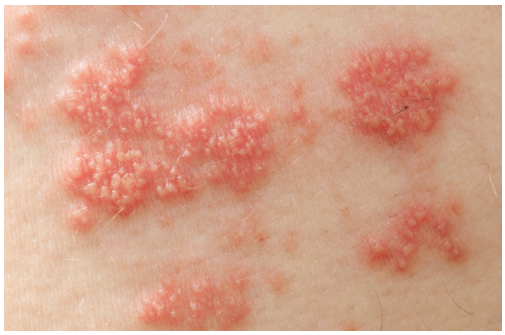
"Shingles (Herpes Zoster)"

June 2014

The objectives of this lesson are such that upon completion:



Pharmacists will be able:

1. Differentiate between HSV-1, HSV-2, chickenpox & shingles.
2. State the mechanism by which patients acquire shingles.
3. List the medications used in management of shingles.
4. Describe the symptoms & signs associated with shingles.
5. Define PHN & relate signs, symptoms & management.

Technicians will be able to:

1. Describe the differences between shingles & chickenpox.
2. Explain how patients acquire shingles.
3. Define PHN.
4. Discuss medications that are used for shingles.

This is a subscription program. To get continuing education credit, you must subscribe to the program, or pay fee for individual lessons.

OTHER 2014 TOPICS

Geriatric Considerations
Parenteral Nutrition
Pharmacy Waste
Nosocomial Infections
Blood Thinners

CE PRN

PHARMACY CONTINUING EDUCATION FROM WF PROFESSIONAL ASSOCIATES

ATTENTION!
DEADLINE INVOLVED!
READ THIS NOW!
VERY IMPORTANT!

Your CE cannot be processed unless we have:

1. **Your NABP eProfile ID # & birthdate (MM/DD).**
2. **Are you a pharmacist or a technician?**
3. **Check your eProfile account monthly. If there are discrepancies & we are not made aware of them within 60 days, there is NO recourse.**
4. **All of the above are YOUR responsibility. We have NO control.**

WHEN YOU SEND IN QUIZZES, ALWAYS KEEP A COPY. EMAIL OR FAX THEM. FAX TO 847-945-5037. OR SEND A CONVENTIONAL EMAIL WITH YOUR ANSWERS TO CEINFO@WFPROFESSIONAL.COM.

This lesson provides 1.25 hours (0.125 CEUs) of credit, and is intended for pharmacists and/or technicians in all practice settings. **Program ID #s 707-000-14-006-H01-P (for Pharmacists); 707-000-14-006-H01-T (for Technicians). Participants completing this lesson by May 31, 2017 may receive full credit.**

To obtain continuing education credit for this lesson, you must answer the questions on the quiz (70% correct required), and return the quiz. Should you score less than 70%, you will be asked to repeat the quiz. Computerized records are maintained for each participant.

If you have any comments, suggestions or questions, contact us at the above address, or call 1-847-945-8050. **Please write your NABP eProfile (CPE Monitor) ID Number & birthdate (MM/DD) & your CE PRN ID Number (the number that is on the top of the mailing label) in the indicated space on the quiz page** (for continuous participants only).

CE PRN® (ISSN 0199-5006) is owned and published by W-F Professional Associates, Inc. 400 Lake Cook Road, Suite 207, Deerfield, Illinois 60015. William J. Feinberg, President. CE PRN® is published eleven times per year, monthly, January through November. Subscription rate is $110.00 per year. POSTMASTER: Send all address changes to W-F Professional Associates, Inc., 400 Lake Cook Road, Suite 207, Deerfield, IL 60015.

Shingles, also known as herpes zoster, is a nerve infection caused by varicella zoster virus (VZV) which is the same virus that causes chickenpox. This is a herpes simplex type virus (HSV-1 & HSV-2) which involve sensory ganglia and the surrounding skin. The infections are accompanied by pain along the affected nerves, as well as rash or blisters. The emergence of the lesions occurs as a result of reactivation of latent VZV. Other names for VZV are chickenpox virus, varicella virus, zoster virus, and herpes virus type 3. VZV is related to human herpes simplex viruses, but they are not the same. Patients have previously been infected with chickenpox.

