

DEPARTMENT OF PHARMACY SERVICES



In This Issue:

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- American Pharmacists Month
- District Meetings Scheduled

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

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SDPhA 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: <http://www.sdpha.org>.

OCTOBER American Pharmacists Month

- 10-14 NCPA Annual Convention, Washington, DC
- 12 Native American Day
- 13-16 National Consultant Pharmacist Week
- 15 Aberdeen District Meeting - 6 p.m.
 Dakota Event Center, 720 Lamont St. S., Aberdeen
 RSVP to Trisha: jeantc80@hotmail.com
- 18-24 National Hospital and Health-System Pharmacy Week
- 27 Christopher Jerry Presentation - Sioux Falls - see info on page 10
- 20 National Pharmacy Technician Day
- 22 Sioux Falls District Meeting - 5:30 p.m. Social
 Ramkota, 3200 W. Maple St., Sioux Falls
 RSVP to elizabeth.stroeh@sanfordhealth.org
- 29 Black Hills District Meeting - Save the Date - Time & Place TBA
 RSVP to Curt: 0461@medicineshoppe.com

NOVEMBER

- 1 Daylight Savings Time Ends
- 11 Veterans Day
- 15 Mitchell District Meeting - 6 p.m. Dinner Program
 The Depot, 210 S. Main St., Mitchell
 RSVP to Lindsay: leilts@lewisdrug.com
- 26 Thanksgiving

DECEMBER

- 6-10 ASHP Midyear Clinical Meeting
 Ernest N. Morial Convention Center, New Orleans, LA
- 25 Christmas

JANUARY

- 1 New Years Day
- 12 Legislative Session Begins
- 18 Martin Luther King, Jr. Day
- 26-27 SDPhA Legislative Days, Pierre, SD

Cover Photo by Sue Schaefer, Pierre, SD

SOUTH DAKOTA PHARMACIST

The *SD PHARMACIST* is published quarterly (Jan, April, July & Oct). Opinions expressed do not necessarily reflect the official positions or views of the South Dakota Pharmacists Association.

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DIRECTOR'S COMMENTS

Sue Schaefer | Executive Director



Happy American Pharmacists Month!

I hope you're all busy working on ways to showcase the profession in your pharmacy! It's also an important time to reflect on how far pharmacy has come in the past few years. Please note our "idea" page in this journal issue on how you can celebrate with your patients.

We're still tying up loose ends on our annual meeting, but WOW what a tremendous turnout! Our numbers are very strong, and we heard some great comments on the quality of the continuing education that was offered. Add that to some excellent entertainment and a quality setting, and we had a recipe for success! I sure hope we can repeat it next year in Brookings (yes...it's a GAME weekend).

Our student contingent was awesome! Once again, we really appreciated the help with registration, minutes, running, scooping SDSU ice cream, etc., AND also for presenting! They did an amazing job and we look forward to inviting them back each year. It's so energizing to have them present and they truly share their enthusiasm. A big "Thank You" to our sponsors and vendors too. AmeriSource Bergen Corporation surprised us by supporting the meeting at a Platinum Sponsorship level, which enabled us to support 60 students, who attended the convention free of charge. We wouldn't be able to put on such a nice convention and support our student population if it wasn't for our sponsors and vendors.

While enjoying some excellent CE, members also passed a very important resolution, Enhancing Patient Care through Pharmacist Provided Services. In a nutshell, we need to make sure pharmacists can practice at the top of their scope and deliver important patient care, just like any other provider in South Dakota.

The Association has been charged with creating a committee consisting of the Executive Board, staff, legal counsel and you, our members, to explore the necessary remedies for a modification to South Dakota's laws and rules to enhance patient access to pharmacist provided services.

Please stay tuned, as we'll be bringing you additional information on this initiative and the work being conducted on your behalf.

I also am pleased to report that Senator Thune has agreed to co-sponsor S. 314, the Pharmacy and Medically Underserved Areas Enhancement Act, which amends title XVIII (Medicare) of the Social Security Act to cover pharmacist services in underserved areas. We now have support from Senator Rounds and Thune, and Representative Kristi Noem on these important companion bills. Thank you to all who wrote, called or met with our delegation in person. You truly made a difference!

Pharmacy is truly poised and ready to make a difference in the health of patients all over the world. As pharmacists, you need to be prepared to embrace and enhance your work with patients! Consider it a challenge to show your peers, other providers and patients how pharmacy has evolved.

A few Fall District Meetings are scheduled, with Aberdeen leading off with a meeting on October 15th, Sioux Falls on October 22nd, followed by the Black Hills District, scheduled for October 29th, and Mitchell on November 15th. We've offered the District Officers flexibility for scheduling the fall meetings, since many of the business items have moved to the spring district meetings. PLEASE PLAN TO ATTEND!

One important reminder for you – **please don't forget to support your district and donate to our Commercial & Legislative Fund.** For those of you who prefer a paper form, you'll find one within this journal for you to fill out and return. Our website has an online payment option, so please visit www.sdpah.org to donate! We need to keep our Lobbyist Bob Riter engaged, so your help is very much appreciated.

We're excited to share that Jan Lowe, an oncology pharmacist with Regional Health in Rapid City, has joined your Executive Board team! Jan was elected to an at-large position, and has a wealth of experience! She's also a veteran of society/association work, after running through the chairs at SDSHP. We work hard to keep a broad representation on our board, so we really appreciate it when pharmacists step forward and agree to share their expertise and enthusiasm for the profession! Your Executive Board of SDPhA work extremely hard for all of you and do their

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PRESIDENT'S PERSPECTIVE

Rob Loe | SDPhA President



Greetings! We just completed our 129th annual SDPhA Annual Convention. Pharmacy in the Pines at the Lodge in Deadwood was a great success. It was great to see so many friends and colleagues and the passion we all share for the future of our profession. The continuing education was superb and compares to anything on a national level. Thank you to our Past President Lynn Greff for his service and dedication to pharmacy and SDPhA.

Congratulations to all of our award winners. They are truly deserving and great ambassadors for our profession. It was a special moment to see them receive their awards. Congratulations:

Anna Nadenicek – District Pharmacy Technician of the year
Kim Karschnik- Outstanding Industry Salesperson of the Year
Tim Rave – Distinguished Service Award
Beth Joachim – Distinguished Young Pharmacist
Renee Sutton – Bowl of Hygeia Award
Steve Aamot – Hustead Award

Also, a special thank you goes out to all the sponsors and exhibitors of our Annual Convention. In addition, kudos to SDSU's College of Pharmacy students for their involvement and help with registration and continuing education.

October is a busy month for Pharmacy. It is American Pharmacists Month. Check out the link on the home page of the SDPhA website, for ideas for activities and events that spotlight contributions made by pharmacists towards improving medication use and advancing patient care. In addition, October is Breast Cancer Awareness Month. It is a great chance to show how pharmacists can help promote disease screening and early detection. Furthermore, influenza vaccinations are ramping up. South Dakota State Epidemiologist Dr. Kightlinger reminded us that South Dakota has ranked first in four out of the last five years in adult influenza vaccination rates. So pat yourselves on the back for contributing to this outstanding rating and keep up the good work. Finally we remember that Tuesday, October 20th, is National Pharmacy Technician Day. Do something special for those technicians that are so valuable to us.

We continue to closely watch The Pharmacy and Medically Underserved Areas Enhancement Act move through the congressional process. We are proud to have Mike Rounds and John Thune co-sponsor this legislation in the Senate and have Kristi Noem co-sponsor this in the House. We will continue to work with our national partners and keep you up-to-date on this legislation as we move closer to provider status.

Finally, I am fortunate to be a part of a great, diverse board and am looking forward to the coming year. We welcome Jan Lowe to be a part of the Board. The SDPhA board is here to serve our members. Let us know what's on your mind or if we can help in any way. Until next time, it's time to hit "send" and go outside and enjoy outdoors in the beautiful state in which we live.

DIRECTOR'S COMMENTS

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best to represent all and tackle the tough issues as they arise.

I'd like to welcome our new President, Rob Loe from Pierre, as he begins his "Presidential" year. Rob truly cares about the profession and plans to support and seek out potential opportunities for pharmacists, enabling all of you to practice at the top of your scope. Rob will be an excellent leader!

