransformation mechanism can lead to potential drug-drug interactions when taken with concomitant medications affected by the CYP enzyme mechanism, particularly with medications which have a narrow therapeutic index, like warfarin, diazepam, and phenytoin.^{3,4}

One drug interaction of particular note involves the coadministration of PPIs with the antiplatelet drug, clopidogrel (Plavix®). Two specific PPIs, omeprazole and esomeprazole are known to significantly reduce clopidogrel's active metabolite levels, and therefore diminish its antiplatelet activity.⁵

Proton pump inhibitor blood levels may rise when taken concomitantly with certain other medications which are metabolized within the CYP enzyme system, like ketoconazole and fluconazole.

Finally, the effectiveness and absorption of medications that require an acidic gastric environment may be altered when taken concomitantly with proton pump inhibitors. Common drug-drug interactions due to the more neutralized or basic nature of the gastric contents during

PPI therapy would include dasatinib, erlotinib, vitamin K antagonists, enteral iron therapy, and St. John's Wort.³

PATIENT COUNSELING

Proton pump inhibitors are highly effective in treating specific gastrointestinal conditions for most patients. However, the agents in this class of medications are metabolized via the CYP 2C enzyme system which may lead to inconsistencies in their anticipated benefits.^{4,6} A segment of people within several population groups with clinically specific genetic variations causing rapid or ultra-rapid metabolism of these agents may experience a lower range of acid-suppression benefits. Within the Asian population, 12-20% may be rapid or ultra-rapid metabolizers, compared to only 2-6% of the Caucasian population.⁶

The majority of patients do not experience significant side effect issues with short-term PPI therapy. Those who do may experience infrequent episodes of mostly gastrointestinal-related issues. (See Table 2)

TABLE 2
PPI adverse effects:

Headache
Diarrhea
Constipation
Abdominal pain
Flatulence
Fever
Vomiting
Nausea
Rash

*Note: Certain side effects may be more prevalent with one agent than another.
Chart adapted from: https://www.medicinenet.com/protonpump_inhibitors/article.htm*

Despite a potential for the development of these types of adverse effects, proton pump inhibitors have proven to be safe and generally well-tolerated with short-term use.

Long-term therapy with proton pump inhibitors, however, is a different matter. Chronic PPI therapy has led to an increase in risk for the development of more serious adverse effects.

It is also important for healthcare professionals to be cognizant of the potential drug-drug interactions which are unique to PPI therapy and take the time to counsel

individuals accordingly. Awareness is an important tool in the prevention of adverse effects due to these types of pharmacodynamic interactions which are unique to this medication class.

Individuals initiated on proton pump inhibitor therapy should be counseled by involved healthcare professionals on the specific indications for PPI therapy, anticipated benefits, the potential adverse side effects, drug interactions, and appropriate duration of therapy. With thorough and effective counseling, individuals will better avoid the development of more serious long-term adverse effects, such as hypomagnesemia, *Clostridium difficile* infections, increased fractures, and a potential for vitamin B-12 deficiency.

HYPOMAGNESEMIA

In recent years there have been a variety of case reports of individuals experiencing severe hypomagnesemia related to PPI use. Some of the patients involved subsequently developed significant cardiac arrhythmia events due to the low magnesium, potassium and calcium levels.⁷ The Food and Drug Administration (FDA) responded to these reports by issuing a warning regarding the potential of hypomagnesemia with PPI use in 2011.

Since then, studies have been conducted reviewing the potential association of low magnesium levels and chronic PPI use. One systematic review and metaanalysis of nine studies, conducted in 2015, demonstrated a relative risk associated with proton pump inhibitor use of 1.43 with a 95% confidence interval of [1.08-1.88].⁸

Following sensitivity analysis that included only trials with high quality scores based on the Newcastle-Ottawa scale, the relative risk associated with proton pump inhibitors increased to 1.63 (95% confidence interval, [1.14-2.23]).

