Vol. 24 No. 3

South Dakota Pharmacist

In this issue:

Summer Edition 2010

SOUTH DAKOTA
PHARMACIST
Volume 24 Number 3

SDPhA CALENDAR

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

South Dakota Board of Pharmacy
4305 South Louise Avenue
Suite 104
Sioux Falls, SD 57106
(605)362-2737
www.pharmacy.sd.gov

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.

July
16-17 Board Retreat

August
26-28 ASCP'S Midyear Conference and Exhibition
Phoenix, AZ

September
6 Labor Day

October
6 Labor Day

* Cover photo courtesy of South Dakota Tourism

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. The Journal subscription rate for non-members is $25.00 per year. A single copy can be purchased for $8.

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PRESIDENT'S PERSPECTIVE

Earl Hinricher
SDPhA President

FROM THE PAST TO THE FUTURE, CHANGE WILL CONTINUE IN PHARMACY

In 1862, the first drug store was opened in Yankton in the Dakota Territory. Years later in 1876, the first west river drug stores opened their doors in Deadwood. There were no laws regulating pharmacy in the Dakota Territory between 1862 and 1887. Anyone could simply invest funds in an inventory of medicinal products and open a store. Supposedly, that druggist had some training or had done an apprenticeship with another druggist. Few druggists had college training from other states.

It was not until 1886 when druggists decided to organize an association. Most traveled via rail to attend that first meeting in Mitchell. The key principles of the association were to promote the interests of pharmacy, to unite educated druggists, to improve the science and art of pharmacy, and to restrict the dispensing of medicines.

There have been many changes since then. As training and technology advances, it is hard for me to remember all of the changes that have occurred since I began practicing pharmacy. For all of us, pharmacy is a continuous learning process. An example would be medication therapy management.

Last year I attended a National Rural Health Conference for Pharmacists. A number of colleges were presenting their interpretation of medication therapy management. I was impressed with Mississippi. They have worked with local pharmacies in the poorest health districts and assisted the pharmacists in setting up a weekly clinic to interview and work with their most difficult diabetic patients. The plan was to improve blood glucose levels through intense education which included diet and taking prescribed medications. This would improve their HgA1C which would decrease ER visits and diabetic complications. At a spring meeting this year, I was told there isn't a universal template for MTM…it depends on the needs of your particular community.

We also have pharmacies preparing sterile products and modifying their facilities to comply with USP <797>. Sterile products that have been prepared by pharmacies for years now need to separate their working areas, IV preparation areas, and enhance their air filtration systems to improve air quality which decreases potential product contamination. Changes occurring in pharmacy do not necessarily affect all pharmacies in the same manner. However, all pharmacies in one form or another are dealing with e-pharmacy. This may include electronic prescribing, electronic medical records and electronic physician order entry.

In addition, there are those who want a plan implemented for payment of patient services rather than a fee attached to a product. Guidelines for such practices either are regulated or required by the insurance industry. A number of years ago when I managed a medical clinic, there were few guidelines for the appropriate documentation of an encounter between a physician and a patient. Physician notes could only be a few comments. Not all physicians used S.O.A.P. notes at the time. Overtime, guidelines were written and rewritten by Medicare and the insurance industry to control the costs associated with poorly documented healthcare. As pharmacists, we too will see the implementation of guidelines as we continue to provide services. This process may be slow…as healthcare dollars are limited. If you take time to read the new healthcare reform, it is full of sections that affect pharmacy. The availability of healthcare dollars will determine our future.

South Dakota's Prescription Drug Monitoring Program becomes law July 1st. The Board of Pharmacy has the responsibility for the administration of the program, and will be looking to prescribers and dispensers for assistance in shaping the program. Many of us are in need of such a database to ensure appropriate pain management for our patients.

So where does the future road of pharmacy take us? It depends on pharmacists who are willing to invest their time and their talents. We need pharmacists who are willing to share their ideas and work together regardless of type of pharmacy practice or employer.

I applaud pharmacists who are willing to blaze new trails for pharmacy. It takes time to nurture relationships with other healthcare providers. The key word is trust. As you grow in your relationships, you are promoting yourself as well as your fellow pharmacists and the practice of pharmacy.

My final comments are aimed at our talented young pharmacy students, but applicable to all. A Pharmacist by the name of Eddie Tarrango would quiz me daily about my plans for the future. Eddie was a pharmacist I worked with many years ago. He would say "Life is full of stepping stones. Life has many opportunities. Are you willing to take the next step? Are you willing to make something of yourself? Are you willing to work with your fellow pharmacists to implement new ideas that advance the practice of pharmacy or resolve issues? Are you willing to give back to your local community in time and talent? Are we willing to pass on our good fortune to others?"

That is my challenge to you.

Earl

Earl Hinricher, SDPHA President

DIRECTOR'S COMMENTS

Sue Schaefer
Executive Director

I hope this note finds you all enjoying your summer with friends and family! I'm not sure where the time goes, but I know it flies faster every year…maybe it's a sign of age!

Convention was more educational and fun than a barrel of beach balls! For those of you who were there, you understand. For those of you who missed it, we're so sorry!…all I can promise is we'll work on an even more outstanding event for next year, so I hope you'll join us for the big 125th Anniversary of your pharmacy association (June 3-5, 2011 in Sioux Falls at the Sheraton Hotel & Convention Center).

We're working on wrapping up the last of the convention details, and year-end budgetary items, so we've been busy as bees. Jenny Schwarting, the administrative assistant for SDPhA was offered a tremendous opportunity to get back into banking IT, so she's flown from our Association nest. She's been great about helping with the transition, and we'll miss her! But it's a happy move for her to return to her passion, so that's a good thing.

Plans are underway for our annual board retreat in July. We'll be developing plans and ideas to move the Association forward with a limited budget, which is always challenging, as many of you know. Above all, I know your board and staff will work hard to keep protecting and enhancing your profession. Many challenges arise during the course of a year's time…I know the slate you've chosen to lead is definitely up to the challenge.

New board members chosen at the 2010 Convention are Lisa Rave, Secretary/Treasurer, Sioux Falls; and Shannon Gutzmer, Member-at-Large, Rapid City. They join an excellent cast of characters including newly-elected President Earl Hinricher of Forestburg; President-elect Lenny Petrik of Pierre; Vice President Else Umbreit of Tea; and Stephanie Muller of Watertown, who was elected for a second term at-large.

I'd like to thank Immediate Past President Chris Sonnenschein for his leadership over the past year. He did an excellent job, and I hope you'll thank him if you see him.

As I write this, the Prescription Drug Monitoring Program is now state law. The Board of Pharmacy will most certainly be reaching out to pharmacists as they develop the program, and we welcome their questions and stand by to provide any assistance we can. We know good programs aren't hastily developed, and you can be sure that Ron and staff will work hard to develop a program that is secure, straight-forward and helpful.

And don't forget our door is always open and iced tea available…hope you give us a call or send us an email if you need us. We're here to help you!

Take care and have a wonderful summer.

Sue

Contribute to the 2010-2011 South Dakota Pharmacists Association District Dues and SDPhA Commercial and Legislative Fund!!

Visit our website at www.sdpha.org

Thank You for Your Support!

South Dakota Board of Pharmacy

Ron Huether
Executive Secretary

FIFTY YEAR PHARMACISTS

Congratulations to those pharmacists who have been registered with the South Dakota Board of Pharmacy for 50 years: Terry Casey (Chamberlain), Donald Frank (Gregory), Norval Luke (Wentworth), James McMurtry (Crescent City, CA), Ronald Nelson (Brookings), Everett Randall (Redfield), Eugene Rezac (Mitchell), Richard Robbins (Sioux Falls), Conley Stanage (Yankton), Benjamin Thompson (Minneapolis), James Thorson (Rapid City), and Myron Weber (Spearfish).

NEW REGISTERED PHARMACISTS

The following candidates recently met licensure requirements and were registered as pharmacists in South Dakota: Roy Balinski, Wayne Bauma, Daniel Blakeley, Angela Bomgaars, Molly Branaugh, Nicole Brown, Joseph Caputo, Yuen Chin, Deborah Cook, William Coolidge, Austin Danielson, Joulan Elbarhamtoshi, Amy Engelhart, Eric Froke, Tyler Geerdes, Aaron Gerber, Lacey Haensel, Sara Hahn, Jill Haiar, Stacey Hoitsma, Holly Holmes, Paul Hueseman, Jessica Hummel, Stacey Jackson, Bobbi Johnson, Sheila Johnston, Matthew Kolb, Jessica Kroon, April Krull, Amy Lebrun, Amy Mammenga, Justin Manning, Brandon Markley, Jamie Meister, Heidi Miles, Amanda Muir, Jessica Okins, Erin Olson, Megan Poppe, Jeffrey Meyer, Danielle Milbrandt, Rachel Pajl, Satyam Patel, Ryan Prouty, Tasha Rausch, Angela Ritter, Joseph Roby, Kimberly Roiger, Lawrence Sajdak, Dustin Schrader, Claudia Shaffer, Jamie Tarbox, Andrew Tonneson, Darci Weakland, Thomas Weismantel, Joshua Woods, and Zhiying Yang.