It's hard to say goodbye to our Immediate Past President Lynn Greff, but we're happy he'll stay on the board and remain engaged

through this next year. Lynn, we're so thankful to have had you at the helm this past year.

I wish you all a wonderful fall season, and will look forward to seeing many of you at district meetings.

Warmest Wishes,

Sue

SOUTH DAKOTA BOARD OF PHARMACY

Kari Shanard-Koenders | Executive Director



Greetings, I would like to introduce myself to you as your new Executive Director for the SD Board of Pharmacy. I have experience in a vast number of settings and pharmacy has been very good to me throughout my 30+ years of practice. I am excited about continuing the excellent relationship between the Board and the pharmacists, pharmacies, and technicians in the great state of SD.

I hope to meet every one of you over the next months.

NEW REGISTERED PHARMACISTS

We just completed licensing a record number of new licensees during the summer. The following (77) candidates recently met licensure requirements and were registered as pharmacists in South Dakota: Jacqueline Adams, Makenzie Aesoph, Sarah Ahrndt, Anthony Appel, Brittany Baldry, Joseph Berendse, Lindsay Bossman, Claire Carson, Heather Caton, Alicia Christensen, Andrea Christy, Kelly Correll, Emily Coughlin, Tyson Dietrich, Jesse Domino, Jodi Fischer, Katelynn Garcia, Kelsey George, Mindy Harpine, Dale Harts, Cassie Heisinger, Andrew Hemmer, Kari Holland, Sarah Johnson, Abbie Johnson, Kirsten Johnson, Kazuhiko Kido, Patrick King, Gregory Kniffen, Gerard Kokett, Jonathan Koskela, Jean Kroeger III, Maggie Kruschel, Susan Lane, Kyle Laporte, Ashley Larson, Aaron Larson, David Lawless, Shelby Ling, Ashley Losing, Murphy Mack, Molly Mack, Christopher Menssen, Anna Meyer, Seth Moe, Kelci Muehling, Aaron Muller, Heather Nelson, Megan Nelson, Shelby Nielsen, Colleen O'Connell, Maria Odens, Alexander Olinger, Theodore Osborn, Terelle Perman, April Pottebaum, Ashley Potter, Taylor Ramsdell, Karen Richart, Eric Robinson, Lisa Rose, Susan Rust, Brittanie Schmeets, Carlie Soper, Jordan Stricherz, Brittany Sykora, Jessica Thyen, Pathik Tripathi, Emily Van Klompenburg, Shawn Voss, Jessica Wahl, Ashley Weber, Cory Wegehaupt, Stevie Wessel, Kirre Wold, Bretton Young, and Amber Zemlicka. As of this writing, there are 1997 pharmacists licensed in South Dakota. Of these, 1248 have addresses in South Dakota and 749 reside in other states. Some bordering states with SD licensed pharmacists are: ND – 34; MN – 173; IA – 74; and NE – 67.

New pharmacy permits issued over the same time period are: Community Health Center of the Black Hills - Rapid City; Wollman Drug Inc. - Lake Andes (change of ownership); Lewis Drug #8 – Madison; and James Drug – Wagner (change of ownership).

BOARD STAFF UPDATE

Executive Director Randy Jones retired on July 31, 2015 with a small going away celebration with Board Members, Staff and a few colleagues. He will be missed as will Senior Secretary Rita Schulz who resigned with her last day being August 20, 2015. The office is very minimally staffed to conduct the Board's business with these two vacancies. Thanks for your patience with us. If the phone doesn't get answered, please call back. We are working diligently to meet everyone's needs during this busy time. Sarah Dady has been doing a P4 regulatory rotation with us at the Board. We have posted the Senior Secretary and the PDMP Director position on the state's Bureau of Human Resources web site.

TECHNICIAN TO PHARMACIST RATIO RULES FINALIZED

Technician to pharmacist ratios have changed. ARSD 20:51:29:19 – 20:51:29:19.02 became effective on August 19, 2015. This rule increased the ratio of technicians to pharmacists from two to three technicians to one pharmacist in all pharmacies. Further, there is an exception to the ratio for mail order, long term care, and hospital pharmacies. This exception allows pharmacist in charge (PIC) to determine the ratio only if the following are employed by the pharmacy in filling prescriptions: technology (scanning) to insure accuracy in the filling process; role-based software platform with stop points where a pharmacist must intervene; software with DUR checks for allergies, interactions and age appropriate dosage ranges; clinically significant computer warnings which require pharmacist review; electronic surveillance technology to control access and to provide continuous monitoring of all areas where drugs are stored or dispensed or both; a quality assurance program to identify and evaluate dispensing errors including continuous quality improvement programs; appropriate training programs for all pharmacy functions; and strict monitoring to prevent diversion of controlled substances. Please use caution as with all PIC accountabilities, it is the PIC responsibility to design all processes to ensure the health and safety of patients is top priority. Please see the state website for the rule in its entirety at <http://legis.sd.gov/rules/DisplayRule.aspx?Rule=20:51:29:19> and <http://legis.sd.gov/rules/DisplayRule.aspx?Rule=20:51:29:19.02>.

PRESCRIPTION DRUG MONITORING UPDATE

The SD PDMP vendor change went more smoothly than we could have imagined. The Appriss PMP AWARxE system seems to be widely accepted by SD prescribers and dispensers. We have heard very positive feedback. Further, as you know, we are working with pharmacy providers to voluntarily move to

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SOUTH DAKOTA BOARD OF PHARMACY

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April Most Prescribed Drugs	RXs	Quantity	Days Supply	Quantity/Rx
Hydrocodone BIT/Acetaminophen	21,669	2,818,488	515,528	130
Tramadol HCl	13,080	994,402	234,941	76
Zolpidem Tartrate	7,718	255,076	254,215	33
Lorazepam	7,460	442,681	172,831	59
Clonazepam	6,712	829,344	408,170	124
Alprazolam	5,291	311,339	138,962	59
Dextroamphetamine/Amphetamine	5,022	229,931	150,961	46
Oxycodone HCL	4,415	368,062	85,753	83
Oxycodone HCL/Acetaminophen	4,229	509,326	99,038	120
Methylphenidate HCL	4,132	188,809	125,698	46

daily data submissions. Many have agreed. AWARxE can make data available in the database in approximately 2 hours after submission which provides substantial additional value to all users and is closer to real time than ever before.

Please access the PDMP web site at <http://doh.sd.gov/boards/pharmacy/pdmp.aspx> for information on how to sign up, run a patient request and more. It's never too late for you to get signed up. We hit another milestone of over 7,400 on line PDMP queries in July. Pharmacists and prescribers are driving increased use as you can see in the table below. We currently have 23% of prescribers querying the database and 73% of pharmacists who are signed up to use the system querying the database.

The top controlled substance in SD remains Hydrocodone combination products despite moving them to CII. Pharmacists keep up your attentiveness to your customers and continue using the PDMP. This is an epidemic of addiction and thank you for

working together to make a difference.

BOARD MEETING DATES

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

BOARD OF PHARMACY STAFF DIRECTORY

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Board of Pharmacy Websitewww.pharmacy.sd.gov



SOUTH DAKOTA STATE UNIVERSITY

College of Pharmacy



Dennis Hedge | Dean



Greetings from the College of Pharmacy!

On September 25th, South Dakota State University held a kickoff event for an entity known as SDSU Health and the "Healthy Jacks" campaign. The day featured an inspiring keynote address by Dr. Colleen Coffey, a woman that has dealt with mental health issues, including anxiety, depression and disordered eating. In addition to Dr. Coffey's powerful message to the SDSU campus community to seek assistance and that recovery is possible, the day's events included a 2-mile wellness walk around campus, and a healthy-menu picnic lunch.

SDSU Health is a consortium of South Dakota State University's health science programs, student health and counseling services,

and health system and community partners committed to innovations in education, practice, and research across health professions



and health-related programs. With a mission to create a culture that promotes and supports health and wellness throughout the university community and beyond, SDSU Health will provide a framework for interprofessional collaboration and coordination of efforts that will enhance our ability to educate the next generations of health and allied health professionals and scientists to meet global and national health challenges.