These results demonstrate a significant association between the development of hypomagnesemia and PPI use. Authors speculated that individuals receiving proton pump inhibitors developed hypomagnesemia due to a disruption in the magnesium transport and absorption within the gastrointestinal tract. However, due to the observational nature of the studies included in this meta-analysis, a causal relationship could not be firmly established. Moreover, there were statistical heterogeneities present in the meta-analysis. The studies varied in the type of PPI used, the duration of treatment and the type of settings (i.e. inpatient versus outpatient).

CLOSTRIDIUM DIFFICILE

The incidence of *Clostridium difficile* infections has been steadily increasing over the past five to ten years in the United States. The increasing severity, morbidity and mortality of *Clostridium difficile* infections is a growing health concern across the country.

There are several key risk factors involved in the increasing incidence *Clostridium difficile* infections. Antibiotic exposure is recognized as the leading risk factor. However, recent literature also indicates a possible association with PPI use. There have been numerous observational studies conducted to evaluate this association. In 2012, the American Journal of Gastroenterology published a meta-analysis and systematic review of 42 observational studies with over 313,000 participants.⁹ The primary objective of this study was to evaluate the impact of proton pump inhibitors on the development of *Clostridium difficile* infections.

Investigators determined a significant association between PPI use and the risk of the development of a *Clostridium difficile* infection as well as with recurrence of the infection. The odds ratio was 1.74 (95% confidence interval 1.47-2.05; p-value <0.001) for those with PPI users compared to non-users.

A secondary analysis evaluating recurrent *Clostridium difficile* infections determined a significant associated risk with an odds ratio of 2.51 (95% confidence interval 1.16-5.44; p-value=0.02).⁹

While the study included many participants and had many strengths, limitations were present as well. The study had substantial heterogeneity and did not address duration of PPI therapy, nor indication for use. Overall, the results indicate a significant association between the risk of developing a *Clostridium difficile* infection and PPI therapy. However, in addition to observational studies, randomized control trials are needed to further evaluate the relationship between *Clostridium difficile* infections and PPI use.

FRACTURES

Recent studies have shown an increased bone fracture rate among individuals classified as longer-term users of proton pump inhibitors.

While many of these studies are marked by substantial limitations, including retrospective study design and the inability to control potential confounders such as diet and lifestyle factors, healthcare providers should nonetheless be cognizant of the potential fracture risks associated with long-term PPI therapy. In 2012, researchers from Massachusetts General Hospital conducted a prospective cohort study examining the association between chronic PPI use and the risk of hip fracture.¹⁰ This study included 79,899 post-menopausal women enrolled in the Nurse's Health Study. Researchers aimed to remove potential confounders and gathered a variety of information regarding the diet and lifestyle of the participants. The study concluded that the absolute risk of hip fracture in individuals with regular PPI use was 2.02 events per 1000-person years. This compared to the absolute risk of 1.51 events per 1000-person years in non-users of PPIs.

After researchers accounted for potential risk factors such as smoking status, activity level and history of osteoporosis, the results remained largely unchanged with a hazard ratio of 1.36 (95% confidence interval 1.13-1.63). Additionally, the risk of hip fractures increased in individuals in conjunction with the duration of PPI use. Authors speculated that the potent reduction of gastric acid secretions with PPI use over longer periods of time impairs the absorption of minerals, most notably calcium and magnesium, which are critical for maintaining strong, healthy bones over longer periods of time.

VITAMIN B-12

Vitamin B-12, also known as cobalamin, is essential for maintaining optimal health. Vitamin B-12 deficiencies may result from certain chronic digestive disorders like pernicious anemia or atrophic gastritis. They may also develop consequent to autoimmune conditions like Graves disease or lupus. Deficiencies may develop from the prolonged use of acid-blocking drugs, like PPIs and histamine H2 receptor antagonists (H2 blockers).¹¹

Adequate levels of hydrochloric acid and intrinsic factor, both secreted by the stomach's gastric gland parietal cells, are necessary for optimal vitamin B-12 absorption. Since proton pump inhibitors are such potent suppressors of parietal cell function, their longterm use presents a significant risk for the development of B-12 deficiency.