NEW PHARMACIES

Pharmacy licenses have been issued recently to: Tom Wullstein, pharmacist-in-charge, Brandon Health Mart and Judy Waldman, pharmacist-in-charge, Vilas Pharmacy – Ipswich (telepharmacy).

PRESCRIPTION DRUG MONITORING PROGRAM

During the most recent legislative session a new law was passed establishing Prescription Drug Monitoring (PDMP) in South Dakota. This law places the responsibility for implementing and operating this program with the Board of Pharmacy. Rep. David Lust, Rapid City, provided the leadership in drafting the bill and gaining legislative support. The law provides for an Advisory Committee made up of prescribers, dispensers and other stakeholders to provide advice and make recommendations to the Board regarding how to best use the program to improve patient care and foster the goal of reducing misuse, abuse and diversion of controlled substances. Board of Pharmacy staff will be drafting administrative rules to define the details of program within the authority and mandate of the law. As the rules are developed they will be available on the Board website. We encourage pharmacists to comment on the rules prior to the public hearing.

Drug Enforcement Administration (DEA) has been a long time proponent of PDMP's due to the proven effectiveness in curtailing the diversion and abuse of controlled substances. The PDMP involves the exchange of health information. Pharmacies will be submitting prescription drug utilization data to the program. Data submission will be mandatory for all pharmacies and dispensers who provide controlled substances to South Dakota patients. Data will be collected online via an interface data dump (like online insurance adjudication). The information will be transferred to the secure data base.

Prescribers and pharmacists will access this information for the care of their patients. The program is not intended to be used to target _subjects for investigation, but rather to identify illegal activity such as prescription forgery, indiscriminate prescribing, and to deter "doctor shoppers". Health care providers will have access to review the data online through a secure server once the data has been collected, but are not required to access the database prior to writing or dispensing a prescription.

According to other states, the implementation period will take about one year. We anticipate that our program will be operational by July 1, 2011. Executive Secretary Ron Huether has submitted a request to the US Department of Justice – Bureau of Justice Assistance - Harold Roger's PDMP Implementation Grant. If we are successful in obtaining the $400,000 grant, the program will be funded through September 30, 2012.

Staffing for the program will include: a part time pharmacist to serve as PDMP director and a full time clerical/technical associate to perform day-to-day data review and provide responses to inquiries. We will contract with a vendor that currently provides data collection and storage services to existing programs in other states. The PDMP director will be responsible for designing educational materials for health care providers and the public. The materials will include details of PDMP and how prescribers and dispensers can use the information to provide better patient care. The director will provide face-to-face education to prescribers and dispensers throughout the state.

Continued

Continued

BOARD MEETING DATES

Board meeting dates: Board meetings are scheduled for October 1 in Brookings and December 12 in Sioux Falls. The Board encourages pharmacists to attend. Please check our website for the time, location and agenda.

INSPECTORS' NOTES

Our inspectors have noticed several occasions where a nurse has prepared new prescriptions on the prescriber's behalf, and then signs the prescriber's name in addition to their own name. State and Federal law state a prescriber's manual signature must be on the prescription. The only exception to this would relate to electronic prescription in which an electronic signature is acceptable. Insurance companies have recouped payments when an audit finds a written prescription without the signature of the prescriber. Please validate these prescriptions with a verbal authorization and reduce to writing. This pertains to refill requests faxed to the prescriber also. Nurses are not allowed to sign or initial the refill authorization.

When our inspectors are conducting annual inspections, a question often asked as to what is "readily available" when it comes to retrieving invoices for controlled substances. Invoices for schedule II controlled drugs must be stored separately from all other invoices and in a manner which promotes an efficient and effective audit. We recommend filing these invoices chronologically in conjunction with the DEA form 222 or the CSOS form. Invoices for all other controlled substances should be filed separately from other ordinary business records of the registrant.

PHARMACISTS – BANK CONTINUING EDUCATION HOURS

Pharmacist license renewal time is right around the corner. To avoid a last-minute panic finding continuing education certificates, you can accumulate and enter the hours on the board's renewal site.

To log in use the same method as renewing your license:

1. Access the Board web site at www.pharmacy.sd.gov
2. Click on the "Pharmacists" button on the right
3. Click on - On-line Renewal/Bank CE
4. The log-in name is letters "nspharm" plus your 4-digit license number. (Do not use the "R" if you have one in your license number).
5. The password is the letters "nspharm" and the last four digits of your SSN.
6. You will have the option of changing your password if you wish.
7. Click on Ph26PharmLic, and then click on Pharmacist Info.
8. You can update any personal or employment information. The phone number requires you to use dashes. The dates should be in MM/DD/YYYY format. If a required field is left blank you will get an error message to complete that field. If you don't have an entry for that field enter N/A.
9. Click the continue button to go to the CE page.
10. Enter each CE program, the date, and the year that you want it used and then click "apply". (Enter 2010 for the October 1, 2010 through September 30, 2011 renewal year.) The program will automatically add them for you. Remember to use the MM/DD/YYYY format – this is probably the number one error people encounter.
11. Hours earned between October 1, 2009 and September 30, 2011 can be used for the 2011-2012 licensing year.

Please contact the Board office at 605-362-2737 if you need assistance.

CONTROLLED SUBSTANCES LAWS

Our office often gets questions related to federal controlled substance laws and regulations. The June issue of Drug Topics had a very good continuing education article on this topic. We encourage pharmacists to go to the Drug Topics website – www.drugtopics.com – click on "Continue Education" to review this very good information.

2010 Convention Awards

Bowl of Hygeia
J. Mark Dady

The Bowl of Hygeia Award, sponsored by Wyeth Pharmaceuticals, recognizes pharmacists for outstanding service in community. This years recipient was J. Mark Dady.

Mark and wife Diane, also a pharmacist, are owners of Family Pharmacy in Mobridge. Mark is the past chairman and member of the Mobridge Community Fund, a former Cub Scout leader, is involved with Knights of Columbus and has been a basketball and softball coach in the Mobridge community.

Good pharmacy genes run in the Dady family, as Mark's dad John "Jack" Dady was also honored with the Bowl of Hygeia Award in 1984.

Distinguished Young Pharmacist
Teresa Orlando

The 2009 Distinguished Young Pharmacist Award, sponsored by Pharmacists Mutual Insurance Company was awarded to Teresa Orlando.

Ms. Orlando grew up following in her father footsteps. She graduated from the University of Nebraska Medical Center in 2002, and immediately joined her father in his practice in Sioux City. In 2004, she opened her own pharmacy and became the Director of Pharmacy at Siouxland Surgery Center.

She is involved with teaching and mentoring students of all ages about pharmacy. Teresa talks with grade school children about the difference between "good" and "bad" drugs and shares information about the profession. She is also a preceptor for pharmacy students.

Teresa is a member of the South Dakota Pharmacists Association, the American Pharmacists Association, National Community Pharmacy Association and the Nebraska Pharmacists Association. She has three children and is very active in her community.

Hustead Award
Gary Karel

The Hustead Award recognizes contributions or service during a career or significant accomplishments during a short period of time that impacts the profession in a positive manner. Gary Karel demonstrated the dedication, resourcefulness, service and caring that has made pharmacy one of the most respected professions in our country. This award also stresses the significance of Gary's professional career as well as the impact he has made on the profession, and his dedication to community service.

Honorary President's Award
Kevin Wurtz

The Honorary President's Award recognizes a career pharmacist who has not been the President of the Association.Kevin Wurtz was this year's recipient.

After graduating in 1975 from SDSU College of Pharmacy, Kevin began his career in Elk Point, SD, where he and wife Barb purchased their pharmacy in 1977.

He has served the community of Elk Point and the surrounding areas as a volunteer ambulance driver and firefighter. He is a member of the Commercial Club, Elk Point Economic Development Association, Southern Union County Economic Development Association, Union County Health Board, Doctor Retirement Committee, Prairie Estate Medical and Dakota Hospital Board Member. He also sits on the board of First Federal Bank, and is currently a member of the Union County Soil Conservation Board.

Kevin has been actively involved in the South Dakota Pharmacists Association, and was honored with the Bowl of Hygeia Award in 1999. Kevin is married to wife Barb, and they have four children.