The "Healthy Jacks" campaign aims to improve the health and wellness of students, faculty and staff at South Dakota State University. Healthy students, faculty, and staff benefit the university, state, and region in many ways. For example, increasing student wellness can result in fewer class absences, improved student retention, and instill healthy living skills and habits that last a lifetime.

These are exciting times at STATE and the SDSU Health initiative is one more reason why. I look forward to sharing the successes of SDSU Health and the "Healthy Jacks" campaign with you in the months and years to come.

Best wishes for excellent health!

Warm regards,
Dennis D. Hedge, Dean of Pharmacy

SD SOCIETY OF HEALTH-SYSTEM PHARMACISTS

Tadd Hellwig, Pharm.D., BCPS | SDSHP President



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

39th Annual SDSHP Conference

The 39th Annual Conference was held at the Ramkota Inn in Sioux Falls on April 17th and 18th. A total of 11 hours of CE was provided to the 117 attendees with a separate technician track on

Saturday with targeted CE for technician members. Attendees gave overwhelmingly positive evaluations for the speakers and high regards were given to the Clinical Pearl and Clinical Debate sessions. The annual meeting also ushered in new board members including:

- Past President: Andrea Aylward
- President: Tadd Hellwig
- President-Elect: Rhonda Hammerquist
- Secretary: Gary Van Riper
- Treasurer: Nicole Hepper
- Board Members: Joel Van Heukelom and Brittney Meyer
- Technician Board Member: Lynna Brenner
- Resident Board Member: Rachel Pavelko
- Student Board Members: Brittany Bailey and Kendra Ernst

SDSHP would also like to thank out-going board members of Kelley Oehlke, Bonnie Small, and Amanda Janisch for their service and contributions to SDSHP.

Recognition

In addition to the excellent educational programming, several awards were presented at the annual conference. Steve Petersen, Vice President of Pharmacy at Avera Health was awarded the Gary W. Karel lifetime achievement award which recognizes an individual of high moral character, good citizenship and high professional ideals who has made significant contributions to health-system pharmacy practice in South Dakota. Rhonda Hammerquist from Sanford USD Medical Center was awarded the SDSHP Pharmacist of the Year and Jessica Mendel from the Black Hills Surgical Hospital was recognized as the SDSHP Pharmacy Technician of the Year. On behalf of the SDSHP board, members, and all pharmacists in the state of South Dakota, congratulations to our award recipients!

In addition, SDSHP would like to say THANK YOU and happy retirement to Marilyn Eighmy for her many years of service with SDSHP. We would also like to introduce Rae Ann Thompson as the new SDSHP Support Specialist.

Upcoming Event

Mark your calendars for the evening of Tuesday, October 27th. Chris Jerry, CEO of the Emily Jerry Foundation, will be speaking to Pharmacists and Technicians. Sanford USD Medical Center has brought this national patient safety speaker to the area, and the event is being co-sponsored by SDSHP and SDPhA. Watch for emails from both organizations with details on this exciting event!

Van Riper Honored as Top Kappa Psi Adviser



BROOKINGS – Well-known retired SDSU pharmacy faculty member Gary Van Riper of Brookings has been honored as the national adviser of the year by the Kappa Psi pharmacy fraternity.

This is the second time assistant professor emeritus Van Riper has received the award, which is known as the Grand Council Deputy Outstanding Achievement Award. He received the inaugural award in 2005. He has been adviser of the Gamma Kappa chapter at South Dakota State University since 1973.

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SD ASSOCIATION OF PHARMACY TECHNICIANS

Sue DeJong | President



Greetings fellow technicians,
I'm Sue DeJong, your new president of the
SDAPT.

Just a little about myself: I live in Milbank, SD; and I worked as a technician for almost 35 years for Liebe Drug and now, for Lewis Drug. It's been a great career! I'm thankful for the wonderful opportunities that it has opened for me, especially now, to be able to serve as your SDAPT president for the next two years.

SDAPT met for our annual fall CE and Conference Day on Oct. 3rd in Sioux Falls. There were approximately 60 members in attendance - a great turnout! Five technician-specific CE courses were offered: Pharmacy Law, Drop a Day (Dr. Vance Thompson), Psychotropic Meds, Medicare Part D-2016 updates and Medical Marijuana. All were very interesting!

Christopher Jerry, father of Emily Jerry, for whom Jerry's Law was enacted is planned to speak in Sioux Falls on October 27th. Many thanks to Deb Cummins and Anne Oberg for helping to bring him to South Dakota to present his story. Please plan now

to attend! We will get more specific information out to all of you soon.

Congratulations to our very own Anna Nadenicek for being recognized as the State Technician of the Year at the SDPhA convention! It's great to have you on the SDAPT team, too!

Please check out the SDAPT website for updates periodically. You may access it through the SDPhA website or through Facebook.

Your officers for the next two years are:

- Sue DeJong, President
- Jerrie Vedvei, President-Elect
- Deb Mensing, Treasurer
- Lynna Brenner, Secretary
- Bonnie Small, Immediate Past President

Please feel free to contact any one of us if you have questions, concerns and comments. We love to hear from all of you!

Happy Pharmacy Technician Day on October 20th! Seize the Fall!

Christopher Jerry to Speak to Pharmacists and Technicians

October 27, 2015 | Southeast Technical Institute • Sioux Falls, SD

On October 27, 2015, Christopher Jerry, President of the Emily Jerry Foundation, will be in Sioux Falls to speak to pharmacists and technicians. Please join us at the Southeast Technical Institute's Sullivan Health/Science Center Auditorium, 2320 N Career Ave, Sioux Falls, 6:45 p.m. (social), 7:00 p.m. (program).

Mr. Jerry lost his beautiful two-year-old daughter, Emily, after a fatal medication error in March 2006. Pharmacist Eric Cropp was supervising the hospital pharmacy technician who made

the compounding error, which resulted in Cropp spending six months in county jail. After the loss, Chris established The Emily Jerry Foundation to increase public awareness of the systems aspects of medicine, addressing key patient safety issues by identifying technology and best practices proven to minimize errors. Chris Jerry is a relentless patient safety and caregiver advocate who spreads a message of hope, forgiveness, compassion, collaboration, and how to turn a tragedy into positive change in medical facilities.

RSVP to Rhonda.Hammerquist@SanfordHealth.org.

This event is sponsored by the Sanford USD Medical Center, with additional support from the South Dakota Society of Health System Pharmacists, the South Dakota Pharmacists Association, and Avera.



ACADEMY OF STUDENT PHARMACISTS

Traci Eilers | APhA-ASP SDSU Chapter President



As APhA-ASP President, I am delighted to share some of our chapter's fall updates with you. We wrapped up our summer activities and started planning activities for the year.

In August, we hosted two international students through the International Pharmaceutical Students Federation's (IPSF) Student Exchange Program. Sergio

Cavalheiro of Brazil and Tobiasz Migdal of Finland spent three weeks in Sioux Falls and Brookings at various practice sites to learn about pharmacy in South Dakota and the United States. The sites included Avera McKennan, Sanford, Veteran's Affairs Hospital, Walmart, MedVantex, Pharmacy Specialties, and the College of Pharmacy research labs. The international students enjoyed their time and appreciated the different types of experiences. Our chapter members were able to learn more about pharmacy in the exchange students' countries. In turn, our members showed Sergio and Tobiasz about life in South Dakota. Thank you to everyone who helped with this program and contributed to its success!

Our year is off to a great start. Our theme is focusing on providing patient care, improving public health, and promoting the profession. Prior to patient care screenings and events, our chapter arranges Patient Care Training for all student pharmacists participating in screenings. Several faculty members have volunteered their time to present on blood pressure, glucose, cholesterol, and bone density screenings to prepare students conducting the screenings. We are looking forward to providing the best possible screenings for patients in our communities.

Our chapter has recently unveiled a new certificates program for our chapter members. The program has a total of five certificates including: Active Member Achievement, Patient Care, Public Health Education, Professionalism and Advocacy, and Health-Systems Pharmacy. The certificates are designed for members who want to focus on a particular area within the pharmacy profession as well as provide a great way to recognize chapter members' involvement within our chapter. Members will need to participate in specific events and meet a minimum list of criteria yearly for the Active Member Achievement certificate or over the course of their involvement in APhA-ASP to receive each specific certificate.