One study showed an association between PPI therapy (two years or longer duration) and vitamin B-12 deficiency.⁹ The association was stronger with higher PPI doses (1.5 pills /day versus 0.75 pills/day). Discontinuation of PPI therapy led to a decrease in the association with B-12 deficiency.¹¹

A mild B-12 deficiency may not present with any symptoms, but a more significant deficiency may lead to fairly serious complications like anemia, and even dementia. (See Table 3)

TABLE 3
B-12 deficiency - symptoms:

Weakness, tiredness, lightheadedness, heart palpitations, shortness of breath, pale skin, smooth tongue, digestive problems, neurologic symptoms (numbness, tingling) muscle weakness, gait disturbance, diminished vision, depression, memory loss, behavioral changes

Chart adapted from WebMD, "Vitamin B-12 – What to Know."
Accessed from: <https://www.webmd.com/diet/vitamin-b12-deficiency-symptoms-causes#2>

It is recommended that patients in need of long-term PPI therapy use the lowest dose possible for maintaining good acid-suppression relief.

Final note - there have been no large population-based studies on this association.

BEST PRACTICE

Pharmacists should stay current regarding ongoing research developments with this class of medications, and they should utilize Best Practice guidelines in providing appropriate recommendations for safe and effective PPI therapy to both patients and health care providers.

A summary of *Expert Review and Best Practice Advice from the American Gastroenterological Association* is provided immediately below for further review. (See Table 4)

TABLE 4
Best Practice Advice:

1. Recommend PPIs for short-term healing, maintenance of healing and long term control for patients with GERD and serious acid-related complications (ie, erosive esophagitis or peptic stricture);
2. Recommend that patients with uncomplicated GERD who respond to short-term PPIs subsequently attempt to stop or reduce use, or consider ambulatory esophageal pH/impedance monitoring before committing to lifelong PPIs;
3. Recommend PPIs long-term for patients with Barrett's esophagus and symptomatic GERD;
4. Recommend long-term PPI use for asymptomatic patients with Barrett's esophagus;
5. Recommend on-going PPI therapy for patients at high risk for ulcer-related bleeding from NSAIDs if they continue to take NSAIDs.
6. Recommend that patients on long-term PPI therapy be periodically reevaluated for lowest possible PPI dose to effectively manage the condition being treated;
7. Recommend long-term PPI users AGAINST routine use probiotics to prevent infection;
8. Recommend that long-term PPI users NOT routinely raise their intake of calcium, vitamin B12, or magnesium beyond the Recommended Dietary Allowance (RDA);
9. Advise long-term PPI users that they do not need to routinely screen or monitor bone mineral density, serum creatinine, magnesium, or vitamin B12;
10. Advise that specific PPI formulations should NOT be selected on the basis of potential risks.

Chart adapted from: Freedberg DE, Kim LS, Yank YX. The Risks and Benefits of Long-term Use of Proton Pump Inhibitors: Expert Review and Best Practice Advice From the American Gastroenterological Association. Journal of Gastroenterology. 2017 Mar;152(4):706-715. doi: 10.1053/j.gastro.2017.01.031. Accessed from: <https://www.ncbi.nlm.nih.gov/pubmed/28257716>

CONCLUSION

Despite the recent literature indicating the increased incidence of particular adverse effects, proton pump inhibitors play an important role in the treatment of common and well-defined gastrointestinal conditions. The agents within this class of medications are effective, safe, and well-tolerated when used appropriately. Inappropriate continuation of PPI therapy, where there is no clear indication for chronic use, may put patients at unnecessary increased risk for serious adverse effects. Healthcare providers should remain cognizant of a given patient's current indication for use and actively discontinue medications if therapy is not warranted.