2010 Convention Awards con't

Distinguished Service Award
Rene Hixon and Rita Schulz

The Distinguished Service Award is reserved for outstanding individuals who offer significant contributions to the profession of pharmacy by working hard to advance and protect the profession.

Rita holds the title of Program Assistant at South Dakota State University's College of Pharmacy in Brookings. She has implemented several procedures within the office that have created a more efficient work environment.

"Rita takes great pride in working for the College of Pharmacy and her association with the pharmacy profession," said Dennis Hedge, Dean of SDSU's College of Pharmacy. "Whether facilitating an Advisory Council Meeting, supporting a continuing education program for pharmacists and pharmacy technicians, organizing a ceremonial event, or answering questions about the admissions process, she is willing to do whatever needs to be done and no task is too small to deserve 100% of her attention and effort. She enjoys educating the young and old about the pharmacy profession."

Rene has served the pharmacy profession since September 1998 in the South Dakota Board of Pharmacy office. She helps with the day-to-day office administration, manages the Board of Pharmacy website, plans meetings and takes minutes at the Board of Pharmacy meetings.

She maintains the financial records for the Boards receipts and expenditures, and oversees the licensing and registration of Pharmacists, Pharmacies, Pharmacy Technicians, Wholesaler Drug Distributors, and Non-Prescription Drug Permitees.

"Rene is the first point of contact for everyone who deals with the board," said Ron Huether, the South Dakota Board of Pharmacy's Executive Secretary. "She supports the activities of the inspectors and the Executive Secretary and assists countless Pharmacists, Technicians, and many other individuals with information about the board. Rene is the consummate professional and has demonstrated the dependable characteristics that healthcare professionals must possess."

She is married and has one child and she enjoys camping with family and friends and is very active in her community.

Innovative Pharmacy Award
Ann Morstad

Anne Morstad was the recipient of the 2009 Innovative Pharmacy Practice Award on behalf of NASPA. Anne was selected by demonstrating innovative pharmacy practices resulting in improved patient care.

Anne received her degree from South Dakota State University in 1999 and is currently working for Avera Behavioral Health Center as a clinical pharmacist.

She has a unique practice as a psychiatry pharmacist. She and her team work closely with Psychiatrists to develop drug regimens for patients, to develop programs that enhance a patient's understanding of their medication and she works with patients on medication compliance/adherence. She also works closely with physicians to assist them with formulary decisions.

District Salesperson of the Year

Brian Rice	Sioux Falls & Yankton District
Lauri O'Hara	Watertown District

District Technicians of the Year

JoAna Flannagan	Black Hills Distict
Laura Kost	Mitchell District
Diane Feiner	Mitchell District
Ann Ritter	Sioux Falls District
Laura Wright	Sioux Falls District
Cheri Leader	Yankon District
Rhonda Karst	Watertown District

Prestigious Group 50-Year Pharmacists

Terry Casey

Terry was born and raised in Masdison, SD. He graduted from Madison High School in 1956, then he enrolled at SDSU College in the fall of 1956. After graduating from SDSU Pharmacy school in 1960, he moved to Chamberlain to work with his uncle, Mark Casey. Which later he purchased the store from Mark in 1970. Terry is married to Sharon. They have four wonderful childern, Mike, Jeanne, Collin, and Christian, 10 grandchildren and 1 great-grandson.

Terry and his wife built Casey's Drug and Jewelry Cafe at I-90 exit 263 in Chamberlain in 1978. They still own and operate both locations. Terry has served as presidents of many boards and the St. James Catholic Church in Chamberlain. Terry served on the South Dakota Board of Pharmacy form 1973 to 1980 and the South Dakota Pharmacists Association from 1988 to 1992.

Terry Received the SDSU College of Pharmacy Distinguished Alumnus Award in 2007.

Terry still works as a Pharmacists at Casey's Drug and Jewerly in Chamberlain. Terry's hobbies include traveling, golfing, pheasant hunting, vocal music.

Gene Rezac

Gene was born and raised in Highmore, SD and graduated from Highmore High School in 1955. He then graduated from the College for Pharmacy at South Dakota State University, Brookings SD with a BS in Pharmacy in 1959.

He immediately entered the field of Retail Community Pharmacy as a staff pharmacist and was very fortunate to be mentored early in his career by outstanding pharmacists and very successful pharmacy owners Red Zarecky of Pierre Walgreen Drug and Clarence Herzog, Joe Cholik and Fred Vilas Jr., owners of Vilas Drug all very successful full line retail pharmacies in Pierre, SD. They all contributed to building a strong desire in Gene to set the goal of someday owning his own Community Pharmacy. He feels he will be forever indebted to them in that endeavor which started with the purchase of Jos. P. Faas Drug, in Hoven, SD in October of 1961 at the ripe old age of 24 years. Dr. Faas, also an Optometrist and Pharmacist was also a great teacher of retail pharmacy ownership and without his trust and financial help, our career of nearly 50 years of successful pharmacy ownership would have never happened or without my lifelong married partner, Janis Anderson Rezac from Hitchcock, SD, who of course he met as a customer , where else but in a Drug Store. We will be celebrating our 50th wedding anniversary Dec. l0th of this year.

After selling Rezac Rexall Drug in Hoven, SD. to Ron and Marilyn Schwans, both pharmacists, in the latter part of 1970, Gene and Jan moved to Sioux Falls, SD for a short time, wanting to explore other opportunities in the field of Pharmacy. It did not take long for us to realize that we missed owning our own Pharmacy deeply and shortly thereafter purchased O'Neill Drug, in O'Neill, NE in January of 1972 and quickly renamed it REZAC Walgreen Drug and enlarged it into a 6,000 sq ft full line drug store. After 33 years of successful ownership there, we sold the store to another independent community pharmacy owner from Schuyler, NE and we are proud to say that the former Rezac Discount Drug in O'Neill, NE is continuing as a very successful large retail drug store in the same exact location and doing very well. We were thankful that we were able to continue the tradition of independent pharmacy within our store and did not have to succumb to a chain store acquiring our files. We sold the store in January, of 2005.

Gene retired from active pharmacy work at the finalization of the sale of the store, and in the summer of 2007 we moved back to the great state of SD and now live in the great little city of Mitchell, which puts them close to their daughter, husband and two granddaughters, 20 and 17 yrs old respectively, all of whom live on their own farm 30 miles northwest of Mitchell

A separate paragraph must be delegated to share Gene's great news that their 20 year-old granddaughter, Amber Schmidt was recently selected to be eligible to enter the College of Pharmacy at SDSU in Brookings this fall of 2010. They are very proud and privileged to be grandparents of a future pharmacist. Last and not least, we feel very fortunate to have had a very productive and satisfactory career in an Independently owned Community Pharmacy.

Prestigious Group 50-Year Pharmacists

Benjamin Thompson

Pharmacy has changed so much, as we all know. It doesn't seem possible, when using hind-sight, that what was state of the art Apothecary activities in college, retail, pharmaceutical research, and hospitals are not in use today. Pharmacists were mostly thinking of getting their own store or taking over their family drug store. Penicillin, tetracycline, and triple sulfas, along with tranquilizers, were state of the art then.

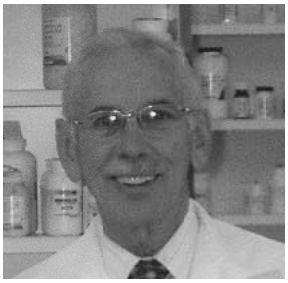
While in college, Ben had a part-time job in Kendall's Drug store in Brookings. From there he interned in Mobridge at Schwartz Drug. Then he moved on to Vilas Drug in Pierre. A couple of years later, a close friend, the late Gene Hanson, called him and explained what was offered in Minneapolis to compare with the small town pharmacy. Ben decided that a few years in the big city and he could pickup knowledge on how to operate the future pharmacy he would eventually get in South Dakota. His first job in Minneapolis was at Loop Pharmacy. This was the first discount pharmacy in Minneapolis. To his surprise, of ten pharmacists employed in the Loop Pharmacy half of them were from SDSU. He was in retail pharmacy about five years and an opportunity was mentioned to him by Dick Eitreim, a graduate from State, who was a Eli Lilly rep. North Memorial Hospital was his next job for 32 years. There wasn't much in the old 1950's reminton that you would refer to starting in the 1970's. Computers, plastic IV bags, pharmacists in ER, surgery, chemo labs, piggy-back IV antibiotics, kinetics, poison control centers, 24 hour schedules, unit dose etc, etc. "Stat, PRN standing orders, bug juice iv's, clot busters, hyperals fax machines, pharmacy techs, IV incompatibilities, Laminar Positive flow Hoods", were a brand new game...