HSV-1 & HSV-2

These viruses, which belong to the subfamily alphaherpesvirinae, are the most common viral infections, and are second only to influenza and common cold viruses. The term herpes was derived from the Greek word 'herpein' meaning to 'creep,' and describes one of the characteristics of these infections--- spreading. One of the most prominent characteristics of herpes viruses is their contagiousness and their ability to remain dormant (latent) in nerve ganglia following initial infection. This is followed by reactivation of the virus when conditions are favorable. This cycle can be repeated during the life of a patient. Reactivation often occurs at the site of the initial formation of the rash or blisters.

HSV-1

This virus is known as oral herpes, herpes simplex labialis, orolabial herpes, cold sores and fever blisters. Orolabial herpes relates to the oral opening. The infection exhibits itself as blisters on the lips and around the mouth. About 85% of Americans are infected with HSV-1 and nearly 90% of the population has HSV-1 antibodies by age 50. Once the infection subsides, the virus spreads into the cutaneous nerve ganglion where it remains for a long time and probably for life. The virus will lay dormant within the nerves until it is reactivated. Then it travels from the nerve ganglion to the site where the initial blisters have appeared, usually on the lips. Once the virus reaches the site of reinfection, the patient experiences tingling and burning sensations that stimulate itching. After a day or two, a sore appears that becomes a blister within 24 hours. Then after a few more days the fluid-filled blister(s) burst, dry up and a yellow scab appears. The scab drops off leaving behind a tender area that eventually heals. After recovery, the lesions usually leave no scars. The final step of the cycle is the return of the virus to latency until such a time when it is reactivated to begin another cycle.

HSV-2

HSV-2 is also known as herpes genitalis because the blisters appear in the genital region. The infection affects one in every 4-5 Americans. Nearly 22% of the population has HSV-2 antibodies by age 50. Genital herpes is more likely to be transmitted from males to females. The incidence is more common among females (20.0%) than in males (11.5%) aged 14-49 years of age. Incidents increase with age. Many of the cases are considered asymptomatic, and patients are not aware of the presence of the infection. In fact, about 88% of infected patients are not aware that they had previously been infected with genital herpes or currently have the infection. Today, there are 50 million Americans with HSV-2 and about 775,000 new cases are reported every year. The vast majority of sufferers are asymptomatic or experience mild symptoms that are unnoticeable or mistaken for other skin disorders. When symptoms appear, they are usually blisters filled with liquid. These are usually preceded by tingling, pain and irritation. Within a day the blisters break leaving behind a painful ulcer that develops to a

crust. The rash usually disappears within two weeks. Some female patients may experience low grade fever, dysuria, and vaginal or urethral discharges. Recurrence may appear especially during the first year. However, the symptoms are less intense and heal at a faster rate. The number of outbreaks decrease over time.

TRANSMISSION OF HSV-1 & HSV-2

Transmission of HSV-1 occurs through direct contact with the blisters or saliva of an infected patient.

Transmission of HSV-2 usually occurs via contact with genital secretions. The risk of acquiring infection increases during the presence of active blisters.

PREVENTION OF HSV-1 & HSV-2

HSV-1 may be prevented to a certain extent by avoiding contact with the saliva of an infected person. Additionally, avoid touching blisters.

HSV-2 can be moderately prevented through the use of condoms. It has been estimated that the risk of acquiring HSV-2 can be reduced by 30% when condoms are used. Refraining from sexual activity during the active phase can reduce the risk of transmission even though viral shedding may transmit the infection during the absence of lesions.

CHICKENPOX

Chickenpox is also known as HSV-3 and Varicella. It is a common, highly contagious, febrile infection caused by VZV, which eventually may lead to shingles. The hallmark of thin viral infections is the flare-up of an itchy rash that appears over the body. It affects people of all ages, but children between 1 - 4 years of age, as well as those between 10 and 16 are most prone to infection. Seronegative adults are also susceptible to the infection. In adults it is usually more severe and could be fatal due to the risk of developing complications such as pneumonia and hepatitis. Pregnant females are prone to complications once the disease is acquired. Patients who have never had chickenpox, or have not received chickenpox vaccine, can acquire the disease. It is rare to contract this disease more than once. If this does occur, it is usually a mild case.

