

Virginia Long-Term Care Clinician Network

Monthly Forum
July 15, 2026



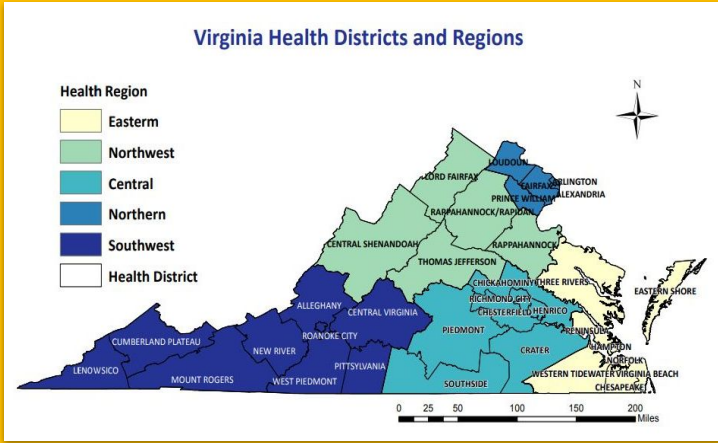


The Virginia Long-Term Care Clinician Network is managed by VCU's Division of Geriatric Medicine, Virginia Center on Aging, and Department of Gerontology.

As you join, please turn on cameras and mic or unmute your phone and say hello to your Virginia colleagues.



Welcome!



There are approximately 287 nursing homes and 580 assisted living facilities operating in Virginia. Within these, there are over 500 clinicians providing care. **We have 334 network members.** The Network provides ongoing learning and communication.

Remind your work colleagues to attend so they can get education, support and CME!

Disclosure of Financial Relationships

Disclosure of Commercial Support:

We acknowledge that no commercial or in-kind support was provided for this activity.

VARICELLA ZOSTER VIRUS (VZV)

Bhagya Lakshmi Gummadi PharmD

candidate Date : 07/14/2026

MCPHS University

Boston, MA

ABOUT ME

- 17 years of pharmacy experience
- 14 years with Walgreens
- Former long-term care and consultant pharmacist
- Former preceptor, University of Michigan College of Pharmacy
- Former patient care lab professor, Wayne State University College of Pharmacy
- Led COVID-19 vaccination clinics in Detroit and surrounding areas

OBJECTIVES

- Outline the virology and molecular biology of VZV
- Describe the pathogenesis of chickenpox and shingles
- List the prevalence and cost burden of VZV
- Identify the risk factors and clinical symptoms of VZV
- Explain the diagnosis and treatment of VZV
- Apply renal and hepatic dose adjustments for VZV medications
- Discuss prevention, vaccination, and special population considerations

INTRODUCTION

- Most common human virus in the world
- Causes chickenpox and shingles
- Chickenpox latin word little pock or spot like rash in early infection
- Zoster (shingles) latin word girdle or belt, painful blister later virus reactivation
- Over 95% of adults in the USA carry this virus in their bodies.
- Over one million Americans develop shingles every year, and risk increase with age