Ronald J. Nelson

Ronald was born December 1936 in Minneapolis, MN and reared in Canby, MN. He received his Bachelor of Science in Pharmacy from SDSU in June 1958. The following six months the ROTC commitment began his career in retail pharmacy in Minnesota and Arizona. He had good sense to return to South Dakota in 1967 with the purchase of Shirley Pharmacy and later purchasing City Drug both in Brookings. His other employments included Lewis Drug in Huron, Snyder Drug in Brookings, Casey's Drug in Chamberlain, and Pamida in Madison where he is currently employed part-time.

Ronald's interests include golf, stained glass, furniture refinishing, travelling and following the Jack Rabbits, Vikings and Twins. He has been married for 48 years with six children and 14 grandchildren.

Myron Weber



After graduation from SDSU, Myron served his internship at a drug store in Deadwood, SD. They really love the area but job opportunities were limited.

Myron and Virginia then moved to Sioux Falls where he was employed at Sioux Valley Hospital until 1962, at which time Webbers started a drug store in Wessington Springs. After seven years, they sold it and moved to Black Hills where he did relief work.

In 1971, Myron and Virginia purchased a full-line drug store in Spearfish, which they operated for the next 16 years. They then purchased the franchise from Medicap Pharmacies and built a professional store near Lookout Memorial Hospital in Spearfish. In addition to the pharmacy, he also served as the pharmacist at the limited part-time pharmacy at the hospital for ten years. He attributed his success to the fact that he was 'on call' for either facility day or night.

They sold the pharmacy in 1998 and Myron has been providing some relief work again all over the Black Hills.

They have three daughters currently living in Spearfish. The oldest is a pharmacists and is working part-time in Belle Fourche. One of her sons is married to a pharmacists. Also, her oldest daughter has been accepted into SDSU College of pharmacy. It make Myron and Virginia wish they still owned a pharmacy.

The Weber's lives have been filled with church and civic events. They have been extremely busy, even in retirement, enjoying the companionship of 15 grandchildren, all of them having lived in Spearfish most of their lives. They thankGod daily for the privilege they have had in shaping their grand children's lives in some small part.

2010 Convention Highlights

2010 Convention Highlights

History of Pharmacy in South Dakota

Continued

1900

1901

- 445 in-state Pharmacists, 60 out of state pharmacists and 27 assistants pharmacists on the membership

1902

- Ladies Auxiliary organized at Flandreau. Mrs WA Simpson, Flandreau was the first President and the annual dues for the Ladies Auxiliary was $.50 a person.

1903

- State price mark was approved. The price mark consisted of alphabetical letters : C O P Y R I G H T S Z and Numerical letters: 1 2 3 4 5 6 7 8 9 0
- Price mark listing for mixtures/ointments/suppositories:
  - 1oz $.25
  - 2oz $.35
  - 8 oz $1.00
  - 1 dz pills $.25
  - 2 dz pills $.40
  - 3 dz pills $.50
  - 75 -100 pills $1.00 -1.50
- Legislature passed a law requiring peddlers to be licensed to sell their product. $30.00 if they were by foot, bicycle, or train, $60.00 by single horse and wagon, and $100.00 for car or two horse and wagon.

1904

- 481 registered pharmacists in the state: 86 with their Ph.G., 49 with their M.D., 2 with their P.C, 1 with both M.D. and Ph.G. 341 passed the examinations with the practical experience requirements.

1906

- US. Congress passes a Pure food and Drug act. This prohibited the sale of adultered drugs, false, or misleading labeling and improper packaging. The label had to show the presence and amount of the dangerous drug, including any narcotic drug.

1908

- Price Mark did not exist
- 518 registered pharmacists 123 with their Ph.G., 50 with M.D., 2 with P.C, 1 with MBS, 1 with DDS, 1 with both M.D and Ph.G. 340 passed the examinations. There were 39 assistant Pharmacists certificates and there are 20 practicing in the state.

1909

- South Dakota Pure and Drug Act was approved.

1910

1910

- South Dakota New Stone Capitol was dedicated in Pierre and accommodated the states 110 employees.
- Legislature passed a law requiring a pharmacist to have a license to sell intoxicating liquor. The same year a law passed allowing the town supervisor the authority to act as the Board of Health, with no power to control the sources of filth and causes of sickness.

1911

- The first legislative session in the new Stone Capitol in Pierre.
- Kirk G. Phillips and Dr. A.M. McKinney opened the first drug store on Main Street in Deadwood

1912

- 30,000 automobiles were in South Dakota. That year SD State College met the demand for auto mechanics, and began offering a 3 week course on gas engines, ignitions, electrical cooling systems and car repairs. Tuition was $1.00.

1914

- Congress passed the Harrison Narcotic Act that regulated the purchase and sale of morphine, codeine, heroin, cocaine and opium or any of their derivatives

1915

- 853 registered pharmacists in South Dakota 661 in state and 192 out of state.
- The graduating class of SDSU included 10 with Ph.G. and 3 with B.S. degrees.

1916

- Because if WWI all the prices rose. The sale of 75 % drugs double in price.

1917

- April 6, US declared war on Germany. 32,791 South Dakotans either enlisted or were drafted to server their country. There were over 40 pharmacists included in the group.
- At Aberdeen convention. Shortages and increased prices of pharmaceutical products were discussed.
- Convention resolution urged South Dakota Congressional Delegation to as the military to give a higher rank to pharmacists in the U.S Service and also place them upon equal footing with other branches of service.
- Professor Bower T Whitehead, Head of Department of Pharmacy at SDSU, died on April 1.
- A Veteran Druggist Association was formed for the first

time in 1926.

- SDPhA donated an ambulance to the South Dakota National Guard.

1918

- South Dakota State College offered Ph.C (pharmaceutical Chemist) degree which was a 3 year course was offered right along with the Ph.G. two year pharmacy course. This course ended in 1930.

1920

1921

- Commercial Travelers changed their name to Allied Drug Travelers.
- 49 candidates appeared of the board exams. All were high school graduates 21 held a Ph.G. degree from State College, five from other Colleges of pharmacy, seven were women with their Ph.G. degrees.

1923

- Whitehead chapter of SDPhA established at State College.
- At the regular meeting, Chairman of the Trade interstate Committee, told the pharmacists that only 2 percent of the people in any given community are taking medicine at any one time. Therefore, pharmacists must sell to the other 98 percent such items as perfumes, soaps, electrical supplies, sporting goods, stationary, cigars, proprietary medicines, and items from the soda fountains, to name a few.
- The gross sales of $40,000 by a pharmacists usually netted about $2000 a year. They averaged about $10 a day.

1924

- The name changed to South Dakota State Pharmaceutical Association.
- At convention the amended the constitution to create two new committees: Commercial Section and an Educational and Legislative section. They also changed their name to South Dakota Pharmaceutical Association.
- A law was passed that laypersons could also sell certain designated poisons under a poison license. A permit was purchased for $1.00

1927

- The first memorial hour was conducted at the convention in Mobridge.
- The Optimists was mailed out to the members.
- the Board required that all apprentice time be registered with the Board of Pharmacy office. In 1928, the Board of Pharmacy began to give separate exams for registered pharmacists and for registered assistant pharmacists. A candidate for registered pharmacist needed to be 21 years old and an assistant need to be 18 years old.
- There were 70 registered assistant pharmacists of which 45 were practicing in state. Five of the 45 were women. In 1949 there were none registered? The annual renewal fee was $1.00.

1928

- The Board of Pharmacy began to give separate exams for registered pharmacists, and for registered assistant pharmacists.

1929

- The board gave the Division of Pharmacy State College all the examinations because of the excellent facilities.

1886-1930 Annual Meetings

- 1886- Mitchell
- 1887- Sioux Falls
- 1888- Huron
- 1889- Aberdeen
- 1890- Watertown
- 1891- Madison
- 1892- Sioux Falls
- 1893- Yankton
- 1894- Huron
- 1895- Lake Madison
- 1896- Madison
- 1897- Sioux Falls
- 1898- Mitchell
- 1899- Watertown
- 1900
- 1901- Refield
- 1902-Flandreau
- 1903- Canton
- 1904- Mitchell
- 1905- Aberdeen
- 1906- Sioux Falls
- 1907-Huron
- 1908- Watertown
- 1909- Lead
- 1910- Yankton
- 1911- Huron
- 1912- Hot Springs
- 1913- Sioux Falls
- 1914- Aberdeen
- 1915- Lake Madison
- 1916- Mitchell
- 1917- Watertown
- 1918- No Convention due to WWI
- 1919- Lead
- 1920-
- 1921- Sioux Falls
- 1922
- 1923
- 1924- Rapid City
- 1925- Lake Madison
- 1926- Watertown
- 1927- Mobridge
- 1928- Huron
- 1929- Mitchell
- 1930- Sioux Falls

At the SDPhA Conventions they had various games from guessing games of chance to foot races, totaling 27 events and they had a dance. They gave awards for the longest distance traveler by auto. They had a baseball game between the pharmacists and the commercial travelers.