This year, we are collaborating with various healthcare students on campus in the SDSU -Health campaign. Our chapter is organizing screenings and health education booths on campus. The focus of this project is to increase health awareness on campus as well as foster interprofessional relations between various health professions.

October is American Pharmacists Month! During the month of October, we have again collaborated with SDPhA to have two billboards highlighting pharmacists' impact on patient care. The billboards will be on display in Rapid City and in Sioux Falls, so please check them out!

The fall semester is in full swing as we return from the SDPhA Annual Meeting and Convention in Deadwood where we had 59 students attending! As a chapter, we extend a sincere thank you to SDPhA for all of the support provided to our APhA-ASP Chapter and student pharmacists. We are extremely grateful for the support and collaboration provided for the Welcome Back Picnic, SDPhA Convention, and American Pharmacists' Month billboards!

APhA and Pharmacists Commended for Role in Reducing Vaccine Preventable Diseases

WASHINGTON, DC – Since the American Pharmacists Association (APhA) launched its Pharmacy-Based Immunization Delivery certificate training program nearly 20 years ago more than 260,000 pharmacists have been trained to provide immunization services across the lifespan in all 50 states, D.C. and Puerto Rico. Through this program APhA is extending the vital role pharmacists play in the community. Public health partners like the Centers for Disease Control and Prevention (CDC) recognize APhA's leadership in immunization education and pharmacists' expanded role as part of the immunization neighborhood.

In a letter to the pharmacy community, Anne Schuchat, M.D., RADM, U.S. Public Health Service, Assistant Surgeon General, Principal Deputy Director, CDC praised APhA and pharmacists for their commitment to increasing the public's awareness of the importance of vaccines and improving patients' access to vaccination services.

"APhA's commitment to training and collaboration has increased access to vaccination services through expanded scopes of practice for immunizing pharmacists. Over the last 20 years pharmacists have played an expanding role in reducing the risk of vaccine preventable illnesses," said Dr. Schuchat. "My colleagues and I at the CDC applaud your accomplishments... and your continued efforts to improve the health of our communities by reducing vaccine-preventable diseases."

Pharmacists in particular can reduce barriers to getting the influenza vaccine in a way that other members of the immunization neighborhood may not, because of their hours and locations. Pharmacists also set a great example for their colleagues and patients. They led health professionals with a

95% immunization rate for themselves last year, according to a recent CDC survey published in the Morbidity and Mortality Weekly Report. Doctors and nurses followed closely behind at 89%.

"We are grateful to Dr. Schuchat and her colleagues at the CDC for their recognition and support of our efforts to improve pharmacists' role in the immunization neighborhood and increasing the public's access to needed vaccinations," said APhA Executive Vice President and CEO, Thomas E. Menighan. "Pharmacists are educated members of the immunization neighborhood ready to address your vaccination needs and help you sort through the available options and information."

The CDC recommends the influenza vaccine for everyone aged 6 months and older. Pharmacists are authorized to give flu vaccinations in all 50 states, D.C. and Puerto Rico. In many states, pharmacists are able to administer other important immunizations across the lifespan. Immunizations may include:

- Pneumococcal (Pneumonia)
- Meningococcal (Meningitis)
- Hepatitis B
- Human papillomavirus (HPV)
- Tdap (Tetanus, Diphtheria, Pertussis)
- Zoster (Shingles)

In recognition of all pharmacists do, October is American Pharmacists Month. APhA encourages patients to partner with pharmacists who are trained to provide a broad spectrum of patient care services, including administering immunizations, conducting health and wellness screenings, providing medication management, and managing chronic diseases.





SDPhA LEGISLATIVE DAYS

JANUARY 26-27, 2016

Legislative Days provides you with an opportunity to visit face-to-face with your state legislators, express your opinions, and observe the legislative process.

Tuesday, January 26

- Networking Social and Dinner at 6 p.m. at the ClubHouse Hotel & Suites/ RedRossa in Pierre for student pharmacists, pharmacists, and pharmacy technicians
- Legislative Update

Wednesday, January 27

- SDSU College of Pharmacy student pharmacists will provide healthcare screenings in the President's and Speaker's lobbies (third floor of the Capitol) starting at 7 a.m.
- Pharmacists may visit with legislators.
- A light breakfast will be provided.

Registration Deadline: January 19, 2016

Hotel Reservations:

ClubHouse Hotel & Suites
808 W. Sioux Ave.
Pierre, SD 57501
605-494-2582

Capitol Photo Courtesy of SD Department of Tourism

LEGISLATIVE DAYS 2016 REGISTRATION FORM

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Email: _____

Pharmacy/Organization: _____

Registration Deadline: January 19, 2016

Please send registration form to:

SDPhA
PO Box 518
Pierre, SD 57501

OR Phone: (605) 224-2338
 Fax: (605) 224-1280
 Email: sdpha@sdpha.org

We hope to see you in Pierre as we address important pharmacy issues!



Celebrate Your Profession!

October is American Pharmacists Month! It's time to celebrate your profession, recognize your staff, and reach out to your patients. SDPhA has compiled some creative ways for you and your colleagues to celebrate American Pharmacists Month!

in the community pharmacy setting

- Use a special answering message promoting American Pharmacists Month when you answer your phone, "Thank you for calling. We are celebrating American Pharmacists Month. How can I help you?"
- Conduct an Immunization Day (flu clinic), blood pressure clinic or osteoporosis screening. Create a patient care center in your pharmacy.
- Hold a week long event of brown bag medication reviews in your pharmacy.
- Decorate your pharmacy for the month of October with banners and posters highlighting American Pharmacists Month.
- Hold an educational session with snacks at a convenient time, call it "Snacks & Facts" and invite the public.
- Hold an "open house" at your pharmacy and hand out goody bags with an informational brochure inside.
- Give an OTC tour to your patients on how to select the best OTC products for their individual condition.
- Invite local students to visit your pharmacy for a class trip and give them a tour of the pharmacy.
- Reach out to local media.
- Host a visit for your senator or representative and provide him/her with a view of the role of the pharmacist.

hospitals, institutions, managed care & long-term care settings

- Place information in your facility's newsletter about American Pharmacists Month.
- Decorate the hospital or institution lobby with posters or displays. Create a lunch tray tent card explaining the goals of the pharmacy and services you offer.
- Hold an "open house" for all employees to visit the pharmacy.
- Host a visit for your senator or representative and provide him/her with a view of the role of the pharmacist.
- Reach out to local media.

student pharmacists and Colleges of Pharmacy

- Create a plan and be prepared to help your employer or rotation site hold activities and events for the month of October.
- Create a banner and ask your school to display the banner to promote American Pharmacists Month.
- Hold a t-shirt fundraiser at your school in honor of American Pharmacists Month.
- Talk to high school students about pharmacy careers.

Please send SDPhA information on what you are doing this year to celebrate American Pharmacists Month. Send us an email at sdpha@sdpha.org or fax at 605-224-1280 telling us your plans. Make sure to include names of those who participated and photos, if available. Visit our website at www.sdpha.org and click on "October is American Pharmacists Month" for more ideas on how to celebrate. This is a celebration of pharmacists and pharmacy-so make sure to share your story!

American Pharmacists Month

Make sure to recognize your pharmacy staff during American Pharmacists Month!

October is the perfect time for managers and supervisors to show their appreciation for the great work the pharmacy staff does throughout the year.

October 2015

go out into your community

- Senior Citizen Centers are always looking for new, exciting educational events. Set up a brown bag medication review event at a local Senior Citizen Center.
- Hold a healthcare event in your community or get involved in your local health fair.
- Present information on pharmacy to people in the community. Promote the event in advance and invite the public.
- Speak with the local school nurse on educating high school teachers about pharmacy. Ask the guidance counselor if you can set up a presentation on careers in pharmacy for Career Day.
- Contact the media in your area, write a news release and talk with the media about American Pharmacists Month.



don't forget to celebrate!

