Prevention Across the Continuum: Health Maintenance in Post-Acute and Long-Term Settings

Elizabeth Hames, DO

Kenya Rivas, MD

Melanie Trigo, PharmD

Objectives

- **By the end of the session, participants will be able to:**

1. Understand current evidence-based health screening recommendations for the geriatric population.
2. Discuss applicable preventive interventions to reduce disease risk, after evaluating the net benefit in geriatric patients.
3. Describe some current prognostication tools appropriate for geriatric decision-making.
4. Understand that all treatments should aim to preserve function and maximize quality of life in geriatric patients.

Disclosures

- *The following speakers have disclosures:*
- Dr. Elizabeth Hames, DO, CMD: Medical Director and stockholder UHG/Optum.
- Dr. Kenya Rivas, FAAFP,CMD: Medical Director and stockholder, UHG/Optum.
- Melanie Trigo, Pharm.D, C.Ph: Apothecon
- *All financial relationships have been identified, reviewed, and mitigated by The Society prior to this presentation.*

Why Health Maintenance is Different in PALTC

- Age alone?
- Functional Status
- Limited life expectancy
- Patient’s own goals and values

Components of Prevention

- Vaccinations
- Screening to detect conditions such as HTN, DM, Cancer
- Medication
- Counseling

Three Levels of Prevention

- Primary Prevention
- Secondary Prevention
- Tertiary Prevention

Regulatory Reality in PALTC

CMS Quality Measures

Survey scrutiny

Documentation expectations

Medical Director oversight

The 4 Pillars of Geriatric Health Maintenance

- Functional and cognitive status
- Medication risk and burden
- Life expectancy and prognosis
- Goals and preferences

Goals of Care

- Longevity
- Function
- Palliation

Lag-time benefit definition

- It is the time between the preventive intervention (*when its complications and harms are most likely*) to the time when improved health outcomes are seen.

- Tools are available to help clinicians estimate life expectancy, target cancer screening, for those with adequate remaining life expectancy.

Life Expectancy in PALTC

Individual Health Assessment

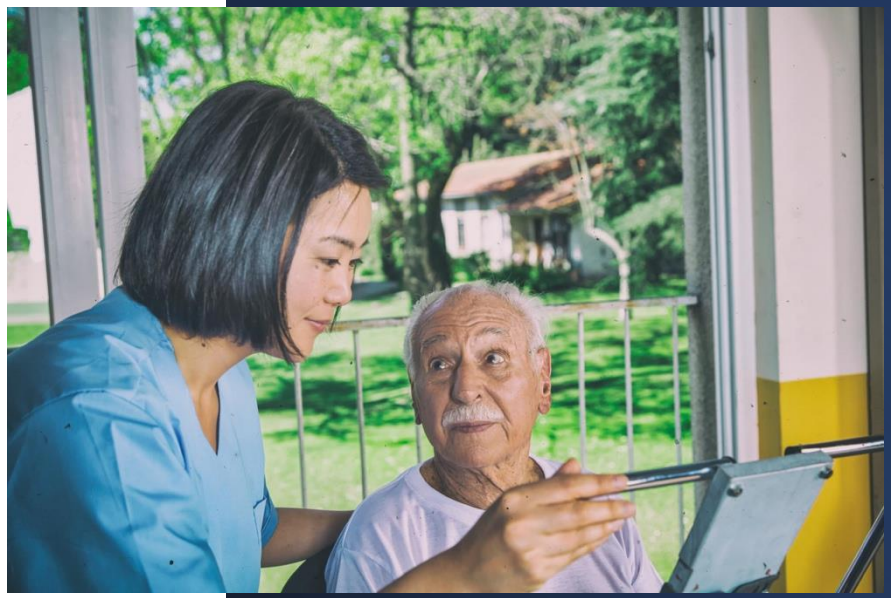
Evaluating life expectancy requires consideration of each resident's health conditions, comorbidities, and functional status.

Advance Care Planning

Discussing patient goals and quality of life preferences is essential for personalized, compassionate care in PALTC settings.

Prognostic Tools and Assessments

Regular use of prognostic tools and assessments supports informed decisions for residents and their families.



Health Maintenance Gaps in PALTC

Underuse of Preventive Measures

Vaccinations and osteoporosis screening are often neglected in PALTC settings, increasing risk of preventable illness and injury.

Overuse of Tests and Medications

Frequent lab tests and unnecessary medications contribute to polypharmacy, raising risks and healthcare costs for residents.

Improvement Through Evidence-Based Care

Addressing these gaps leads to better patient outcomes, lower costs, and care tailored to individual resident needs.

Top Online Prognostic Tools

ePrognosis for Older Adults

ePrognosis offers evidence-based estimates for older adults, using different clinical indices to guide patient care decisions.