A careful review of the potential risk versus benefit should be evaluated with any patient utilizing PPIs on a long-term basis. With increased awareness and continued vigilance, healthcare providers can play an important role in the prevention of unnecessary, and potentially serious, adverse effects associated with these agents.

Course Development: This course was developed under the guidance and review protocols of the Office of Continuing Education, South Dakota State University College of Pharmacy and Allied Health Professions.

Mentor Oversight: The Office of Continuing Education, South Dakota State University College of Pharmacy and Allied Health Professions provided guidance throughout the development of this CPE activity regarding adult learning principles outlined in the ACPE Standards for Continuing Pharmacy Education. Course material subject to peer review process.

Financial Disclaimer: The author of this course has had no relevant financial relationships with any commercial party having a vested interest in this subject material.

References:

1. Stanford Medicine News Center, Jun 10, 2015. Accessed from: <https://med.stanford.edu/news/all-news/2015/06/some-heartburn-drugs-may-boost-risk-of-heart-attack-study-finds.html>
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Additional Reading:

- Lam JR, Schnieder JL, Zhao W, Quesenberry, CP, Corley DA. Proton Pump Inhibitor and Histamine-2 Receptor Antagonist Use and Iron Deficiency. Gastroenterology. 2017;152:821-829. Accessed from: [https://www.gastrojournal.org/article/S0016-5085\(16\)35392-6/pdf](https://www.gastrojournal.org/article/S0016-5085(16)35392-6/pdf)
- FDA: Information for Consumers - Over the Counter Heartburn Treatment <https://www.fda.gov/drugs/resources-foryou/consumers/ucm511944.htm>
- Mayo Clinic Proceedings, Concise Review for Clinicians - Proton Pump Inhibitors: Review of Emerging Concerns - 2017: [https://www.mayoclinicproceedings.org/article/S0025-6196\(17\)30841-8/pdf](https://www.mayoclinicproceedings.org/article/S0025-6196(17)30841-8/pdf)
- The Proton Pump Inhibitor Non-Responder: A Clinical Conundrum. Clinical and Translational Gastroenterology: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4816276/>
- Some Heartburn Drugs May Boost the Risk of Heart Attack, Study Finds. Stanford Medicine News Center. June 2015.: <https://med.stanford.edu/news/all-news/2015/06/some-heartburn-drugs-may-boost-risk-of-heart-attack-study-finds.html>

Proton Pump Inhibitors: Overview, Safety Profile, and Appropriate Use

Learning Assessment – Post Test

- Proton pump inhibitors had grown to become the most widely prescribed class of medications in the world by the year 2015, hitting over _____ prescriptions that year in the U.S. alone.
 - 25 million
 - 50 million
 - 100 million
 - 1 billion
- Proton pump inhibitors are commonly prescribed to individuals for specific gastrointestinal disorders, and when used appropriately are _____:
 - well-tolerated
 - safe and effective
 - free of any clinically relevant drug interactions
 - A and B
- The mechanism of action of proton pump inhibitors involves _____.
 - histamine-2 receptor antagonist activity
 - parietal cell H⁺/K⁺ ATP pump inhibition
 - the inhibition of the pepsin proteolytic activity
 - the lowering of esophageal sphincter tone
- Recommended indications for the use of proton pump inhibitors include which of the following:
 - gastric ulcers
 - Helicobacter pylori* eradication
 - gastrointestinal reflux disorder
 - all of the above
- Which of the following is **NOT** a common adverse effect of proton pump inhibitors??
 - muscle pain
 - headache
 - dizziness
 - flatulence
- All individuals respond equally well to proton pump inhibitor therapy.
 - true
 - false
- Which of the following medications is known to increase the plasma concentration of proton pump inhibitors?
 - dasatanib
 - naproxen
 - ketoconazole
 - vitamin K antagonists
- Hypomagnesemia related to proton pump inhibitor use is likely due to a disruption in magnesium transport and absorption within the gastrointestinal tract.
 - true
 - false
- Investigators of a meta-analysis and systematic review published in the American Journal of Gastroenterology determined there is a significant association between proton pump inhibitor use and first occurrence of clostridium difficile infections but **NOT** in recurrent infections.
 - true
 - false
- There is a plausible association between an increased risk of hip fractures and _____.
 - prolonged duration of PPI use
 - age >50
 - increased physical activity levels
 - caucasian descent
- Healthcare professionals should conduct a risk versus benefit analysis prior to initiating longer-term proton pump inhibitor therapy.
 - true
 - false
- Best Practice Advice: Recommend PPIs _____ for patients with Barrett's esophagus and symptomatic GERD.
 - short-term
 - long-term
- Best Practice Advice: Recommend **against** ongoing PPI therapy for patients at high risk for ulcer-related bleeding from NSAIDs if they continue to take NSAIDs
 - true
 - false
- Best Practice Advice: Advise long-term PPI users that they _____ need to routinely screen or monitor bone mineral density, serum creatinine, magnesium, or vitamin B12.
 - do
 - do not