October 13-16, 2015
National Consultant Pharmacist Week

October 18-24, 2015
National Hospital & Health-Systems Pharmacy Week

October 20, 2015
National Pharmacy Technician Day

Make sure to show your appreciation for your pharmacy technicians on this day by acknowledging their significant contributions in the pharmacy!

resources

For more information on how to celebrate, visit the APhA website at:

<http://www.pharmacist.com>

Follow the Newsroom tab to the American Pharmacists Month tab for a web page full of promotional items and gifts available to you for American Pharmacists Month.

Spread the Word
Pharmacists improve patient health!

2015 SDPhA CONVENTION

September 18-19, 2015 • Deadwood, SD



Pharmacy Technician of the Year

Anna Nadenicek, Brandon, receives the Pharmacy Technician of the Year Award from President Lynn Greff



Distinguished Service Award

Senator Tim Rave (with President Lynn Greff)



Salesperson of the Year

President Lynn Greff presents Kim Karschnik with the Salesperson of the Year Award



Bowl of Hygeia Award

Renee Sutton of Burke receives the Bowl of Hygeia Award from President Lynn Greff



Distinguished Young Pharmacist

Beth Joachim of Gettysburg receives the Distinguished Young Pharmacist Award from Lynn Greff

2015 SDPhA CONVENTION

September 18-19, 2015 • Deadwood, SD



2015-2016 SDPhA Executive Board

Back Row: Immediate Past President, Lynn Greff; At-Large Board Member Bernie Hendricks; President Rob Loe, Vice President Eric Grocott.

Front Row: At Large Board Member Jan Lowe, President-elect Trisha Hadrick and Sec/Treasurer Erica Bukovich.



Above: (Left to Right) Dr. Keegan kicks off the meeting, Incoming President Rob Loe speaks to group, emcee Dave Helgeland addresses convention attendees.

Below: Student Attendees



2015 SDPhA CONVENTION

September 18-19, 2015 • Deadwood, SD



September 18-19, 2015 • Deadwood, SD

CONVENTION RESOLUTION

Title of Resolution: Enhancing Patient Care Through Pharmacist Provided Services

Objective of Resolution: That SDPhA create a committee consisting of the Executive Board, staff, legal counsel and membership to explore the necessary remedies for a modification to South Dakota's laws and rules to enhance patient access to pharmacist provided services.

WHEREAS, studies of pharmacists providing medication therapy management (MTM) services to improve therapeutic outcomes indicate that these services improve patient outcomes and reduce healthcare costs.

WHEREAS, pharmacists are able to provide these services in South Dakota under collaborative practice agreements. However, research suggests that pharmacists lack provider recognition under some of South Dakota's current rules and laws, resulting in the absence of the ability to fairly compensate the profession for these services.

WHEREAS, a recent report by the National Governor's Association calls for the expanded role of pharmacists in health care systems. The report also cites that a lack of state law governing compensation of cognitive pharmacy services directly impacts patient care and further recommends that states should advocate to integrate pharmacists more fully into the health care delivery system.

WHEREAS, there are 13 states that have legislation that classify pharmacists as health care providers under state Medicaid and allow for full or partial MTM/comprehensive service reimbursement. Several surrounding states already have secured recognition and/or payment for these services, including Minnesota, North Dakota, Nebraska, Iowa, Montana and Colorado.

WHEREAS, it is important to distinguish that this is a different measure than the current legislation (H.R. 592 and S. 314) that have currently been introduced in the U.S. House of Representatives and Senate. These bills would allow for pharmacist reimbursement under Medicare Part B and only in medically underserved areas.

THEREFORE BE IT RESOLVED, that SDPhA, on behalf of its members, explore necessary remedies to enhance patient access to pharmacist provided services.

SAVE THE DATE!



**South Dakota Pharmacists Annual Convention
September 16-17, 2016 (Display Day 16th)
Swiftel Center
Brookings, SD**

2015/2016
COMMERCIAL AND LEGISLATIVE (C&L) FUND & DISTRICT DUES CONTRIBUTIONS

First Name _____ Last Name _____
Address _____
City _____ State _____ Zip Code _____
Home Phone _____ Mobile Phone _____
Employer/Company _____
Work Address _____
Work City _____ State _____ Zip Code _____
Work Phone _____ Work Fax _____
Email Address _____

Do you wish to receive SDPhA email alerts regarding important pharmacy issues? YES NO

2015 - 2016 Commercial & Legislative (C&L) Fund
(Memberships set by SDPhA C & L Executive Committee, 2007)

**Pharmacy or Business Membership (\$100.00)
(Includes One Individual Membership)**

Name of Pharmacy/Business _____
Name of Individual Included _____

**Corporate Membership (\$200.00)
(Two or more stores of the same corporation)**

Name of Corporation _____
Name of Individual Included _____

Individual Membership

\$50 Level \$75 Level Other \$ _____

District Dues
(Circle your District)

Aberdeen-\$10.00	Black Hills-\$20.00	Huron-\$10.00	Mitchell-\$10.00	Mobridge-\$10.00
Rosebud-\$10.00	Sioux Falls-\$20.00	Watertown-\$10.00	Yankton-\$10.00	

TOTAL ENCLOSED \$ _____

*Return completed form and payment to SDPhA, P.O. Box 518, Pierre, SD 57501.
If you wish to pay with a credit card, please visit www.sdph.org. Thank you for your continued support of
SDPhA's Commercial and Legislative Branch (C&L) efforts and your District!*



Optimize patient results with accurate, efficient access to quality products.

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Pharmacists Mutual Releases Second Quarter Financial Results

For the quarter ending June 30, 2015

For the quarter ending June 30, 2015, Pharmacists Mutual Insurance Company reports increased premiums written, net income, and surplus as of June 30, 2015. These results have been filed with the Iowa Insurance Division.

A summary of Pharmacists Mutual's second quarter financial results is shown below:

(in millions)	Quarter Ending June 30	
	2015	2014
Direct Written Premium	\$28.7	\$27.5
Net Earned Premium	22.6	21.5
Net Underwriting Income	(.2)	.6
Net Investment Income	1.6	1.3
Net Income	1.4	1.7
Surplus Change	.5	2.0
Surplus	99.5	93.1

Treasurer and CFO Kevin Banwart commented "Pharmacists Mutual realized growth in both premiums and policies insured during the quarter. Despite significant weather events in April, the Company has strong earnings and growth in surplus for the year. In addition, the Company implemented a new claims administration system on April 27th. This system is integrated with our new policy administration system and will allow our claims staff to process claims more effectively."

According to Ed Yorty, President and CEO, the company has now resolved the claims related to New England Compounding Center and related policies, and the plan has been approved by the presiding judge. Yorty commented, "While our reinsurers paid the large majority of the amount, we are happy to have a resolution to this matter for the company's sake and for the victims."

Please note that management believes all of the information provided to be true. However, the amounts shown have not been audited.

MIDWEST PHARMACY expo

FEBRUARY 12-14, 2016

Community Choice Credit Union Convention Center,
Des Moines, Iowa



LEARN, CONNECT & BE INSPIRED WITH YOUR
COLLEAGUES FROM ACROSS THE MIDWEST!

FEATURING

In addition to the high quality CPE and uniquely Midwestern experience you've always enjoyed, the 2016 Expo will feature:

BPS Recertification Track

Expo has partnered with ASHP to host their **Pharmacotherapy Intensive Studies Package** which features three, 2-hour intensive sessions for board certified pharmacists to earn recertification credit (BCPS, BCACP). CPE credit will also be available for non-certified pharmacists who are interested in attending.



The regional Heartland Pharmacists Recovery Network conference is at Expo. If you have ever been interested in PRN, attend a session or the entire track.



The largest technician CPE conference in Iowa is now part of Expo! It's the same one-day conference, but now includes Expo's additional programming, exhibits and networking opportunities.

www.MidwestPharmacyExpo.com

FINANCIAL FORUM

This series, Financial Forum, is presented by PRISM Wealth Advisors, LLC and your State Pharmacy Association through Pharmacy Marketing Group, Inc., a company dedicated to providing quality products and services to the pharmacy community.

2015: A Time for Patience

Don't let the market's jumps rattle your commitment to staying invested.