VIROLOGY

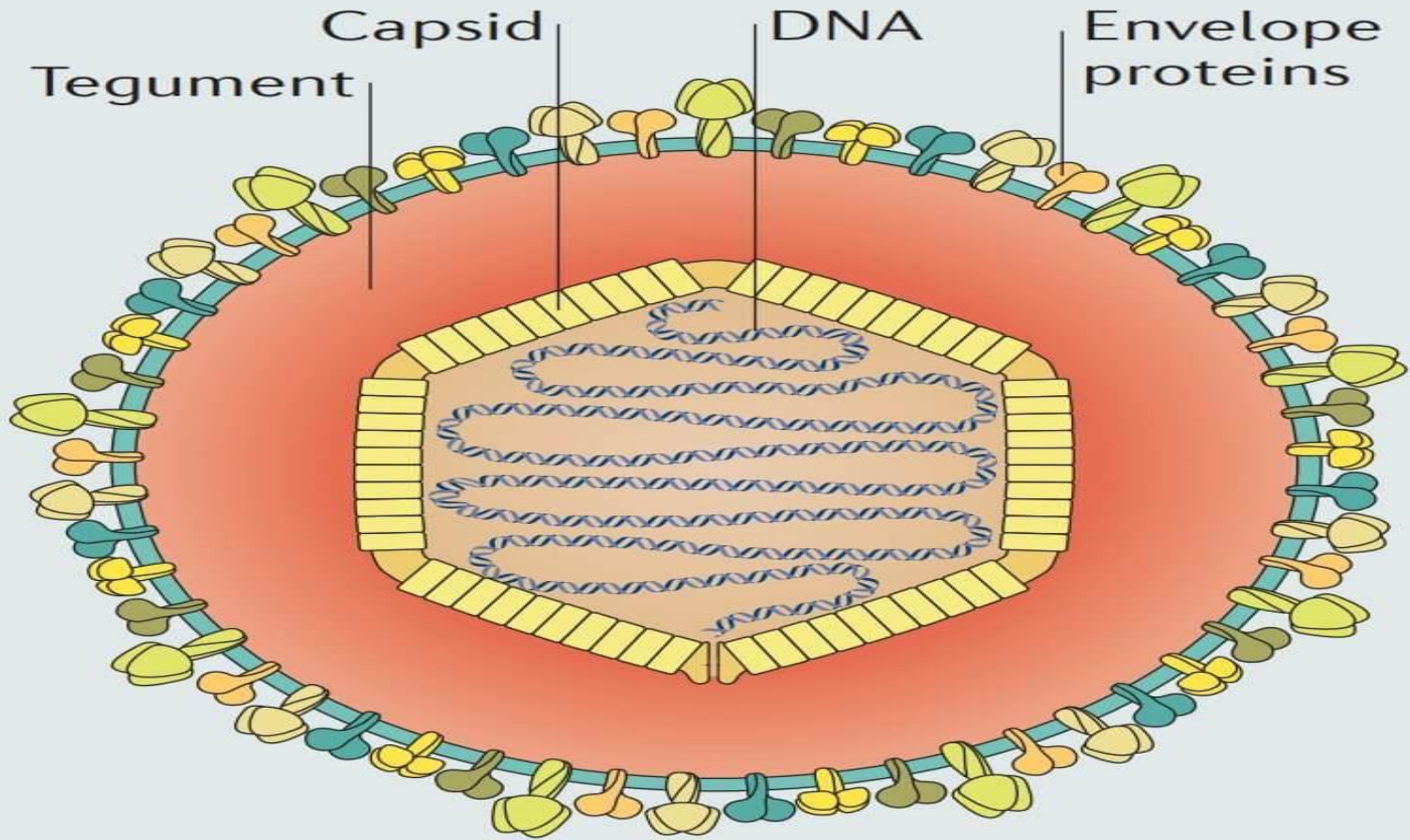
- Alphaherpesvirinae subfamily virus
- Human-specific and highly contagious
- Transmission: respiratory droplets.
 - Mutation: 10 times slower than HSV, 40 times slower than CMV.
- Early Stage - Chickenpox, second Stage: Shingles

Arvin AM. Varicella-zoster virus. *Clin Microbiol Rev.* 1996;9(3):361-381.
doi:10.1128/CMR.9.3.361

Cohen JJ. Clinical practice: herpes zoster. *N Engl J Med.* 2013;369(3):255-263.