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South Dakota State University

College of Pharmacy

Dennis Hedge

Dean

SDSU College of Pharmacy: Dean's Message

The 2009-10 academic year was one that will be long remembered in the history of our College. Overall, we enjoyed remarkable success and delighted in being witness to the construction of the Avera Health and Science Center on our campus. At the same time, we responded to financial challenges relating to the current economy which necessitated a thorough review of our operations. Through that process, and the work of our outstanding faculty and staff, we were able to reduce expenses, yet continued to offer high-quality educational experiences to our students, made great strides in the area of research, and continued to be visible and active in communities across the region.

As we look ahead to the next school year, our attention is squarely on our move into the Avera Health and Science Center, a 144,600 square feet facility for health science education and research. Features of the state-of-the-art facility include:

- A pharmacy practice laboratory designed to accommodate up to thirty students. The lab is technology-equipped for simulation exercises for the purpose of teaching models of patient care in great depth.
- A pharmaceutical sciences laboratory designed for "hands-on" instruction in the fields of pharmacology, medicinal chemistry, and pharmaceutics. Up to thirty students can experience "hands-on" activities at a time.
- Pharmacy practice faculty members stationed at off-campus locations will have dedicated office space when returning to campus enhancing overall productivity.
- A centralized approach to student services with a room dedicated to student recruitment and retention. Within the space, advisors, students, and family members can meet for advising, counseling, and general discussions on the pharmacy program.
- A student resource room with eight computers and a plasma communication message board. The board enables faculty to communicate with students regarding class schedules, deadlines, scholarship information, and professional activities.
- Two major lecture halls with each having a seating capacity of ninety. They are dual "smart classroom technology" equipped, allowing for tremendous flexibility and creativity in course content delivery.
- A pharmaceutical sciences research wing in renovated Shepard Hall. In addition to shared facilities such as a Cell Culture Lab, twelve individual laboratories will exist for faculty, which will increase our potential for additional grant funding.

We take great pride in knowing that we are moving into a building that will allow us to conduct important, problem-solving research, and teach pharmacy care of today and tomorrow. Please be looking for an announcement regarding our ceremonial opening. We look forward to seeing many of you on that historic day.

Best wishes,

Dennis D. Hedge, Dean of Pharmacy

Academy of Student Pharmacists

Kayley Lyons
APhA-ASP President

Greetings from APhA-ASP!

Summer time is a student's favorite time of year! It's the time of year to relax, recharge, and take what we learned in the classroom and apply it to our summer internships and introductory experiences. This summer 25 of our chapter members also had a great time at SDPhA's Summer Convention in Chamberlain, SD! We appreciate the opportunity to attend this event with a free registration thanks to SDPhA. Every student who attended had a great time while learning more about their future profession and networking with experienced pharmacists.

Before the spring semester ended, APhA-ASP took part in the Student Recognition Program. During the program I announced the APhA-ASP Members of the Year. Congratulations to the following recipients: Pre-Pharmacy-Justin Cunningham, P1-Kristin Brown, P2-Joseph Rose, P3-Matt Hines, and P4-Dustin Schrader. Each member went above and beyond his or her duty to develop our chapter into an award winning chapter. Thank you all for your hard work and winning attitude. Also, APhA-ASP hosted the annual P1 Social for the incoming P1's which included mat ball and Subway sandwich platters.

The fundraising committee and APhA-ASP would like to thank everyone who helped out and/or attended the annual APhA-ASP auction which was held in Sioux Falls and Brookings. It was a great success, and we raised over $3500. Our chapter will use that money to defer costs for regional and national meetings attended by our student pharmacists. I would like to especially thank the Fundraising Co-Chairs; Matt Hines, Kris Kirchner, and Joe Rose. These individuals are responsible for organizing the auction and making it the great success it was. We hope that you'll join us again next year.

At the end of the school year we had an executive team retreat where we looked at the results from a chapter wide survey. From looking at our members input, we came up with several new ideas and plans which we are energetic about implementing. Our goals for the fall are to recruit 362 members, design a great hobo day float for the parade, and increase faculty, pre-pharmacy and P3 involvement. Please encourage any student pharmacist you know to attend the following planned events…

September:

7th (6pm Avera HSC)	Pre Pharmacy Intro/Kickball
8th (3-6pm Volstorff)	Pharmacy Organization Fair
9th (6:30pm Rotunda D)	ASP Meeting
16th (4pm Hillcrest Park)	Pharmacy Picnic
20-22nd (3-5pm Avera HSC)	Membership Drive

In the fall semester we will start the year with a pre-pharmacy only introductory event with kickball, food, and information on how they can become involved. The following day we will have our annual fair to showcase our many committees to our future members. This year members will have the option of signing up for however many committees they please. On September 16th at 4pm we will be hosting a Welcome Back Picnic for pharmacy students and faculty. The picnic has been sponsored by the South Dakota Pharmacists' Association the past several years, and we greatly appreciate the support.

I would like to conclude by thanking our advisors Dr. Teresa Seefeldt and Dr. Kelley Oehlke for their service, support, and guidance. They have wonderful ideas and are always a pleasure to work with.

Sincerely Yours,

Kayley Lyons
APhA-ASP President
South Dakota State Chapter

SD Association of Pharmacy Technicians

Phyllis Sour

SDAPT President

Thank-you to Sue and SDPHA for another great convention and for providing a terrific line-up of continuing education. It was a very enjoyable and educational week end.

Summer has just begun, but we are busy planning our Fall Business Meeting and Continuing Education. The date has been set for October 9th in Pierre. The meeting will be held at the CUC building near the hospital on Dakota Ave. I am confident that presenting the meeting in Pierre will make it more convenient for technicians throughout the state to attend. There will be 4 to 5 hours of CE offered with one hour of law for those who need it for recertification. The fee will remain at $20.00 for non-SDAPT members and FREE for technicians that are members of SDAPT, the noon meal is included. A registration form can be found in this issue of the JOURNAL.

Our current SDAPT memberships will expire at the end of August. Our dues will remain at $35.00 for the year and we will post a membership form on our website at www.sdapt.org. We will also be e-mailing notices to our current members. I encourage all technicians to join SDAPT so that you can network with others and make an impact on your chosen profession. Other benefits are, as previously mentioned Free fall continuing education and business meeting, and also the SD Pharmacists Journal subscription and a reduced registration fee for the SDPHA annual convention with continuing education. If you have any questions on becoming a member, please feel free to contact me or any of the officers of SDAPT.

In closing I would like to take this opportunity to say farewell to Ann Oberg, our past-president, and to thank her for her dedication, hard work and support of SDAPT. Ann has taken a position out of state and we at SDAPT wish her the best and good luck on her new venture.

Have a wonderful summer

Phyllis Sour

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Bonnie Small,bsmall@yahoo.com

2010 SDAPT FALL CE
and
BUSINESS MEETING REGISTRATION FORM

Registration Deadline: September 25, 2010
All attendees must pre-register.

Name _____

Address _____

_____

Phone _____

Email _____

___SDAPT Member (No Charge)

___Non-Member- $20.00 Fee

(Checks payable to SDAPT)
Mail registration form along with required fee to:
SDAPT Treasurer, Bonnie Small
19896 Canning Rd
Blunt, SD 57552

Questions: Contact Bonnie Small at: bnnsmll@yahoo.com

SD Society of Health-System Pharmacists

Jan Opperman
SDSHP President

Greetings from SDSHP! Here is a brief report of recent and upcoming SDSHP activities:

Our 34th Annual Conference took place April 9th and 10th at the Rushmore Plaza Holiday Inn in Rapid City. We had 100 convention participants, 27 exhibitors, and 12 poster presentations. It was another record breaking convention for us and we are grateful to our members for making it such a success. The attendees enjoyed plenty of continuing education, networking and learning opportunities, plus a little free time to enjoy the beauty of the Black Hills! Especially impressive was the number and the content of the poster presentations – all of the presenters did a great job and presented information relevant to the current practice of health-systems pharmacy.