What the market does today, it may not do tomorrow. That may seem elementary, but there are days, weeks, months, and even years when that investing lesson is ignored. Wall Street started 2015 with pronounced volatility, and in the opening six weeks of the year, investors were again reminded why patience is so important.

What did investors do in January? Sell. The S&P 500 lost 3.10%. Discouraging news items bred pessimism: deflation was coming to Europe, world demand for oil had peaked and prices would never come near \$100 again, the slowdown in Europe and Asia would soon unravel America's economic comeback. An old market belief dictates that the opening month of a year sets the tone for the rest of the year. Clear implication: 2015 equals bad market year. Sell, sell before it is too late.¹

What did investors do at the start of February? Buy. The S&P 500 gained 3.03% in the first trading week of the month (and it had advanced 2.64% in the 30 days ending February 6). Encouraging news items bred optimism: the European Central Bank unveiled an asset-purchase program extending into 2016 to fight deflation with a scope matching QE3, oil prices began to rebound sharply, assorted earnings pleased Wall Street. Clear implication: 2015 might not be so bad. Buy the dip.^{2,3}

What's the takeaway here? Don't panic. Don't let a down January lead you to put off your annual IRA contribution or trim your per-paycheck retirement plan deferrals. What ground stocks lose, they may quickly regain. For the record, 2014 provided the same lesson in patience. January 2014 saw the S&P 500 fall 3.56%. February 2014 brought a 4.31% gain. The S&P went on to go +11.39% for the year. Perhaps its 2015 performance will mimic this.^{1,3} History is no barometer of future stock market performance, but it can be illuminating with regard to how stocks have overcome the "January effect" – a bad January does not necessarily lead to a lousy year. In fact, here is the real eye-opener: during 1989-2014, the S&P finished up for the year 75% of the time after a loss of 2% or greater in January, with an average annual gain of nearly 8% in those market years. In fact, only twice in the past quarter-century has a bad January presaged a bad year for the index (2000, 2008). In 2009, it lost 8.57% in January and went +35.02% for the rest of the year. In 2003, it gave up 2.74% for January, then went +29.94% across the next 11 months. This

illustrates that on Wall Street, anything can happen – and that includes good things.⁴

Stay patient & stay invested. The last couple of years have been notably placid for U.S. stocks. Entering February, the S&P had gone more than 1,200 days without a correction. That lulled some investors into a comfort zone, to the point where they overreacted to significant (but in no way aberrant) stock market fluctuations.⁵ Patience is a virtue for the long-term investor trying to build wealth for retirement and other future objectives. Already, this stock market year has highlighted its value. The Federal Reserve may elect to raise interest rates and the strong dollar may persist for some time, but those factors may not hold back the bulls in 2015 any more than many others have since 2009.

1 - ycharts.com/indicators/sp_500_monthly_return [2/9/15]

2 - markets.on.nytimes.com/research/markets/usmarkets/usmarkets.asp [2/6/15]

3 - online.wsj.com/mdc/public/page/2_3022-quarterly_gblstkidx.html [12/31/14]

4 - investing.com/analysis/75-of-the-time,-%27down%27-january-good-for-s-p-500%27s-yearly-close-240337 [1/31/15]

5 - tinyurl.com/kw8ue3b [1/31/15]

Pat Reding and Bo Schnurr may be reached at 800-288-6669 or pbh@berthelrep.com.

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Continuing Education

for Pharmacists

“Thyroid Function, Part 2: Etiology, Treatment, Monitoring”

- Knowledge-based CPE

Author: Ashley Losing, Pharm.D.

Goal: To enhance learner knowledge of thyroid physiology, disease conditions, and treatment strategies.

Pharmacist Learning Objectives

1. Define the roles of TSH, T3, and T4 levels in the diagnosis and monitoring of thyroid dysfunction.
2. Explain the utility of a radioactive iodine uptake test.
3. Identify the key thyroid hormone levels at which treatment should be considered.
4. List the primary treatment modalities and monitoring parameters for hypothyroidism.
5. List the primary treatment modalities and monitoring parameters for hyperthyroidism.

Pharmacy Technician Learning Objectives

1. Define the term “euthyroid.”
2. Define hypothyroidism and identify the key medications options for treatment.
3. Define hyperthyroidism and identify the key medication options for treatment.
4. Explain why levothyroxine is the preferred medication for thyroid replacement.
5. Identify the typical dosing schedule and normal dosing range for levothyroxine.

Diagnosis

Thyroid hormone production is regulated through a negative feedback system. As free T4 levels increase, thyroid stimulating hormone (TSH) excretion from the pituitary is suppressed. When T4 levels drop, TSH increases in order to stimulate the thyroid into production. An example of the standard levels of TSH, T3, and T4 are listed in **table 1**. The reference ranges change with age and different laboratory assays. The term “euthyroid” is used to signify normal thyroid function.

Thyroid Function Test	Euthyroid Levels
Total T4	4.5-10.9 mcg/dL
Free T4	0.8 – 2.7 ng/dL
Total T3	60-181 mcg/dL
TSH	0.5 – 4.7 mIU/L

Table 1. Euthyroid Levels¹

The diagnosis of a thyroid disorder is based both on clinical judgment and serum values of total and free T4, total T3, and TSH¹. When used in conjunction, these measurements can indicate what type of dysfunction is present.

For example, a high TSH in conjunction with low T3 and T4 indicates a primary hypothyroidism. A low TSH with high T3 and T4 indicates primary hyperthyroidism. Most commonly, T4

is used as the indicator as it is solely derived from the thyroid, while T3 is not. Serum T3 levels are also more variable to different disease states and conditions. Certain antibody levels may also be assessed, as they can indicate autoimmune etiology such as Grave's disease (GD) or Hashimoto's for hyper- and hypothyroidism, respectively¹.

To further identify the etiology of a hyperthyroid condition, radioactive iodine uptake (RAIU) will be measured¹. Measurement of RAIU is necessary if a clinical exam is not diagnostic of GD². Normal 24-hour RAIU is about 10-30%¹. An elevated RAIU suggests true hyperthyroidism, in which the thyroid gland is actively overproducing thyroid hormones. A low RAIU suggests thyroiditis or hormone ingestion. Treatment varies based on etiology.

Treatment for true hyperthyroidism focuses on decreasing the rate of hormone synthesis and secretion; those methods would be ineffective for other etiologies as hormone synthesis and secretion are already at a minimum¹.

Hyper- and hypothyroidism may be either subclinical or overt based on the results of the thyroid function tests. A subclinical result reveals TSH is only slightly above or below its standard range while T3 and T4 levels are normal. With an overt dysfunction, both sets of tests are outside of the standard range.

True or False? A subclinical condition is indicated by abnormal serum TSH and normal serum T3 and T4.

True _____ False _____

Hypothyroidism Treatment

Subclinical hypothyroidism is characterized by a serum TSH above the upper reference level in

combination with a normal serum T4 level. This must be in the setting of stable thyroid function, normal hypothalamus-pituitary-thyroid axis, and no severe illness, recent or ongoing³. An upper reference of 4.12 mIU/L for TSH is listed but not universally accepted. Elevated TSH (generally >10 mIU/L) with subnormal free T4 characterizes overt hypothyroidism³.

Patients are recommended to be treated once serum TSH levels exceed 10 mIU/L due to increased risk for heart failure and cardiovascular mortality. Patients with serum TSH between the upper reference limit and 10 mIU/L should be considered for treatment if patients have symptoms suggestive of hypothyroidism, positive antibodies, cardiac disease, or risk factors for heart disease³.

Hypothyroidism is very detrimental to a developing fetus, therefore pregnant women have stricter recommendations in consideration of treatment. Treatment should be considered with TSH >2.5 mIU/L in the first trimester, >3 mIU/L in the second, and >3.5 mIU/L in the third³. The treatments and monitoring discussed below pertain only to primary hypothyroidism. Central or secondary dysfunction treatment is more complex.

The most reliable therapeutic endpoint in treatment of primary hypothyroidism is the serum TSH value³, although alleviation of symptoms is also an important consideration. When TSH is within normal ranges, free T4 will also be in the normal range. Specific upper limits of normal (ULN) should be determined by each given laboratory with a third-generation TSH assay, but if it is not available, an upper limit of 4.12 mIU/L should be considered³.