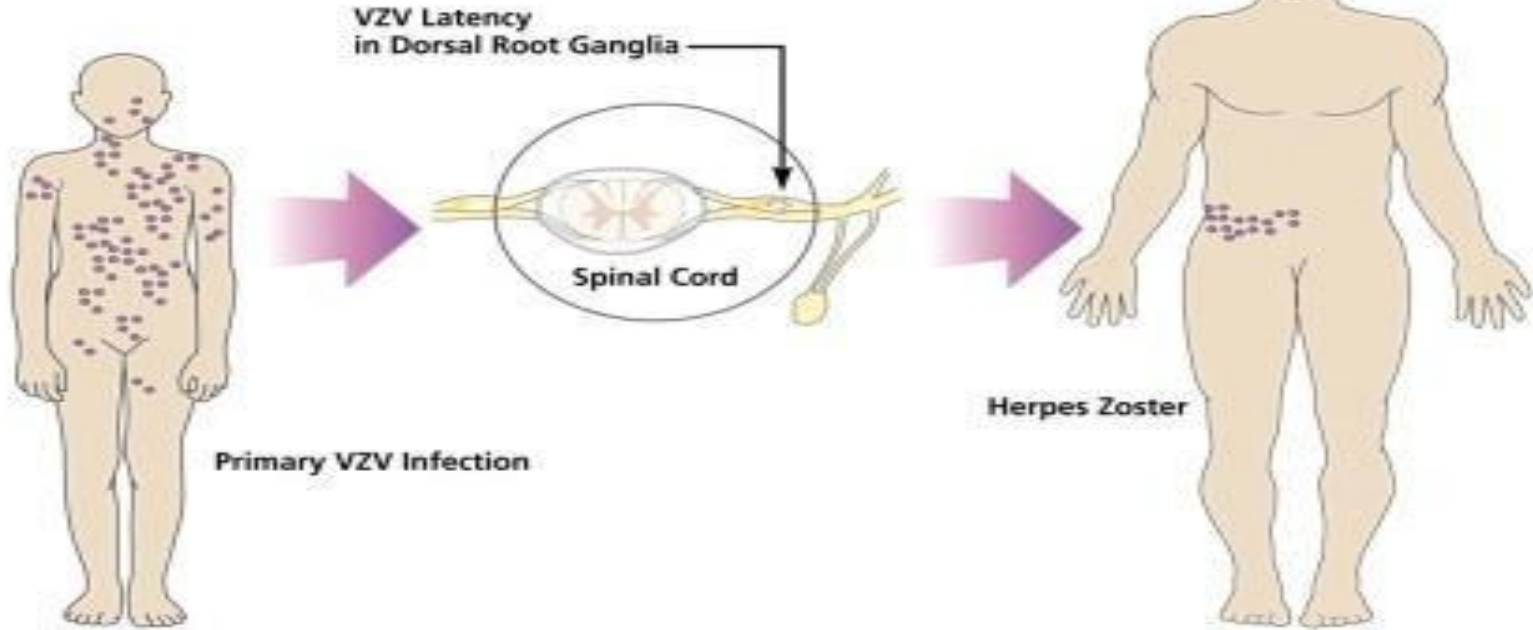
MOLECULAR BIOLOGY

- VZV made of linear, with 125kB double-stranded DNA genome and 71 open reading frames (ORFs)
- Virion has 4 layers: DNA core, nucleocapsid, tegument, and envelope with 9 glycoproteins that help the virus enter human cells
- Genes are expressed as immediate early, early and late
- VZV replicates inside the cell nucleus



PATHOGENESIS

- VZV enters through respiratory droplets, spreads via bloodstream (viremia) to the skin → causes chickenpox
- After recuperation, virus travels to dorsal root ganglia (nerve cells) and becomes dormant (latent)
- When immune system weakens (aging, stress, immunosuppression), virus reactivates → causes shingles
-



PREVALENCE

- Over 95% of U.S. adults have developed resistant to VZV due to prior infection or vaccination
- Every year Over 1 million shingle cases occur in the U.S.
- Incidence rate: 3–4 cases per 1,000 persons annually
- Incidence increases with age; 50% lifetime risk by age 85
- Varicella cases decreased by $\geq 88\%$ since universal vaccination began in 1996

COST BURDEN

- Cost around \$2.4 billion yearly in direct medical costs and productivity losses
- 1.1 million shingles cases, 114,000 Postherpetic neuralgia, and 43,000 eye complications every year
- 67,000 quality-adjusted life years (QALYs) lost annually