Proton Pump Inhibitors: Overview, Safety Profile, and Appropriate Use

Knowledge-based CPE

To receive 1.5 Contact Hours (0.15 CEUs) of continuing education credit, preview and study the attached article and answer the 14-question post test by circling the appropriate letter on the answer form below and completing the evaluation. A test score of at least 71% is required to earn credit for this course. If a score of 71% (10/14) is not achieved on the first attempt, another answer sheet will be sent for one retest at no additional charge.

Credit upload to a participant's eProfile account - within two weeks following successful completion of this course.



The South Dakota State University College of Pharmacy is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education. The Universal Program Identification number for this program is: #0063-0000-19-039-H01-P.

Learning Objectives - Pharmacists: 1. Summarize the statistical data on the popularity and the use of proton pump inhibitors (PPIs) in the United States; 2. Identify the mechanism of action, indications for use, drug interactions, and primary side effects most commonly associated with proton pump inhibitor therapy; 3. Evaluate recent literature regarding the potential for the development of hypomagnesemia, Clostridium difficile infections, bone fractures, and vitamin B-12 deficiencies with the long-term use of proton pump inhibitor medications; 4. Utilize "American Gastroenterological Association (AGA) Clinical Practice Update" on best practices for PPI use to counsel patients on the appropriate use of proton pump inhibitor medications and provide therapy recommendations for their safe and effective initiation and continuation to prescribers.

Circle Correct Answer:

1. A B	4. A B C D	7. A B C D	10. A B C D	13. A B
2. A B C D	5. A B C D	8. A B	11. A B	14. A B
3. A B C D	6. A B	9. A B	12. A B	

Course Evaluation: must be completed for credit.

	DISAGREE							AGREE						
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Each of the stated learning objectives was satisfied:														
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FINANCIAL FORUM

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A Retirement Fact Sheet

Some specifics about the “second act.”

Does your vision of retirement align with the facts? Here are some noteworthy financial and lifestyle facts about life after 50 that might surprise you.

Up to 85% of a retiree’s Social Security income can be taxed. Some retirees are taken aback when they discover this. In addition to the Internal Revenue Service, 13 states levy taxes on some or all Social Security retirement benefits: Colorado, Connecticut, Kansas, Minnesota, Missouri, Montana, Nebraska, New Mexico, North Dakota, Rhode Island, Utah, Vermont, and West Virginia. (It is worth mentioning that the I.R.S. offers free tax advice to people 60 and older through its Tax Counseling for the Elderly program.)¹