Serum T4 levels can be useful for detecting non-compliance, malabsorption, or differences in levothyroxine product bioequivalence⁴. Serum T3 levels should not be used for monitoring³.

Levothyroxine is synthetic T4 and is the preferred method of thyroid replacement due to low cost, lack of antigenicity, uniform potency, and chemical stability. Although T3 is the more biologically active form of thyroid hormone, administration of levothyroxine provides a readily available pool of T4 to be converted to T3.

Its half-life is approximately seven days, which accounts for once daily dosing¹. The absorption of levothyroxine is reduced when taken close to a meal, so it is recommended to take each dose consistently thirty to sixty minutes prior to breakfast or at bedtime four hours after the last meal³.

Many drugs are also thought to impact the absorption of levothyroxine, including acid suppressants, calcium, and iron salts. A more complete list can be found in Pharmacist's Letter⁵.

Although these interactions with food and medications are common, their impact is minimal if the patient is consistent in his or her medication regimen. The dose will be adjusted based on the serum TSH level in intervals discussed below.

Each of the generic forms of levothyroxine are very similar, but the relationship between T4 and TSH is not strictly linear, and even small changes in T4 can produce large changes in TSH. As such, once a levothyroxine product is initiated, therapeutic interchange should be discouraged¹.

Initial dosing may be weight based or at a standard dose and then titrated to maintain normal levels of TSH. Using ideal body weight, an individual with little residual thyroid function requires approximately 1.6 mcg/kg for replacement therapy. Doses of 25-75 mcg daily are generally sufficient for achieving a euthyroid state

Dose adjustments are based upon serum TSH levels at 4-8 week intervals following initiation of therapy, dose adjustments, or changes in levothyroxine product³.

Liothyronine is synthetic T3. It is theoretically useful as the more biologically active form of thyroid hormone, but several clinical disadvantages hinder its usefulness.

Liothyronine can be used diagnostically as a T3-suppression test. Disadvantages to the product include higher cost, higher incidence of cardiac adverse effects, and difficulty in monitoring with conventional laboratory tests¹.

Desiccated thyroid is a natural thyroid hormone derived from the thyroid gland of hog, beef, or sheep. Thyroid USP is required to contain 38 mcg of levothyroxine and 9 mcg of liothyronine for each 65 mg (1 grain) of product. As an animal protein-derived product, desiccated thyroid carries the highest risk of antigenicity in allergic or sensitive patients¹.

Similar to the levothyroxine products, the various generic products of desiccated thyroid should not be interchanged. Although recent preparations are more standardized, differing products may contain various amounts of thyroid hormone. This product is fairly inexpensive, but its limitations preclude its use as drug of choice for hypothyroid patients¹.

Hyperthyroidism Treatment

According to the 2011 clinical practice guidelines, subclinical hyperthyroidism is defined as low or undetectable serum TSH and values within the normal ranges for T3 and free T4².

Overt hyperthyroidism is characterized by suppressed TSH (<0.01 mIU/L) and an excess of thyroid hormones.

In addition, changes in the basal metabolic rate, cardiovascular hemodynamics, and psychiatric and neurophyschological function may be present².

For subclinical hyperthyroidism, treatment should be considered when TSH is persistently < 0.1 mIU/L in individuals over 65 years old, post-menopausal women not on estrogens or bisphosphonates, patients with cardiac risk factors, heart disease, or osteoporosis, and individuals with hyperthyroid symptoms.

If TSH is persistently below the normal limit of normal but > 0.1 mIU/L, treatment should be considered in patients over 65 years old and in patients with cardiac disease or symptoms of hyperthyroidism².

Overt hyperthyroidism should be treated according to etiology. Again, pregnancy has varying reference ranges, and special care must be taken due to potential harm to the fetus.

Three treatment modalities are used in hyperthyroidism management: surgery, antithyroid medications, and radioactive iodine. Agents such as beta blockers are also recommended for symptom management².

Hyperthyroidism treatment modalities

Surgery

Antithyroid medications

Radioactive iodine

Beta blockers - symptom management

Surgery

Surgical removal of the thyroid gland should be considered for patients with a large thyroid gland (> 80 g), severe ophthalmic problems, or lack of remission from antithyroid agents¹.

Factors that may discourage surgery include substantial comorbidity such as cardiopulmo-

nary disease, end-stage cancer, or other debilitating conditions.

Pregnancy is a relative contraindication; surgical treatment may be used if rapid control of hyperthyroidism is necessary, and antithyroid medications cannot be used².

Antithyroid medications

The treatment guidelines suggest that patients undergoing thyroidectomy should be rendered euthyroid with methimazole (MMI) prior to surgery and be given potassium iodide in the immediate preoperative period².

The antithyroid drug, taken for six to eight weeks prior to surgery, minimizes the risk of thyroid storm precipitation whereas the iodide helps reduce the vascularity of the gland when taken in the 10-14 days prior to surgery^{1,2}.

Propranolol may also be used several weeks preoperatively and seven to ten days postoperatively to keep the heart rate less than 90 bpm¹.

Following surgery, the guidelines recommend that serum calcium or intact parathyroid hormone levels be assessed, and oral calcium and calcitriol be supplemented as needed². Following thyroidectomy, levothyroxine should be started at a dose appropriate for the patient's weight and serum TSH assessed 6-8 weeks postoperatively. Once stable, TSH should be measured annually².

Antithyroid medications including propylthiouracil (PTU) and methimazole (MMI) are considered first-line treatment in children, adolescents, and pregnancy¹. These agents are noninvasive and carry a low risk of permanent hypothyroidism but are also associated with rare but severe adverse effects.

The mechanisms of action for PTU and MMI involve the prevention of iodine incorporation during thyroid hormone synthesis¹.

They also inhibit the coupling of monoiodotyrosine and diiodotyrosine to form T3 and T4. PTU also inhibits the peripheral conversion of T4 to T3. Both drugs are actively concentrated in the thyroid gland after absorption.

MMI is approximately ten times more potent than PTU. Initial doses of PTU are 300 to 600 mg daily, divided into three to four daily doses. MMI is given in two to three divided doses totaling 30 mg to 60 mg daily¹. Some patients may require higher doses.

An assessment of serum free T4 should be obtained approximately 4 weeks into therapy, and the medication adjusted accordingly². Clinical improvement should occur in 6-8 weeks as the thyroid hormone pool is diminished, after which tapering can be initiated¹.

Daily maintenance doses are 50 mg-300 mg for PTU and 5 mg-30 mg for MMI. To induce long term remission, treatment should be continued for 12-24 months¹. Monitoring of TSH, T3, and T4 should occur at 4-8 week intervals through the initial and tapering stages, then every 6-12 months thereafter¹.

The risk profile for both MMI and PTU features adverse effects which are rare, but can be serious if they occur. Agranulocytosis may occur with both drugs and is characterized by fever, malaise, gingivitis, oropharyngeal infection, and granulocyte count <250/mm³. The risk varies from 0.5% to 6% of patients. Arthralgias and lupus-like syndrome may present in 4-5% of patients.

Hepatotoxicity is a concern with both agents, but PTU a higher risk than MMI. As such, PTU is no longer recommended as a first-line agent in adults and children.

MMI has been associated with serious congenital mal-formations when used in pregnancy¹.

Interestingly, patients who are pregnant are recommended to use PTU in the first trimester, due to the teratogenicity of MMI, but switch to MMI for the second and third trimesters due to risk of severe hepatotoxicity with PTU².

A complete blood count with differential should be obtained during febrile illness and at the onset of pharyngitis, but it is not recommended routinely.

Liver function tests should be assessed baseline and should also be assessed if a patient presents with signs of hepatotoxicity such as jaundice, light-colored stool or dark urine, or abdominal pain. Discontinue the medication if transaminase levels reach 2-3 times the upper limit of normal (ULN) and fail to improve within one week².

In children, CBC with differential and a liver profile should be attained at baseline. Antithyroid medication should be stopped immediately if children develop fever, arthralgias, mouth sores, pharyngitis, or malaise, and CBC should then be assessed².