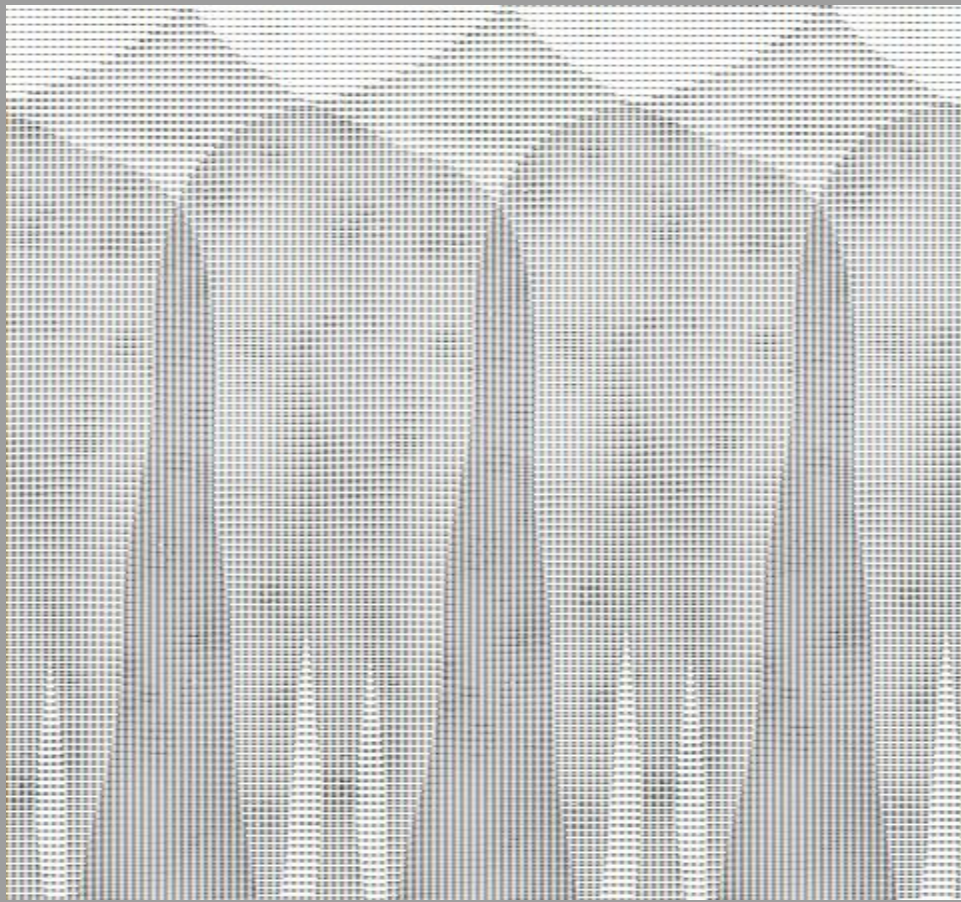
Harvey M, Prosser LA, Rose AM, Ortega-Sanchez IR, Harpaz R. Aggregate health and economic burden of herpes zoster in the United States: illustrative example of a pain condition. *Pain*. 2020;161(2):361-368.

RISK FACTORS

- Age — major risk factor; unvaccinated persons 85 years and older have a 50% risk
- Sex — women are at higher risk than men
- Race — Blacks are higher risk than white
- Family history — increases risk
- Immunosuppression — transplant recipients, lymphoma, leukemia, HIV, immunosuppressive therapy
- Early infection — chickenpox in utero or infancy associated with childhood shingles

CLINICAL SYMPTOMS

- Prodrome (2–3 days before rash): tingling, itching, burning pain in one area
- Rash is unilateral and dermatomal — does not cross the midline
- Rash progresses: macules → papules → vesicles → pustules → crusting (7–10 days)
- Most common infection sites: thoracic, trigeminal, lumbar, cervical dermatomes
- Pain: burning, tingling, allodynia (pain from light touch), hyperesthesia
- Healing takes 2–4 weeks



Types of Shingles / Herpes Zoster

urban
skin & hair clinic



Herpes Zoster



Ophthalmic
Shingles



Ramsay Hunt
Syndrome



Disseminated
Shingles

<https://www.cdc.gov/chickenpox/hcp/clinical-signs/index.html/> accessed July 2nd, 2026