Palliative Performance Scale (PPS)

The PPS assesses functional status and predicts survival, supporting decision-making in palliative care settings.

Seattle Heart Failure Model

This tool predicts mortality in heart failure patients using clinical variables and supports prognosis communication.

Cancer Screening in PALTC

Assessing Life Expectancy

Cancer screening in PALTC must consider life expectancy and comorbidities to avoid unnecessary interventions and harm.

Individualized Decision-Making

Screening decisions should be tailored to each patient, aligning with their goals, values, and preferences.

Minimizing Potential Harms

Routine screening may not benefit those with limited life expectancy; focus on reducing risks and unnecessary procedures.

Breast Cancer Screening Essentials

Individualized Screening Approach

Breast cancer screening should be tailored based on each resident's age, health status, and life expectancy in PALTC settings.

Shared Decision-Making

Care teams and residents must weigh screening benefits and harms together, ensuring informed and personalized choices.

Focus on Comfort and Quality

For frail residents, comfort and quality of life may take priority over routine mammography, reducing unnecessary interventions.

Colorectal Cancer Screening in PALTC

Increased Screening Importance

Colorectal cancer screening is especially important in PALTC due to higher risk in aging populations. Early detection can improve outcomes.

Individualized Screening Decisions

Screening strategies should be tailored to each resident, considering their life expectancy and existing health conditions for best results.

Preference for Non-Invasive Tests

Non-invasive tests like FIT are favored for frail residents, reducing risks and discomfort during colorectal cancer screening.

USPSTF Colorectal Cancer Guidelines

Screening Age Recommendations

Adults aged 45 to 75 years are recommended to undergo colorectal cancer screening for early detection and better outcomes.

Available Screening Methods

Screening options include stool-based tests and visual exams such as colonoscopy, offering different choices for patients.

Personalized Test Selection

Test selection should consider patient preference, medical history, and resource availability for effective and convenient screening.

Prostate Cancer Screening in PALTC

Individualized Screening Decisions

Screening should consider patient age, comorbidities, and life expectancy to ensure optimal care in PALTC.

Shared Decision-Making

Engaging patients and caregivers in decision-making helps balance the benefits and risks associated with prostate cancer screening.

Screening Limitations for Frail Residents

Screening may offer limited benefit for frail or elderly residents with reduced life expectancy, focusing instead on quality of life.

USPSTF Prostate Screening

Individualized Screening Decisions

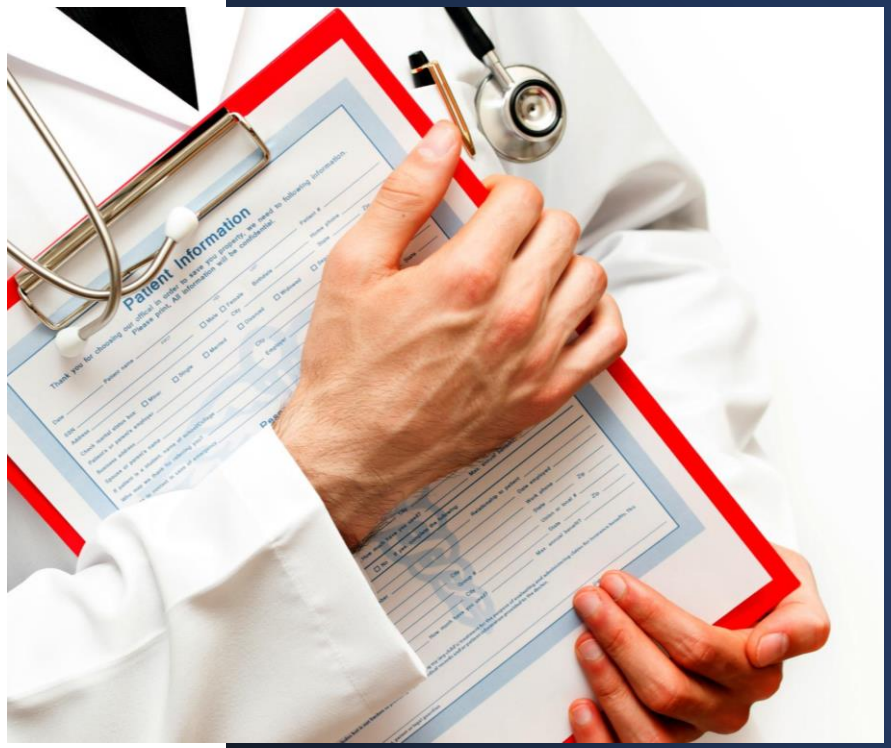
Screening for prostate cancer in men ages 55-69 should involve individualized decision-making, considering both benefits and harms.