At the convention the new board members were inducted and include:

Past President: Jodi Wendte of Sioux Falls
President-elect: Erin Christensen of Sioux Falls
President: Jan Opperman of Rapid City
Secretary: Gary Van Riper of Brookings
Treasurer: Steffanie Danley of Watertown
Technician Board Member: Katie Timm of Rapid City
Board Members: April Schulz and Deanna Visser both of Sioux Falls
Student Board Members: Lisa Becker (of Yankton) and Terry J. Hoffmann (of Brookings)

We also would like to recognize Marilyn Eighmy of Brookings, Support Specialist, for all her assistance to SDSHP.

Throughout this past year several very successful joint continuing education events were sponsored by members of the pharmacy alliance group including SDSHP, SDPhA, the SD Board of Pharmacy, and the SDSU College of Pharmacy. Through the help of RDTN we were able to hold the live programs in Sioux Falls and network to Rapid City. These programs were well attended and we look forward to bringing you future CE programs either live or via RDTN.

Upcoming SDSHP Events:

- Mark your calendars and register for the 9th Annual Gary Van Riper Society Open Golf Classic to be held on July 23rd, 2010 at Bakker Crossing Golf Course in Sioux Falls. Proceeds from the event go towards scholarships for pharmacy students. Registration and event information can be found on our website at www.sdshp.com. It is sure to be a good time so we hope to see you there and we thank you for your support.
- We would like to congratulate a couple of our members on their participation in our national ASHP society: Eric Kutcher and Tom Johnson are both running for leadership positions within ASHP. Tom Johnson is running for ASHP Board Member and Eric Kutcher is running for Chair of the Section of Clinical Specialists and Scientists. Ballots will be mailed to ASHP members the end of July so please show your support and participate in the voting process!
- The 35th Annual SDSHP Conference is scheduled for April 1 and 2, 2011 at the Ramkota Hotel & Conference Center in Sioux Falls. Mark your calendars now to be sure to attend this event. We look to provide another high quality conference to the pharmacists, technicians, students and exhibitors of our state!

Enjoy your summer!

Jan Opperman, PharmD
President
South Dakota Society of Health-System Pharmacists
www.sdshp.com

AND THE LAW

By Done R McGuire Jr., R.PH., J.D

This series, Pharmacy and the Law, is presented by Pharmacists Mutual Insurance Company and your State Pharmacy Association through Pharmacy Marketing Group, Inc., a company dedicated to providing quality products and services to the pharmacy community.

SPOLIATION OF EVIDENCE.....

As a pharmacist, you are aware that if you dispense an incorrect medication, you must take care of the patient. This normally includes apologizing for the error, correcting the mistake, and contacting the patient's physician. These are all important, but you may forget that you also need to take care of yourself. If a patient receives an incorrect medication, there is always a chance they could sue you. That is why it is so important to gather and preserve all relevant information about that incident.

The best thing you can do after a dispensing error has occurred is to thoroughly document the situation. It is recommended that you record the following: how the error occurred, the date the error occurred, the date the error was discovered by the patient, the date the error was brought to the pharmacy's attention, the amount of doses the patient believes they ingested, the amount of doses returned to the pharmacy, and the names of anyone you spoke to while resolving the issue. Document all conversations with the patient or the caregiver. Don't use an abbreviated form of documentation. Use complete words and sentences. It may be easy for you to recall all of the details now, but it could be a year or more before a lawsuit is filed. After filling thousands of prescriptions and handling other problems, it may be impossible for you to remember anything about that specific incident. To be safe, all documentation should allow a party who was not involved to fully understand the situation.

It is worth mentioning a second time to document the amount of doses the patient brought back to the pharmacy and preserve the physical evidence. Too often a pharmacist will verify the patient received the incorrect prescription and then dispose of the medication. They have just disposed of a valuable piece of evidence. The number of doses returned to the pharmacy can help establish the maximum number of doses the patient could have ingested. At any time in the future, if the patient claims they took a specific quantity of capsules/tablets, you will be able to confirm or deny this claim with your documentation and the returned prescription vial. Count the tablets and save the bottle. Treat this as evidence by placing it in an envelope and sealing it with your initials on the closure.

The production of evidence in litigation is governed by the Rules of Civil Procedure. The rules require a party to preserve evidence in a number of situations. It could be in situations of actual pending litigation or when a party is put on notice of a potential claim. It is also a requirement to keep evidence if a party reasonably anticipates that the information might be needed for future reference. As you can see, the requirement to preserve evidence is broad. It can be argued that a patient returning to the pharmacy with incorrect medication that resulted in an injury creates a situation where litigation is reasonably foreseeable. The best practice is to assume this is true and preserve the evidence.

Spoliation is the destruction or significant alteration of evidence in a case. What happens if you don't preserve evidence? The rules also provide the sanctions available when spoliation occurs. These sanctions run the gamut from reprimands, findings of contempt, up to dismissal of a case. Generally, it will take an egregious violation for a court to dismiss or default a case, so it is not very common.

However, it is more common for the court to allow the jury to make a negative inference from the spoliation of evidence. That is, the jury is allowed to presume that the evidence destroyed was more likely injurious to the destroying party's case than it was likely beneficial to their case. This is really a common sense application. People are not likely to destroy things that will be helpful to them. This, of course, is not true in all cases, but what is a jury to do if the evidence is destroyed? The returned prescription might have proven your case, but if you disposed of it, the court will give the jury the spoliation instruction. This instruction can be very damaging to your case and may result in a significant verdict against the destroying party.

The bottom line is you should be able to reproduce or recall details in the future that you would have been able to answer the day the patient presented with the error. If you destroy, dispose of, or do not record some piece of evidence, it could have severe consequences. All of this documentation and preservation is in your best interest. Protect yourself, be complete.

Don R. McGuire Jr., R.Ph., J.D., is General Counsel at Pharmacists Mutual Insurance Company.

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Pfizer Working together for a healthier world™

Continuing Education for Pharmacists

Natural Products: Vitamins B-3, B-5, and B-6

J. Richard Wuest, R.Ph., Pharm.D.
Professor Emeritus
University of Cincinnati
Cincinnati, Ohio

and

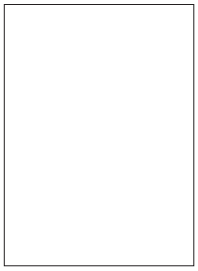
Thomas A. Gossel, R.Ph., Ph.D.
Professor Emeritus
Ohio Northern University
Ada, Ohio

Goals. The goals of this lesson are to present information on the claims, mechanisms of action, typical dosages used and other items of interest on natural products and nutraceuticals alphabetically from vitamin B-3 to vitamin B-6, and to provide background information for assisting others on their proper selection and use.

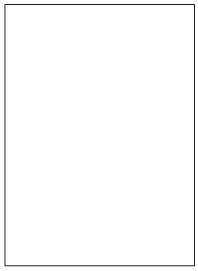
Objectives. At the conclusion of this lesson, successful participants should be able to:

1. exhibit knowledge of the claims, mechanisms of action, and typical dosages for natural products and nutraceuticals presented;
2. select from a list, the synonyms for these products;
3. describe popular uses of the products discussed; and
4. identify sources for information on natural products.

This lesson is part of a series that presents an overview of the common uses, proposed mechanisms of action, typical dosage regimens and other information of interest on natural products and nutraceuticals.



Gossel



Wuest

Vitamin B-3 (niacin), also known as niacinamide, anti-black tongue factor, antipellagra factor, nicotinamide, nicotinic acid and pellagra prevention factor, is present in many foods including cereal grains, eggs, fish, green vegetables, legumes, meat, milk, poultry, and yeast. In addition to utilizing preformed niacin, humans can also metabolize niacin from l-tryptophan contained in proteins in some of these foods.

Pellagra, the disorder resulting from niacin deficiency, was first recognized as a disease in the 18th century in Italy. Its name was derived from the Italian *pella agra* which denotes rough or irritated skin.

By 1912, scientists believed that a pellagra-preventive vitamin existed. In 1926, pellagra was induced in volunteers on a niacin-deficient diet and it was subsequently cured with yeast therapy. Soon thereafter, the chemical structure of vitamin B-3 was discovered.

Originally named nicotinic acid, vitamin B-3 was first synthesized as an oxidation product of nicotine. However, considerable confusion between the names nicotine and nicotinic acid arose to the point that the name of the latter was simplified to niacin.

The term "niacin" specifically refers to nicotinic acid, but is also used to denote niacinamide/nicotinamide. Both niacin and niacinamide provide the nutritional benefits of vitamin B-3, but only niacin exerts vasodilatory and lipid-lowering activity.

Niacin (and its metabolites) is involved in a large number of biologic processes in humans, including: maintenance of genomic integrity (proper function of genes and chromosomes); production of energy; regulation of gene expression; and synthesis of fatty acids, cholesterol and steroids.