<https://urbanskinhairclinic.com/herpes-zoster/> accessed July 2nd, 2026

DIAGNOSIS

- Diagnosed clinically based on type of rash
- PCR testing of vesicular fluid — most sensitive and specific method
- Direct fluorescent antibody (DFA) testing — rapid but less sensitive than PCR
- Viral culture — low sensitivity, not used often
- Tzanck smear — shows multinucleated giant cells but cannot distinguish VZV from HSV
- Lab confirmation recommended in atypical cases or immunocompromised patients

TREATMENT

- Antiviral Therapy start within 72 hours of rash onset
- Valacyclovir 1,000 mg orally 3 times daily for 7 days
- Famciclovir 500 mg orally 3 times daily for 7 days
- Acyclovir 800 mg orally 5 times daily for 7 days
- Valacyclovir and famciclovir are preferred over acyclovir due to better bioavailability and easier dosing
- For severe and Disseminated Disease: IV acyclovir 10 mg/kg every 8 hours

TREATMENT - PAIN MANAGEMENT

- Acute pain: acetaminophen, NSAIDs, opioids if needed
- Postherpetic neuralgia (PHN):
 - Gabapentin or pregabalin (first-line)
 - Tricyclic antidepressants (nortriptyline, amitriptyline)
 - Lidocaine 5% patches (topical)
 - Capsaicin cream (topical) —
- Early antiviral treatment helps reduce risk of PHN

Antiviral Renal Dose

Adjustments

- Acyclovir: Reduce to 800 mg q8h (CrCl 10–25); 800 mg q12h (CrCl <10)
- Valacyclovir: 1 g q12h (CrCl 30–49); 1 g q24h (CrCl 10–29); 500 mg q24h (CrCl <10)
- Famciclovir: 500 mg q12h (CrCl 40–59); 500 mg q24h (CrCl 20–39); 250 mg q24h (CrCl <10)
- All three: give dose after hemodialysis

1. Cohen JI. Clinical practice: herpes zoster. N Engl J Med. 2013;369(3):255-263.
2. Acyclovir, Valacyclovir, Famciclovir [package inserts]. US Food and Drug Administration.

Antiviral Renal and Hepatic adjustment

- Acyclovir, valacyclovir, famciclovir: No hepatic dose adjustment needed
- Gabapentin: No hepatic adjustment (renally cleared)
- Gabapentin/Pregabalin: Reduce dose based on CrCl
- Topical lidocaine/capsaicin: No renal adjustment needed
- TCAs (amitriptyline): Use caution, start low dose

1. Gabapentin [package insert]. US Food and Drug Administration. Accessed July 2026.
2. Amitriptyline hydrochloride [package insert]. US Food and Drug Administration. Accessed July 2026.

COMPLICATIONS - MOST COMMON

- Postherpetic neuralgia (PHN): most common complication; pain persists ≥ 90 days after rash; affects 10–50% of patients depending on age
- Risk of PHN increases with age (especially after 50), severe initial pain, and large number of lesions
- PHN can last months to years — causes sleep loss, depression, weight loss, and reduced quality of life
- Herpes zoster ophthalmicus (HZO): occurs in 10–20% of cases; can cause keratitis, uveitis, acute retinal necrosis, and vision loss

Cohen JL. Clinical practice: herpes zoster. *N Engl J Med*. 2013;369(3):255-263.