Since the introduction of the two-dose chickenpox vaccine, the number of outbreaks has diminished in frequency and number.

The most prominent symptom of chickenpox is the appearance of a pruritic rash that is usually preceded by symptoms such as fever, loss of appetite, fatigue, headache and sore throat. These may last for 1-2 days, but may persist throughout the course of the infection. The contagiousness of the disease begins 1-2 days before the appearance of the rash and lasts until the lesions burst and develop scabs. The incubation period of the virus is from 10 to 21 days. At onset the rash appears on the face, chest and back, but within a day it spreads over the rest of the body. The rash appears as swollen spots that soon become itchy, fluid-filled blisters. Within 5-6 days the blisters break to become dry crusts. If the blisters become infected, they may leave scars. Chickenpox is an airborne disease that is transmitted from an infected individual to a healthy unvaccinated victim through inhalation of contaminated air droplets produced after coughing, sneezing or blowing the nose. The infection can also be transmitted via particles that come off the blisters. Moreover, it can be transmitted following

physical contact with an infected person. Pregnant women, infants and persons whose immune systems are weakened, can be more susceptible.

One of the most important aspects of chickenpox virus, that relates to shingles, is its ability, after recovery, to lie dormant within the nerve ganglia for a long time. The only difference between the latency of HSV-1 and HSV-2 and that of chickenpox is that reactivation of the chickenpox virus, (VZV), will produce shingles. Reactivation of latent HSV-1 and HSV-2 will result in reemergence of the virus that causes fever blisters (oral herpes) and genital herpes. The latency of chickenpox is a phase in the life cycle of the virus which begins after the infection has ceased. Cessation of the infection does not signal eradication of the virus.

SHINGLES (HERPES ZOSTER)

As indicated earlier, shingles is an infection caused by VZV which is the same virus that causes chickenpox. Following recovery from chickenpox, the virus remains in sensory ganglia via the cutaneous endings of the sensory nerves and lies there for many years until it is reactivated and re-infects the patient causing shingles. Reactivation may be triggered by a decrease in the immune system of the elderly, intake of immunosuppressive drugs, malignancy, local irradiation, and surgery. The rash most often appears as a single stripe. The rash rarely appears over a wide area as in chickenpox. Systemic symptoms such as fever, malaise, headache, pain and abdominal stress may occur. Since the nerves are involved in the infection, shingles is very painful and irritating, yet it is not life-threatening. Even though the infection and rash disappear after the patient has fully recovered, about 20-30% of the cases experience pain that may persist for months, years and even for life. This pain, which is known as post herpetic neuralgia (PHN), is believed to be due to the nerve damage caused by the virus during the active stage. The pain may range from mild to severe where the slightest touch can be excruciating. It may range from tenderness, burning, a throbbing feeling, or sharp pain.

Shingles can occur at any age, but it is infrequent among the young. It is more common in males. The incidence increases with age and peaks at age 50 and over. Approximately 2.1 million physician visits by patients who suffer from shingles or its complications occur annually in the U.S., costing about $525 per person. Patients older than 65 years of age are 7 times more likely to develop shingles than younger individuals.