Radioactive Iodine

In the United States, radioactive iodine (RAI) is the preferred method for the treatment of Graves Disease, although any of the three modalities may be used². It is the best treatment for toxic nodules and toxic multinodular goiter¹.

RAI offers a cure for hyperthyroidism by converting the patient to a hypothyroid state. This is very effective provided enough radiation reaches the thyroid tissue². RAI is also the most cost effective option of the three treatment modalities¹. Absolute contraindications to RAI include pregnancy, lactation, coexisting thyroid cancer, individuals unable to comply with radiation safety guidelines, or females planning to become pregnant in four to six months².

RAI is given as a colorless, tasteless liquid that absorbs well and concentrates in the thyroid gland¹. Patients at risk for complications due to worsening of hyperthyroidism, such as those who are extremely symptomatic, or with free T4 levels 2-3 times ULN, should be treated with beta blockers prior to RAI therapy².

Patients may also be pretreated with antithyroid medication. RAI is administered as a single dose. Assessment of free T4 and total T3 should be included in the first two months after RAI therapy. If the patient is still thyrotoxic, monitoring is recommended at 4-6 week intervals. If hyperthyroidism persists beyond 6 months, retreatment should be considered².

The most recent clinical treatment guidelines for hypothyroidism and hyperthyroidism were released in 2012 and 2011, respectively^{2,3}. Also, separate guidelines are available for the treatment of thyroid dysfunction in pregnant women⁶. Please refer to the guidelines for additional information.

Summary

Hyperthyroidism and hypothyroidism may be either subclinical or overt based on the results of the thyroid function tests.

Hypothyroidism is very detrimental to a developing fetus, therefore pregnant women have stricter recommendations in consideration of treatment.

Levothyroxine is synthetic T4 and is the preferred method of thyroid replacement due to low cost, lack of antigenicity, uniform potency, and chemical stability.

The three treatment modalities used in hyperthyroidism management include surgery, antithyroid medications, and radioactive iodine. Agents such as beta blockers may also be recommended for symptom management².

Active learning question: A subclinical condition is indicated by abnormal serum TSH and normal serum T3 and T4. **True.**

Disclaimer: The author of this course has had no relevant financial relationship over the past 12 months with any company having a commercial interest in the contents of this article.

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“Thyroid Function, Part 2: Etiology, Treatment, Monitoring”

Continuing Education Post-test

Directions: Select the one best answer for each question, and fill in correct answers on test page.

1. In diagnosing or monitoring thyroid hormone levels, serum T4 is used preferentially over serum T3?
A. True B. False
 2. Adults in the general population should be treated for hypothyroidism when the TSH is >10 mIU/L, due to the increased risk of heart failure and cardiovascular mortality.
A. True B. False
 3. Why is levothyroxine the preferred form of thyroid replacement therapy?

A. Low cost	D. Chemical stability
B. Lack of antigenicity	E. All of the above
C. Uniform potency	
 4. After initiation of levothyroxine therapy, when should serum TSH be measured?
A. 1 week B. 2-4 weeks C. 4-8 weeks D. 10-12 weeks
 5. Overt hyperthyroidism is characterized by a serum TSH level of _____, along with an excess of thyroid hormone.
A. <0.01 mIU/L B. <0.1 mIU/L C. <1 mIU/L D. <10 mIU/L
 6. When used adjunctively for thyroidectomy, which medication is listed with its correct use?

A. Antithyroid medications - reduce risk of precipitating thyroid storm
B. Propranolol - maintain heart rate less than 90 bpm
C. Iodide - reduce the vascularity of the gland
D. Levothyroxine - supplement thyroid hormone after thyroid gland removal
E. All of the above
 7. If a woman is being treated with antithyroid medications during her pregnancy, which medication is recommended to use during the first trimester?

A. Methimazole (MMI)	C. Radioactive Iodine (RAI)
B. Propylthiouracil (PTU)	D. MMI, PTU, and RAI are all appropriate
 8. What are the two important monitoring parameters recommended for use with MMI and PTU?

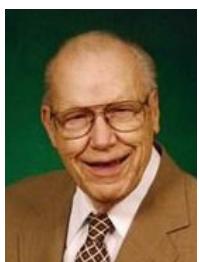
A. CBC, liver profile	C. Blood pressure, liver profile
B. CBC, serum creatinine	D. Serum creatinine, lipid profile
 9. What is the preferred treatment for Grave's Disease (GD)?

A. Surgery	B. RAI	C. Methimazole (MMI)	D. Propylthiouracil (PTU)
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 10. Which medical condition is an absolute contraindication to the use of radioactive Iodine (RAI)?

A. Pregnancy/lactation	B. Osteoporosis	C. Uncontrolled hypertension	D. Diabetes
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IN MEMORIAM

Philip Edwin Case



Philip "Phil" Edwin Case died July 9, 2015, in Columbia. He was 97.

He was born Oct. 25, 1917, in Raymond, Minnesota. His parents were Roy and Eula Freeman Case. Phil moved to Madison, South Dakota when he was 8 years old. He graduated from Madison High School in 1935.

He enrolled in South Dakota State College (now University) in Brookings, South Dakota in 1937. Phil enlisted in the U.S. Navy in 1942 and served until the end of WWII. He served in the South Pacific and New Hebrides. After the war he returned to South Dakota State and graduated with a degree in pharmacy in 1947.

Phil married Rachel Trygstad on Dec. 23, 1942, at First Lutheran Church in Brookings, South Dakota. He worked as a pharmacist in South Dakota from 1947 until his retirement in 1981.

He first worked as a pharmacist in Wessington Springs, South Dakota. He moved to Parker, South Dakota, in 1949 to work at a drugstore he purchased in 1952 and named Case Pharmacy. He sold the Parker store in 1965 and bought a drugstore in Beresford, South Dakota, which he operated until he retired.

Phil and Rachel moved to Bella Vista, Arkansas, for their retirement. He moved to Columbia in 2004, a year after Rachel's death, to live with his daughter and son-in-law.

He served as the president of the South Dakota Pharmaceutical Association from 1961 to 1962. He was active in the Lutheran congregations where he lived. Phil enjoyed his hobby of model railroading from the 1950s until the end of his life.

Philip was preceded in death by his parents; brothers Eugene and Keith Case; son, Jeffrey Case; wife, Rachel; and great-granddaughter, Rachel Frey.

Grateful for having shared his life are his daughter, Rebecca Lass and husband Tom, of Columbia; granddaughters Karen McKeown and husband William, of Woodbridge, Virginia and Janet Frey and husband Adam, of Decatur, Georgia; and great-granddaughters Elizabeth, Sarah and Rebecca McKeown and Olivia Frey.

Supriya Singh



Supriya Singh, 45 of Sioux Falls, SD, passed away unexpectedly on Wednesday, August 12, 2015.

Grateful for having shared her life are her children Rohan, Rahul, and Rhea Singh; and their father Rajesh Singh, Sioux Falls, SD; her parents Vinod and Nirmal Dhand, Greenville, SC; sister Sapna Dhand, Greenville, SC; and many other relatives and friends.

Scot Brost



Scot James Brost, 42, passed away as a result of an automobile accident near Lake Angostura on Saturday, August 15, 2015.

Scot was born on Nov. 26, 1972, in Chadron, NE, to James C. and Sheryl G. (Marshall) Brost. He grew up and attended school in Hot Springs, was active in band and basketball and graduated in 1991. He attended the University of Wyoming and South Dakota State University and graduated in 1996 with a Bachelor of Science Degree in Pharmacy.

He was united in marriage to Heather Curns on August 7, 1993. After he graduated from college, they moved to Denver, where he was employed as a pharmacist at an Albertsons store. In 2000, the family moved to Rapid City, where he was a pharmacist at Albertsons, Walgreens and was currently employed at Shopko Pharmacy.

Scot was an avid hunter and fisherman who enjoyed visiting with his friends and customers and cheering for the Denver Broncos and Stevens Raiders.

Grateful for having shared his life are his wife, Heather, sons, Dane and Reid and daughter, Lauren, all of Rapid City; his parents, Jim and Sheryl Brost, of Hot Springs; and his sister, Brenda (Jason) Engbrecht, of Pierre.

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