Complications — Neurological & Disseminated

- Neurological: Bell's palsy, transverse myelitis, stroke, transient ischemic attacks
- Immunocompromised patients: disseminated skin disease, organ involvement (lung, liver, brain, GI tract), acyclovir-resistant VZV

PREVENTION- VARICELLA VACCINE

- **Varivax** (live attenuated vaccine)
- Two doses: first dose at 12–15 months, second dose at 4–6 years
- Also recommended for susceptible adolescents and adults (two doses, 4–8 weeks apart)
- ~90% effective at preventing chickenpox
- Routine childhood vaccination has reduced chickenpox cases by over 90% in the USA

PREVENTION - SHINGLES VACCINE

- Shingrix (recombinant, adjuvanted — NOT a live vaccine)
- Two doses, 2–6 months apart
- Recommended for adults ≥ 50 years and immunocompromised adults ≥ 19 years
- 90% effective at preventing shingles and PHN
- Zostavax (live attenuated) — discontinued in the USA in 2020; no longer available
- Shingrix is preferred because it provides stronger and longer-lasting protection

NDC 58160-823-11

Rx only

GSK

NOTICE: One vial of lyophilized powder and one vial of liquid suspension MUST BE COMBINED BEFORE USE

Zoster Vaccine Recombinant, Adjuvanted SHINGRIX

**For 50 Years of Age and Older and For 18 Years
of Age and Older who are Immunocompromised
and at Increased Risk of Herpes Zoster**

Contents (10 doses of SHINGRIX):

10 Vials containing Lyophilized gE Antigen Component

10 Vials containing Adjuvant Suspension Component

After reconstitution, a single dose of SHINGRIX is 0.5 mL



SHINGRIX



<https://www.merckvaccines.com/varivax/storage-handling/> Accessed July 2nd, 2026

<https://dailymed.nlm.nih.gov/dailymed/fda/fdaDrugXsl.cfm?setid=0280849d-5c78-4a9d-8941-4eab429f6bd8>

/ accessed July 2nd, 2026

VACCINES COST ISSUES IN LTC

- Shingrix: ~\$300+ for 2-dose series; cost-effective for adults ≥ 60 years
- LTC residents have lower vaccination rates than community-dwelling adults
- Barriers in LTC:
 - Staff turnover and limited bandwidth
 - Difficulty tracking immunization records
 - Resident vaccine hesitancy

1. Prosser LA, Harpaz R, Rose AM, et al. A cost-effectiveness analysis of vaccination for prevention of herpes zoster. *Ann Intern Med.* 2019;170(6):380-388.

2. Senderovich H, Grewal J, Mujtaba M. Herpes zoster vaccination efficacy in the long-term care facility population. *Curr Med Res Opin.* 2019;35(8):1451-1456.

PREVENTING VZV SPREAD IN LTC

- Localized shingles: Contact Precautions; cover all lesions
- Disseminated shingles: Airborne + Contact Precautions; private room
- Continue precautions until all lesions have crusted
- Only immune staff should care for VZV patients
- Exposed residents: Monitor days 10–21; consider post-exposure prophylaxis

SPECIAL POPULATIONS - IMMUNOCOMPROMISED PATIENTS

- Highest risk for severe, disseminated VZV into skin, lungs, liver, brain
- Organ transplant patients, HIV/AIDS, cancer patients on chemotherapy, patients on immunosuppressive therapy
- Treatment: IV acyclovir 10 mg/kg every 8 hours
- Shingrix is recommended for immunocompromised adults ≥ 19 years (safe — not a live vaccine)
- Zostavax (live vaccine) was contraindicated in this group

SPECIAL POPULATIONS - PREGNANT WOMEN & OLDER ADULTS

- VZV infection during pregnancy can cause congenital varicella syndrome (limb abnormalities, skin scarring, eye and brain damage)
- Greatest risk: infection during weeks 8–20 of pregnancy
- Treatment: acyclovir is considered safe in pregnancy
- Varicella vaccine is contraindicated during pregnancy (live vaccine)



<https://stjoesemresidency.com/varicella-in-pregnancy/> Accessed July 2nd, 2026

https://www.researchgate.net/figure/Figure-1-Varicella-Zoster-Infection-Pregnant-women-represent-another-vulnerable-cohort_fig1_396750430/ July 2nd 2026

ADULTS AGED 50 YEARS AND OLDER

- Risk of shingles and PHN increases significantly with age
- Declining cell-mediated immunity is the primary cause of reactivation
- Shingrix two-dose series is strongly recommended