Pellagra is also called the "3 Ds" since it is characterized by dermatitis, diarrhea and dementia. Untreated, the condition leads to a fourth "D," death.

Gastrointestinal symptoms are often the first to appear. They include glossitis (inflammation of the tongue), stomatitis (inflammation of the mouth), loss of appetite and abdominal discomfort.

The dermatitis portion of pellagra is primarily located on sun-exposed skin on the arms, face, feet, and hands. Lesions progress from a red, itching rash to blisters with scales and fissures to thickened, lichenified (hard, flat, solid skin elevations that resemble leather), hyperpigmented skin.

Early mental symptoms of the deficiency include a feeling of weariness, apprehension, depression and loss of memory. These may be followed by disorientation, confusion, hysteria and sometimes, maniacal outbursts.

Table 1
Representative Sources for Information on Natural Products

American Botanical Council	www.herbalgram.org
Facts and Comparisons	www.factsandcomparisons.com
Food and Drug Administration	www.fda.gov (*click on Food*)
National Center for Complementary and Alternative Medicine of the National Institutes of Health	www.nccam.nih.gov
PDR for Herbal Remedies PDR for Nutritional Supplements	www.pdr.net
Pharmacist's Letter	www.naturaldatabase.com

While pellagra occurs relatively rarely in this country (due, in large part, to enriched flour and cereals), it can occur under certain conditions such as alcoholism, cirrhosis of the liver, malabsorption syndrome, and total parenteral nutrition lacking sufficient niacin.

Some conditions increase niacin requirements, including diabetes, hyperthyroidism, cirrhosis of the liver, pregnancy and lactation. Niacin is required for lipid metabolism, tissue respiration and conversion of glycogen into glucose. It is incorporated into the coenzymes nicotinamide adenine dinucleotide (NAD) and nicotinamide adenine dinucleotide phosphate (NADP) that serve as hydrogen carrier molecules. These biochemical functions are of paramount importance for normal tissue integrity, particularly for the skin, the gastrointestinal tract and the nervous system.

Niacin (or niacinamide) is used for preventing vitamin B-3 deficiency and menstrual headache; treating pellagra, schizophrenia, drug-induced hallucinations, chronic brain syndrome, hyperkinesis, depression, motion sickness, alcoholism, acne; improving circulation; and promoting relaxation. The nicotinic acid form of niacin is also used for treating hyperlipidemia, peripheral vascular disease, vascular spasm, migraine headache, Meniere's syndrome and vertigo. Except for treating hyperlipidemia, the scientific establishment does not believe there are sufficient well-controlled studies to prove niacin is therapeutically effective in treating many of these conditions.

Beneficial effects of niacin in treating hyperlipidemia have been proven. The National Cholesterol Education Program (NCEP) recommends niacin as second-line single-drug therapy or in combination with other cholesterol-lowering drugs when diet and single-drug therapy have been ineffective. Niacin reportedly reduces cholesterol as well as HMG-CoA reductase inhibitor statins and bile acid sequestrants in many clinical studies, but it causes a much higher incidence of annoying adverse effects and lower tolerance by patients.

The controlled-release, extended-release formulations that are taken in the evening and release much of the niacin dose during normal sleeping hours are claimed to reduce the level of annoying adverse effects and assist patient compliance.

Niacin, but not niacinamide, given in high doses (1 gram or more per day) decreases serum low-density lipoprotein cholesterol (LDL-C), increases high-density lipoprotein cholesterol (HDL-C) and decreases triglycerides. The exact mechanism for these actions has not been determined.

It is known that niacin does inhibit free fatty acid release from adipose tissue; inhibits cyclic AMP accumulation, which controls the activity of triglyceride lipase and lipolysis; decreases the rate of synthesis of LDL-C and very low density lipoprotein cholesterol (VLDL-C) in the liver; and increases the rate of triglyceride removal from the blood due to increasing lipoprotein lipase activity.

Niacin produces vasodilation of cutaneous blood vessels of the face, neck, and chest, possibly due to activity on prostaglandins. Tolerance to these effects has been found to occur within two weeks.

There are no known adverse effects caused by niacin contained in foods or multiple vitamin products containing Recommended Dietary Allowance (RDA) amounts. The form of niacin most commonly used for these foods and commercial supplements is niacinamide.

Flushing, characterized by burning, tingling, and itching, along with redness of the face and arms, have been reported with doses as low as 30mg of the nicotinic acid form of niacin. Higher doses have been associated with increased intracranial pressure and headache.

Megadoses (more than 3 grams) of nicotinic acid have been reported to cause flatulence, bloating, heartburn, nausea, vomiting, diarrhea, sweating, chills, insomnia, hypotension, dizziness, fainting spells, arrhythmias, severe headache and blurred vision.

Most patients taking the doses of nicotinic acid used in treating hyperlipidemia reportedly will experience flushing and other skin sensations. The controlled release dosage forms reduce this occurrence in many patients. Another method for lessening these effects is to pretreat patients with aspirin, since the vasodilatory effects of niacin are linked to its release of prostaglandins. Slow titration of the nicotinic acid dosing is beneficial. Additionally, flushing tends to decrease as therapy continues in most patients.

The typical dose of niacin as a dietary supplement is 10 to 20mg

daily. The U.S. Recommended Dietary Allowance (RDA) for niacin used to calculate the percent of daily values on food and nutritional supplement labels is 20mg. The U.S. RDA based on age are listed in Table 2.

The usual dose for treating mild vitamin B-3 deficiency is 50 to 100mg daily. For pellagra, 300 to 500mg daily in divided doses is given to adults. The dose used in children is 100 to 300mg daily in divided doses.

When treating hyperlipidemia, typically patients are titrated from starting doses, beginning as low as 125mg of a controlled-release dosage form twice daily, upward to 1.5 to 3 grams per day to minimize adverse effects. Some patients reportedly must receive as much as 9 grams of niacin daily to achieve an adequate response.

Table 2
Recommended Dietary Allowances (RDA) for Vitamins B-3, B-5, B-6*

Age	RDA (*Daily*) Vitamin B-3	Vitamin B-5	Vitamin B-6
infants			
0-6 months	2mg	1.7mg	0.1mg
7-12 months	4mg	1.8mg	0.3mg
children			
1-3 years	6mg	2mg	0.5mg
4-8 years	8mg	3mg	0.6mg
boys			
9-13 years	12mg	4mg	1mg
14-18 years	16mg	5mg	1.3mg
girls			
9-13 years	12mg	4mg	1mg
14-18 years	14mg	5mg	1.2mg
men			
19 years and older	16mg	5mg	1.7mg
women			
19 years and older	14mg	5mg	1.5mg
pregnancy	18mg	6mg	1.9mg
lactation	17mg	7mg	2mg

**Issued by the Food and Nutrition Board of the Institute of Medicine at the National Academy of Science.*

Vitamin B-5 (pantothenic acid), also known as calcium pantothenate, dexpanthenol, dexpanthenolum, D-panthenol, D-pantothenol and D-pantothenyl alcohol, is widely distributed in plant and animal food sources. Its name was derived from the Greek *pantos* which means *everywhere*. Rich sources include organ meats such as liver, vegetables (especially broccoli, soybeans and lentils), cereal grains, legumes, egg yolks, cashews, peanuts, brown rice and milk. The intestinal flora of humans also synthesize pantothenic acid in small amounts. The dextrorotatory form of pantothenic acid provides the nutritional activity of vitamin B-5.

Rather than being commercially available as a single ingredient product, vitamin B-5 is most frequently marketed as a component of vitamin B complex formulations.

The activity of vitamin B-5 within the body mostly depends on its conjugated nucleotide form--coenzyme A (CoA). This coenzyme is found in nearly all human tissues and is one of the foremost coenzymes for tissue metabolism.

The other major biologically active form of pantothenic acid is acyl carrier protein (ACP). ACP functions as a coenzyme in the synthesis of new fatty acids (as compared to those that are a product of breakdown of lipid materials).

As a member of the B group of vitamins, vitamin B-5 is an essential nutrient for humans. It is involved in many biological reactions, including the catabolism of amino acids, acetylation reactions in gluconeogenesis, production of energy, and the synthesis of acetylcholine, cholesterol, heme, phospholipids and steroid hormones. It is also believed to be essential for the proper regulation of gene expression and signal transduction.

The presence of a "pellagra-like" dermatitis in chicks fed a restricted diet was first described in 1931. The existence of an antidermatitis factor in yeast given to chicks was recognized in 1939, and the actual compound was isolated the same year. Discovery of the chemical structure of vitamin B-5 and the synthesis of pantothenic acid occurred in 1940.