Retirees get a slightly larger standard deduction on their federal taxes. Actually, this is true for all taxpayers aged 65 and older, whether they are retired or not. Right now, the standard deduction for an individual taxpayer in this age bracket is \$13,600, compared to \$12,000 for those 64 or younger.²

Retirees can still use IRAs to save for retirement. There is no age limit for contributing to a Roth IRA, just an inflation-adjusted income limit. So, a retiree can keep directing money into a Roth IRA for life, provided they are not earning too much. In fact, a senior can potentially contribute to a traditional IRA until the year they turn 70½.¹

A significant percentage of retirees are carrying education and mortgage debt. The Consumer Finance Protection Bureau says that throughout the U.S., the population of borrowers aged 60 and older who have outstanding student loans grew by at least 20% in every state between 2012 and 2017. In more than half of the 50 states, the increase was 45% or greater. Generations ago, seniors who lived in a home often owned it, free and clear; in this decade, that has not always been so. The Federal Reserve’s recent Survey of Consumer Finance found that more than a third of those aged 65-74 have outstanding home loans; nearly a quarter of Americans who are 75 and older are in the same situation.¹

As retirement continues, seniors become less credit dependent. GoBankingRates says that only slightly more

than a quarter of Americans over age 75 have any credit card debt, compared to 42% of those aged 65-74.¹

About one in three seniors who live independently also live alone. In fact, the Institute on Aging notes that nearly half of women older than age 75 are on their own. Compared to male seniors, female seniors are nearly twice as likely to live without spouse, partner, family member, or roommate.¹

Around 64% of women say that they have no “Plan B” if forced to retire early. That is, they would have to completely readjust and reassess their vision of retirement, and redetermine their sources of retirement income. The Transamerica Center for Retirement Studies learned this from its latest survey of more than 6,300 U.S. workers.³

Few older Americans budget for travel expenses. While retirees certainly love to travel, Merrill Lynch found that roughly two-thirds of people aged 50 and older admitted that they had never earmarked funds for their trips, and only 10% said they had planned their vacations extensively.¹

What financial facts should you consider as you retire? What monetary realities might you need to acknowledge as your retirement progresses from one phase to the next? The reality of retirement may surprise you. If you have not met with a financial professional about your retirement savings and income needs, you may wish to do so. When it comes to retirement, the more information you have, the better.

CITATIONS:
1 – gobankingrates.com/retirement/planning/weird-things-about-retiring/ [8/6/18]
2 – fool.com/taxes/2018/04/15/2018-standard-deduction-how-much-it-is-and-why-you.aspx [4/15/18]
3 – thestreet.com/retirement/18-facts-about-womens-retirement-14558073 [4/17/18]

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OBITUARY

Dr. James E. Powers



May 21, 1934 ~ April 1, 2019

Dr. James E. Powers, 84, of Sturgeon Bay, WI, died peacefully after a long battle with Parkinson's Disease on Monday, April 1, 2019. He was born May 21, 1934, in Eau Claire, WI, son of John and Carolyn Powers. He grew up in Eau Claire, WI. In 1957, he graduated from the University of Wisconsin-Madison with a degree in pharmacy.

Following college, he worked for the Wisconsin Alumni Research Foundation for 10 years. In 1968, James became co-owner of Manitowoc Pharmacies Inc. until he decided to pursue his doctorate pharmacy degree in 1981, graduating in 1983, with his Doctorate in Pharmacology from the University of Minnesota. Upon graduation, he joined the College of Pharmacy faculty at South Dakota State University and became the first full Professor of Clinical Pharmacy. In addition to teaching, James was the Coordinator of Alumni Affairs and consulted at several health care centers before his retirement in 1999.

James was married to Mary Kexel on November 24, 1954, in Jefferson, WI. They raised four children together and celebrated over 60 years of marriage until her passing in 2016.

His survivors include his four children, John (Cindy) Powers, Jean (Mike) Machi, Mike (Angie) Powers, Steve (Amy) Powers; grandchildren, and great-grandchildren.

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