Pain, irritation and flu-like symptoms may occur prior to the appearance of the rash. Itching, tingling and pain may come next. The lesions first appear as red maculopapules which may become a cluster of vesicles filled with serous exudate. Newly formed vesicles may continue to appear for several days after which the lesions, if secondarily complicated by bacterial infection, become pustules and later turn to scabs. In severe cases the rash leaves scars and skin discoloration. The lesions usually appear in a unilateral, dermatomal pattern following the innervation of the sensory nerves involved in the infection. Parts of the body which are usually affected are the trunk, which is the most common site, cervical and lumbar areas. The trigeminal nerve is often affected, in particular that of the ophthalmic branch. This can lead to keratoconjunctivitis and disruption of motor activity, including weakness of the eye muscle and mydriasis (dilation of the pupil of the eye). Ophthalmic shingles refer to cases that affect the eye and the surrounding tissues and may result in immediate or delayed vision impairment. Facial and auditory nerves may be involved resulting in the appearance of vesicles in the external ear and in facial paralysis known as Ramsay Hunt Syndrome which may

lead to hearing impairment and imbalance. Involvement of the cervical ganglia may result in elevation of protein in the cerebrospinal fluid. The infection usually subsides in 2 to 3 weeks and seldom recurs. Pain at the site where the rash has occurred may remain for months or longer. Such pain may be the result of nerve damage during the acute stage of the infection.

ZOSTER SINE HERPETE (ZSH)

Another name for ZSH is Shingles without rash. The condition has symptoms similar to shingles except the rash is absent. Even though the vast majority of shingles cases are accompanied by the dermatomal rash, ZSH exhibits pain, tingling and itching which usually occur prior to the outbreak of rash in ordinary shingles, but no rash appears at any point during the course of this disease. Its incidence is rare.

DIAGNOSIS

Shingles can be diagnosed clinically once the distinctive and recognizable rash has appeared. ZSH cannot be diagnosed clinically due to the absence of the rash. However, both ordinary shingles and ZSH may be diagnosed through laboratory testing. The rash must be distinguished from that caused by herpes simplex, contact dermatitis, popular urticaria and drug eruptions. Direct fluorescent antibody staining of cells from fluid extracted from blisters or from scrapings from the base of a lesion is used to diagnose shingles with rash. This method is rapid and specific but is not as sensitive as polymerase chain reaction (PCR). Viral cultures which are performed on liquid from blisters give more accurate results. Tzanick smear, which can be performed at bedside, consists of placing material from blisters or scrapings on a glass slide for microscopic viral identification. The test is inexpensive, quick, but has only 50-70% accuracy. Because the body provides antibodies during the course of infection, antibody totes (ELISA) can give the amount of antibodies produced. The test has 85% accuracy. PCR is as accurate as viral culture, but gives quicker results and is more expensive.

VACCINATION AND PREVENTION

Patients who never had chickenpox can reduce the risk of acquiring shingles by avoiding close physical contact with individuals suffering from shingles. The shingles vaccine is more effective for prevention.

Shingles vaccinations are the best way to reduce the risk of developing the disease. Zoster vaccine was licensed in 2006 after studies revealed that it reduced the risk of developing the disease by 51.3%, and it can reduce the severity and duration of postherpetic neuralgia. The vaccine is administered only to individuals over 60 years of age. In 2011, the FDA approved the vaccine in patients of all ages.

TREATMENT

There is no effective treatment that can cure shingles. However, there are antiviral medications such as acyclovir, famciclovir and valacyclovir that can reduce the severity and frequency of the infection and pregabalin which provide some relief from preherpetic and postherpetic neuralgia.

Acyclovir is a guanosine analogue antiviral drug that is used in the treatment of shingles as well as HSV-1, HSV-2 and chickenpox. The drug exerts its action through its intracellular conversion

to acyclovir triphosphate, which is the pharmacologically active form of the drug. Non-phosphorylated acyclovir, such as acyclovir monophosphate and diphosphate, has little or no effect on the virus activity. The drug is poorly soluble in water and has only 15-30% bioavailability after oral administration. If there is a need for a rapid and high blood concentration, then the drug should be administered intravenously. Percutaneous absorption, following application to intact skin, results in minimal or no absorption.