A clinical deficiency of vitamin B-5 in humans is rare, but it can be induced with a diet lacking the vitamin, which has been accomplished in human volunteers. Symptoms of vitamin B-5 deficiency include numbness in the toes and painful burning in the feet, headache, fatigue, insomnia, intestinal disturbances, impaired antibody and blood component production, and disrupted enzyme activity.

In addition to its use as a dietary supplement, pantothenic acid is also claimed to be useful for treating acne, alcoholism, allergies, alopecia, asthma, burning feet syndrome, carpal tunnel syndrome, colitis, conjunctivitis, convulsions, and cystitis. Further, it is used to treat dandruff, depression, diabetic neuropathy, enlarged prostate, glossitis, greying of hair, headache, hyperkinesis, hypoglycemia, immune system enhancement and insomnia. Pantothenic acid is also touted as being beneficial for treating leg cramps, multiple sclerosis, muscular dystrophy, neuralgia, osteoarthritis and rheumatoid arthritis, and

Parkinson's disease. In addition, it is used for peripheral neuritis, premenstrual syndrome, psychiatric disorders, shingles, skin disorders, stomatitis and vertigo, and providing reduced susceptibility to colds and flu. Topically, dexpanthenol, the alcohol analog of pantothenic acid, has been used to treat itching and to promote healing of acne, dermatitis, diaper rash, eczema, insect bites, and poison ivy.

Several decades ago, dexpanthenol was often administered by intramuscular or intravenous injection after major abdominal surgery to stimulate intestinal peristalsis to minimize paralytic ileus, for inadequate tone of intestinal smooth muscle causing abdominal distention, and to treat paralytic ileus.

As a dietary supplement, the typical dose of pantothenic acid is 5 to 10mg daily. The U.S. RDA based on age are listed in Table 2.

Vitamin B-6 is a collective term referring to a group of related chemicals: pyridoxal (an aldehyde), pyridoxine (an alcohol), pyridoxamine (an amine), and their phosphorylated derivatives. Discussion of vitamin B-6 generally refers only to pyridoxine, but all of these chemicals exert vitamin B-6 activity.

In humans, vitamin B-6 activity occurs principally in the form of the coenzyme pyridoxal 5-phosphate. It is involved in a wide range of biochemical reactions, including: the metabolism of amino acids and glycogen; synthesis of DNA and RNA; production of sphingolipids (building blocks of the myelin tissue in nerve fibers); and synthesis of the neurotransmitters dopamine, gamma-aminobutyric acid (GABA), norepinephrine and serotonin.

Vitamin B-6 reportedly is a coenzyme for over 100 enzymes in the body. These include many of the enzyme systems involved in amino acid metabolism such as decarboxylases and transaminases. It is also a cofactor for enzymes involved in the metabolism of homocysteine. High serum levels of homocysteine are a risk factor for atherosclerosis. Vitamin B-6 deficiency has been linked to high plasma homocysteine levels, so there are advocates of the use of vitamin B-6 to reduce homocysteine levels and the incidence of atherosclerosis. At this point in time, there is insufficient clinical evidence to prove therapeutic benefits from this use.

Many foods contain vitamin B-6, including meat, fish, poultry, eggs, potatoes, noncitrus fruits, cereals and legumes. Bacteria in the intestinal flora can produce small amounts of vitamin B-6.

Vitamin B-6 deficiency exhibits itself as anemia, chapped lips progressing to lesions, inflammation of the mouth and tongue, seizures, seborrheic dermatitis, irritability, peripheral neuropathy, confusion and depression. Other than dietary deficiency of vitamin B-6, subclinical deficiencies of the vitamin can occur as a result of alcoholism, cancer, cirrhosis of the liver, heart failure, malabsorption syndromes, uremia; in the elderly; and during pregnancy.

There are drugs that reportedly deplete vitamin B-6, requiring supplementation concurrent with their therapy. These include estrogens, ethionamide, hydralazine, isoniazid, loop diuretics, penicillamine and theophylline. Vitamin B-6 supplementation is routinely given to patients receiving these drugs to prevent peripheral neuropathy, especially with isoniazid and oral contraceptives.

In addition to its use as a dietary supplement, vitamin B-6 is also claimed to be useful for treating alcoholism and alcohol overindulgence, allergies and asthma, arthritis, carpal tunnel syndrome, depression associated with pregnancy or oral contraceptive use, diabetic neuropathy, dizziness and motion sickness.

It is also used to treat heart disease, hyperkinesis, hyperlipidemia, menopausal symptoms, muscle and night leg cramps, morning sickness of pregnancy, premenstrual syndrome, prevention of cancer and kidney stones, radiation sickness, seizure disorders, stimulation of appetite, and tardive dyskinesia.

Proof of significant toxicity to vitamin B-6 is lacking, but with very high doses of pyridoxine, nausea, vomiting, abdominal pain, loss of appetite and breast soreness have been reported.

The typical dose of pyridoxine as a dietary supplement is 2mg daily, as well as the U.S. RDA used to calculate the percent of daily values on food and nutritional supplement labeling.

The usual dose for treating vitamin B-6 deficiency is 2.5 to 25mg daily for three weeks. For prevention of deficiency in women taking oral contraceptives, 25 to 30mg daily is recommended. For premenstrual syndrome, the usual daily dose is 50 to 100mg.

In patients taking isoniazid, the typical dose for prevention of vitamin B-6 depletion and the resulting peripheral neuropathy is 10 to 50mg daily. For nausea during pregnancy, 10 to 25mg every eight hours is recommended.

Continuing Education Quiz

"Natural Products: Vitamins B-3, B-5, and B-6"

1. In addition to utilizing preformed niacin, humans can also metabolize niacin from:

   a. acetylcholine. c. l-tryptophan.
   b. d-pantothenic acid. d.serotonin.

2. The term pellagra was derived from the Italian words pella agra which denotes:

   a. beautiful lady. c. hair loss.
   b. good earth. d. rough or irritated skin.

3. Pellagra is characterized by all of the following EXCEPT:

   a. diabetes. c. dermatitis.
   b. dementia. d. diarrhea.

4. The National Cholesterol Education Program recommends niacin as a second-line drug for treating hyperlipidemia because it:

   a. is less effective than HMG-CoA reductase inhibitors.
   b. causes a much higher incidence of annoying adverse effects.
   c. results in higher tolerance than HMG-CoA reductase inhibitors.
   d. increases the rate of synthesis of LDL-C & VLDL-C.

5. Most patients taking the doses of nicotinic acid used in treating hyperlipidemia reportedly will experience:

   a. constipation. c. migraine.
   b. flushing. d. vertigo.

6. The action of Vitamin B-5 within the body mostly depends on its conjugated nucleotide form:

   a. coenzyme CoA.
   b. coenzyme cytochrome P450.
   c. coenzyme pyridoxal 5-phosphate.
   d. coenzyme Q-10.

7. In addition to its use as a dietary supplement, pantothenic acid is also claimed to be useful in treating all of the following conditions EXCEPT:

   a. alopecia.
   b. burning feet syndrome.
   c. carpal tunnel syndrome.
   d. hyperlipidemia.

8. Vitamin B-6 is involved in the synthesis of all of the following EXCEPT:

   a. acetylcholine.
   b. dopamine.
   c. gamma-aminobutyric acid.
   d. serotonin.

9. Vitamin B-6 is given to patients receiving which of the following to prevent peripheral neuropathy?

   a. Aminoglycosides c. Isoniazid
   b. Ciprofloxacin d. Sulfonamides

10. The typical daily dose for vitamin B-6 when used to prevent peripheral neuropathy is:

    a. 0.1 to 0.5mg. c. 10 to 50mg.
    b. 1 to 5mg. d. 100 to 500mg.

This course expires on: July 11, 2013
Target audience: Pharmacists and Pharmacy Technicians

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Learning Objectives - Pharmacists: 1. Exhibit knowledge of the claims, mechanisms of action, and typical dosages for natural products and nutraceuticals presented; 2. Select from a list, the synonyms for these products; 3. Describe popular uses of the products discussed; 4. Identify sources for information on natural products.

Learning Objectives – Technicians: 1. Identify the signs of pellegra; 2. Describe one of the most common side effects of nicotinic acid; 3. Identify the primary health claims for pantothenic acid; 4. Identify the medications that purportedly deplete B-6 stores, thereby requiring supplementation with B-6.

"Natural Products: Vitamins B-3, B-5, B-6"

(Knowledge-based CPE)

Circle the correct answer below:

1. A B C D	6. A B C D
2. A B C D	7. A B C D
3. A B C D	8. A B C D
4. A B C D	9. A B C D
5. A B C D	10. A B C D

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