References

1. Arvin AM. Varicella-zoster virus. Clin Microbiol Rev. 1996;9(3):361-381.
2. Cohen JL. Clinical practice: herpes zoster. N Engl J Med. 2013;369(3):255-263.
3. Quinlivan M, Breuer J. Clinical and molecular aspects of the live attenuated Oka varicella vaccine. Rev Med Virol. 2014;24(4):232-249.
4. Zerboni L, Sen N, Oliver SL, Arvin AM. Molecular mechanisms of varicella zoster virus pathogenesis. Nat Rev Microbiol. 2014;12(3):197-210.
5. Harvey M, Prosser LA, Rose AM, Ortega-Sanchez IR, Harpaz R. Aggregate health and economic burden of herpes zoster in the United States. Pain. 2020;161(2):361-368.
6. Zovirax (acyclovir) [package insert]. Bridgewater, NJ: Bausch Health US, LLC; 2023.
7. Shingrix (zoster vaccine recombinant, adjuvanted) [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2023.
8. Siegel JD, Rhinehart E, Jackson M, Chiarello L. 2007 guideline for isolation precautions. Am J Infect Control. 2007;35(10 Suppl 2):S65-S164.

Claiming CE Credit Through VCU



VCUHealth™
Continuing Education

NEW ACCOUNT NEEDED

Go to vcu.cloud-cme.com to create an account – make sure to add your cell phone number



EXISTING ACCOUNT MEMBERS

Text the 5 digit code to (804) 625-4041 within 5 days

If you are driving during the Forum email ksivey@vcu.edu after the meeting for the code.

Complete Evaluation & Claim Credit.

within 60 days of the event and download your certificate of completion

Need help? ceinfo@vcuhealth.org

TEXT ##### to
804-625-4041

You will receive a text message and an email.



VCU College of Health
Professions

Gerontology and the Virginia Center on Aging



VCU

School of Medicine

WE ARE THE UNCOMMON.

Accreditation

 JOINTLY ACCREDITED PROVIDER™ INTERPROFESSIONAL CONTINUING EDUCATION	In support of improving patient care, VCU Health Continuing Education is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.
	VCU Health designates this live activity for a maximum of 1.00 AMA PRA Category 1 Credits™ . Physicians should claim only the credit commensurate with the extent of their participation in the activity.
	VCU Health Continuing Education designates this activity for a maximum of 1.00 ANCC contact hours. Nurses should claim only the credit commensurate with the extent of their participation in the activity.
	VCU Health Continuing Education has been authorized by the American Academy of PAs (AAPA) to award AAPA Category 1 CME credit for activities planned in accordance with AAPA CME Criteria. This activity is designated for 1.00 AAPA Category 1 CME credits . PAs should only claim credit commensurate with the extent of their participation.

Pathways to Quality: Advancing Nursing Home Care for Better Outcomes



A Value Based Purchasing webinar training series for nursing home staff

In partnership with the **Virginia Department of Medical Assistance Services (DMAS)** and its Nursing Facility Quality Improvement Program, VCU Gerontology is launching a 6-part webinar series, **Pathways to Quality: Advancing Nursing Home Care for Better Outcomes**, dedicated to elevating the quality of care for nursing home residents. This free series will equip nursing home staff with innovative, evidence-based insights and practical approaches designed to strengthen performance across essential areas of resident care.

Upcoming Dates:

July 28

Falls with Major Injury Part 1: Risk Factors, Causes, and Care Paths

[Register Here](#)

September 22

Falls with Major Injury Part 2: Moving to Prevention

[Register Here](#)

Details Here: <https://tictoolkit.vcu.edu/learning-center/pathways/>

Open Forum

Any questions or ideas
from the talk?

Today's CE Code is
#####

Text this code to 804-625-4041



Thank you for joining us!

Upcoming Forums:

- **August 19 - TBD**

Your Calendar Link - In the email reminder you received, there's a calendar link to update your calendar for future meetings.

On your way out of our meeting today, [kindly answer a brief feedback survey](#).

Invite your colleagues! They can register at ltccn.vcu.edu