Absorption may take place when applied to active infection, as the drug may pass through the damaged skin. It is highly distributed in the body and has protein binding affinity ranging from 9% - 33%. It is excreted through the kidneys by glomerular filtration and tubular secretion. Administration of 800 mgs of acyclovir 5 times daily for 10 days has shortened the time for lesion formation of scabs, hastened healing, reduced pain and reduction of formation of new crops of blisters. Administration of this medication within 48 hours of rash onset gives best results. The onset of treatment should commence immediately following the appearance of symptoms such as itching, tingling, pain and burning. It can be taken with or without food but, with a full glass of water. Taking the drug with food may reduce stomach upset. Throughout the duration of therapy, the patient should drink plenty of water to keep the kidneys functioning properly. The adverse effects of acyclovir include abdominal disturbances, dizziness, fatigue, agitation, joint pain, changes in vision, hives, dyspnea, insomnia and confusion.

Famciclovir is a guanosine analogue with similar activity as acyclovir. The usual dose is 500 mg every 8 hours for 7 days.

Valacyclovir is a prodrug which is converted to acyclovir. Thus, this drug has identical mechanism of action, use and side effects as acyclovir.

Pregabalin has a wide range of uses. It has anticonvulsant activity and thus is used as an adjunct therapy for seizures, anxiety disorders as well as neuropathic pain that accompanies shingles, diabetes and fibromyalgia. The drug has no effect on the course of VZV infection. Its main use is to relieve postherpetic neuralgia that occurs after recovery from shingles infection. Side effects include drowsiness, dizziness, blurred vision, euphoria, confusion and fatigue.

SUMMARY

Shingles is a common disease that occurs mainly among individuals 50 years of age and older. It is not life-threatening. It is due to Varicella Zoster Virus (VZV). Shingles implies that the patient has previously been infected with chickenpox. There is no cure, but there are medications that can reduce the severity and duration of the infection. Shingles vaccine is available, but does not provide 100% protection.

REFERENCES

1. Kennedy PG, "Varicella-Zoster virus latency in human ganglia". Rev Med Virol, 12 (5); 327 (2002).
2. Cunningham AL, Bruer, J, Dwyer DE, Grenow DW, Helm RD, Litt JC, Levin MJ, Macintyre CR, "The prevention and management of herpes zoster" Med J Aust, 188 (3): 177 (2008).
3. Galluz: KE, "Management strategies for herpes zoster and post herpetic neuralgia". J Amer Osteopath Assoc, (3 suppl 1): 107 (2007).
4. Volp. A. "Seven complications of herpes zoster". Herpes, 14 (suppl 2): 3SA (2007).
5. Schmader K, "Herpes zoster and postherpetic neuralgia in older adults", Clin Geriatr Med. 23 (3): 615 (2007).
6. Gilden D, "Efficacy of live zoster vaccine in preventing zoster and post herpetic neuralgia" J. Intern Med. 269 (5): 496 (2011).

Fill in the information below, answer questions and return **Quiz Only** for certification of participation to: CE PRN®, 400 Lake Cook Road, Suite 207, Deerfield, IL 60015.

WHEN YOU SEND IN QUIZZES.
ALWAYS KEEP A COPY. YOU MAY EMAIL OR FAX THEM. FAX # IS 847-945-5037. OR SEND A CONVENTIONAL EMAIL WITH YOUR ANSWERS TO CEINFO@WFPROFESSIONAL.COM

NAME_____**CE PRN I.D.#**(1st line on label)_____
ADDRESS _____CITY _____STATE _____ZIP _____
I am a Pharmacist ☐ **I am a Technician** ☐

CPEMonitor ID _____**Birthdate (MM/DD)** _____
ARE YOU LICENSED IN FLORIDA? IF YES, FL LIC # _____
EMAIL Address (we need this) _____

LESSON EVALUATION
Please fill out this section as a means of evaluating this lesson. The information will aid us in improving future efforts. Either circle the appropriate evaluation answer, or rate the item from 1 to 7 (1 is the lowest rating; 7 is the highest).

1. Does the program meet the learning objectives?

Differentiate between HSV-1 & HSV-2	YES NO
State how patients acquire shingles	YES NO
List medications used for shingles	YES NO
Describe signs & symptoms of shingles	YES NO

2. Was the program independent & non-commercial YES NO

	Low Relevance						Very Relevant
3. Relevance of topic	1	2	3	4	5	6	7

4. What did you like most about this lesson?_____
5. What did you like least about this lesson?_____

Please Mark the Correct Answer(s)

1. **Shingles is:**
   A. Caused by HSV-1
   B. A nervous system bacterial infection
   C. Acquired only if the patient previously had chickenpox
   D. Common among children

2. **Another term for chickenpox is:**
   A. Varicella virus B.Orolabial herpes
   C. Herpes zoster D. HSV-2

3. **Which statement is INCORRECT?**
   A. Patients rarely contract chickenpox more than once
   B. Seronegative adults are susceptible to chickenpox
   C. Chickenpox outbreaks occur annually
   D. One chickenpox vaccine dose provides complete protection

4. **The shingles vaccine produces 100% protection.**
   A. True B. False

5. **There are effective treatments for curing shingles.**
   A. True B. False

6. **Ramsay Hung Syndrome is:**
   A. Another name for ophthalmic shingles
   B. A facial paralysis
   C. Elevation of cerebrospinal protein
   D. Pain that accompanies rash caused by shingles

7. **Which statement is CORRECT?**
   A. Dormant HSV-1 virus causes shingles
   B. Shingles is a virus caused by VZV
   C. Shingles rash occurs only on the chest
   D. Shingles appears in the 1st week after recovery from chickenpox

8. **PHN is a condition that:**
   A. Occurs 1 week after chickenpox
   B. Is experienced by all shingles patients
   C. Occurs in 20-30% of shingles patients
   D. Lasts 3 – 4 weeks

9. **Pregabalin is capable of:**
   A. Reducing PHN pain
   B. Changing the course of VZV infection
   C. Potent rating the actin of valacyclovir
   D. Preventing shingles

10. **Which statement is TRUE about acyclovir?**
    A. Very soluble in water
    B. Monophosphate---no effect on shingles
    C. 85% bioavailability after oral dosing
    D. Well absorbed through the skin

CE PRN®
400 Lake Cook Road Suite 207
Deerfield, IL 60015

(Fax) 847-945-5037
(Email) ceinfo@wfprofessional.com

ATTENTION!
DEADLINE INVOLVED!
READ THIS NOW!
VERY IMPORTANT!

Your CE cannot be processed unless we have the following information.

1. **Your NABP eProfile ID # & birthdate (MM/DD).**
2. **Are you a pharmacist or a technician?**
3. **Check your eProfile account monthly. If there are discrepancies & we are not made aware of them within 60 days, there is NO recourse.**
4. **All of the above are YOUR responsibility. We have NO control.**

Contributing Author
Farid Sadik, Dean Emeritus
University of South Carolina
College of Pharmacy
Columbia, SC
College of Pharmacy

Executive Editor
William J. Feinberg,
BS Pharm, MBA

Program ID # s for this lesson:
707-000-14-006-H01-P (for Pharmacists).
707-000-14-006-H01-T (for Technicians).

CE Provider Tracking # with CEBroker.com is 50-3170.

CE PRN® is a publication of W-F Professional Associates, Inc.
W-F Professional Associates, Inc. is accredited by the Accreditation Council for Pharmacy Education (ACPE) as a provider of continuing pharmaceutical education. Providers who are accredited by ACPE are recognized by **All States** for fulfilling CE requirements. Participants completing this course by April 30, 2017 may receive full credit. This lesson furnishes 1.25 hours (0.125 CEUs) of credit.

ALL PHARMACISTS---READ THIS! CREDIT STATEMENTS & HISTORY!
Check your CE activity or print a statement from your NABP eProfile (CPE Monitor) Account.

FLORIDA PHARMACISTS---READ THIS!
We don't know you're Florida licensed unless you tell us. Place your Florida license # on EVERY quiz.

WHEN YOU SEND IN QUIZZES.
ALWAYS KEEP A COPY. YOU MAY EMAIL OR FAX THEM. FAX # IS 847-945-5037. OR SEND A CONVENTIONAL EMAIL WITH YOUR ANSWERS TO CEINFO@WFPROFESSIONAL.COM