Screening Not Recommended Over 70

Prostate cancer screening is not recommended for men over age 70 due to limited benefit and potential risks.

Life Expectancy Considerations

Screening is beneficial only if life expectancy is at least 10 years, as early detection advantages take time to appear.



USPSTF Lung Cancer Guidance

Annual CT Screening Recommendation

Adults aged 50-80 with a significant smoking history should receive annual low-dose CT screening for lung cancer, per USPSTF guidance.

Consideration in PALTC Settings

In post-acute and long-term care settings, evaluating time to benefit is essential due to limited life expectancy.

Balancing Benefits and Risks

Screening is most helpful for people who are expected to live at least 5 more years (some experts say 5-10 years for full benefit)

You admit an 89-yo NH resident for post-acute rehab after a hip fracture. She receives a notification that she is due for a screening mammogram. What do you do?

A. Order the mammogram
B. Defer until rehab is completed
C. Discuss goals of care before deciding
D. Document that screening is no longer indicated

Benefits & Risks of Health Maintenance Interventions

Intervention	Benefits of early detection	Risks	Comments	Number Needed to Screen (NNS)
Dexa Scan	Reduced fractures with treatment	Cost, discomfort, travel, side effects of drug treatment		NNS=336/yr to prevent hip fx
Mammogram	Beneficial	Cost, Uncertain benefit in patients with limited life expectancy	Consider comorbidities, is life expectancy < 5 years?	NNS per lifetime to prevent 1 death for frail elders ranges from >600 at age 70 to non-significance at age >80
Pap smear	Beneficial	High risk of false-positives.	ACS stop top at age 70 USPSTF at 65 if previous normal pap	NNS per lifetime to prevent 1 death for frail elders ranges from > 4,000 at age 70 to non-significance at age >80
Colon Cancer Screening	Potential	Colonoscopy: 0.2-0.3% complications	USPSTF: 5-year life expectancy	NNS per lifetime to prevent 1 death for frail elders ranges from >600 at age 70 to non-significance at age >80
PSA	Potential	Cost, discomfort		Insufficient evidence
AAA Screening	43% reduction in mortality	4% operative mortality		NNS to prevent 1 death is 714/yr.

Take Home Messages

Functional decline predicts mortality. Dependence in > 3 ADLs, advanced dementia, recurrent hospitalizations, weight loss, falls

Stopping Screening is Evidence Based Care: More care is not always better care

Time to Benefit: Cancer screening benefit takes 7-10 + years. Most PALTC residents will not benefit

Stop if life expectancy < time to benefit; stop if results won't change management; stop if harms outweigh benefit

References

- American Cancer Society. (2024). American Cancer Society guidelines for cancer screening. https://www.cancer.org
- U.S. Preventive Services Task Force. (2024) https://www.uspreventiveservicestaskforce.org
- PALTmed Clincal Practice Guideline*, Health Maintenance in the Long-Term Care Setting.* 2023.
- Jonsen AR, Siegler M, Winslade WJ. Clinical Ethics: A Practical Approach to Ethical Decisions in Clinical Medicine. 2002. New York: McGraw-Hill, Inc

Health Maintenance in PALTC – Hypertension

Elizabeth Hames, DO, CMD

Learning Objectives

- By the end of the presentation, participants will be able to:

- Understand and implement evidence-based recommendations for prevention / management of hypertension in older adults in the PALTC continuum

Hypertension in PALTC

- 1/3 to 2/3 PALTC residents have HTN -- 86% ≥75 years
- Definition of blood pressure goals in older adults : **controversy**
- Treatment goal of HTN in older adults: **controversy**
- concerns for kidney injury, orthostatic hypotension, falls, and cognition.
- Evidence shows screening benefits outweigh risks
- USPSTF (2021) recommends annual screening adults ≥ 40 years
- and confirming the diagnosis in another setting

Measurement of BP in PALTC

MANY SPECIAL CONSIDERATIONS IN PALTC:

INACCURATE BP MEASUREMENT

LABILE BLOOD PRESSURE

POST-PRANDIAL HYPOTENSION ~ 1/3 PALTC POPULATION

Screening for hypertension in PALTC

Accurate measurement after 5 minutes seated, 2 or 3 readings need to be averaged and need logs–minimum 2 visits – *do not treat based on less*

24- hour /ambulatory blood pressure monitoring recommended if:

Extreme blood pressure variation

Significant white coat hypertension

Resistant hypertension or recurrent hypotension

Screening for secondary hypertension

Once hypertension is diagnosed, secondary hypertension should be considered with:

Malignant hypertension

Sudden increase in diastolic blood pressure

New worsened blood pressure control

Resistant hypertension (on 3 medications including a diuretic)

Common causes of secondary hypertension:

Renovascular disease

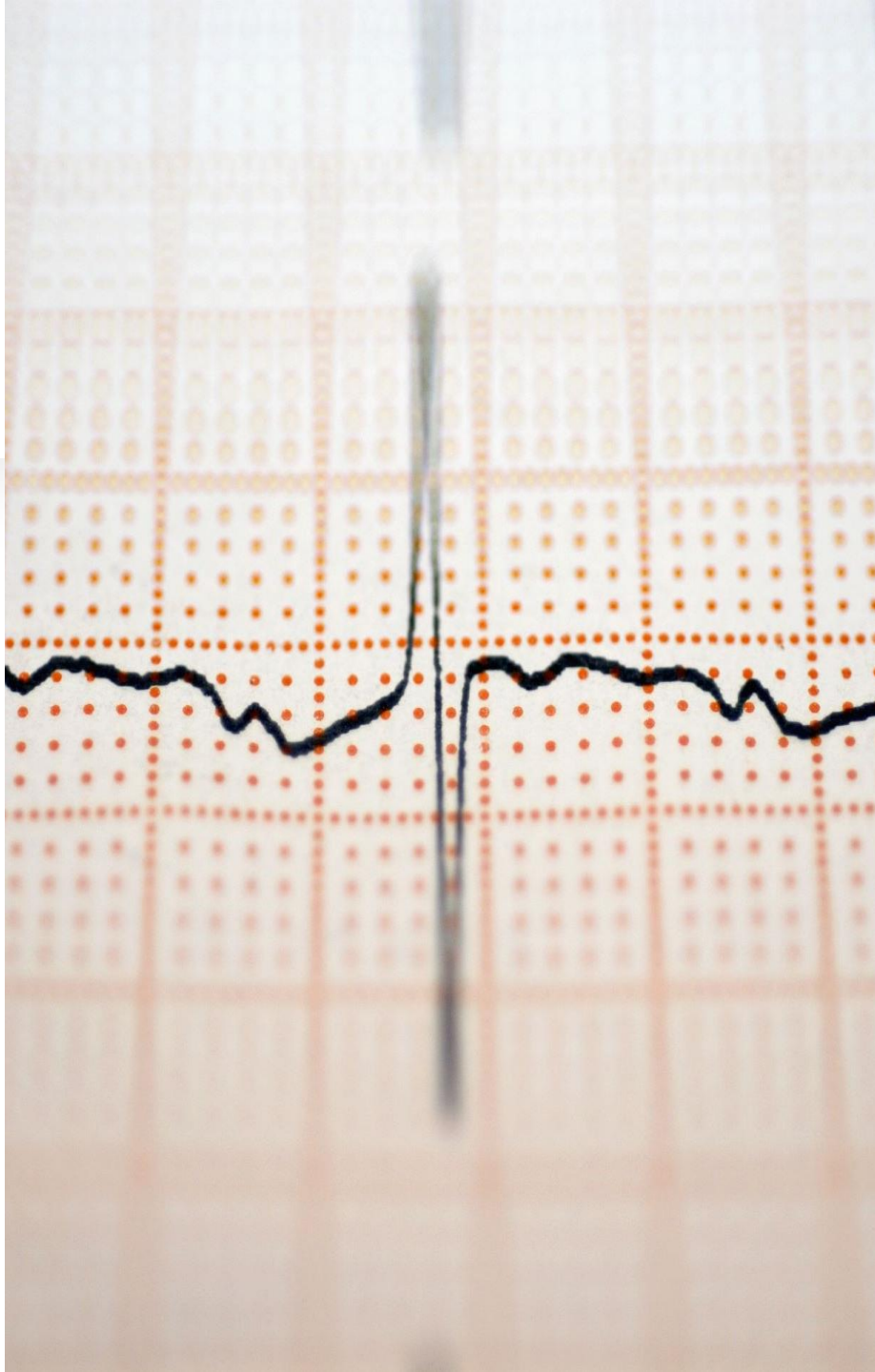
Hyperaldosteronism

Untreated OSA

NSAID use

Renal Artery Stenosis (RAS)

- Only screen for RAS in older adults with resistant HTN (using 3 or more medications incl. diuretic) and abnormal renal function
- Consider possible stenting in patients with resistant HTN, bilateral stenosis, or cardiac destabilization syndromes (cardiac ischemia or flash pulmonary edema)
- Lifestyle changes and blood pressure control recommended
- Angioplasty / stenting of limited benefit:
  - **CORAL and ASTRAL trials did not show benefit of stenting on cardiovascular or renal outcomes in older adults**



The Literature

HYVET–Hypertension in the Very Elderly Trial (2008)

- **First RCT in adults age ≥ 80**
- **Treatment group with systolic blood pressure ≤ 150 compared to average of ≥ 165 in control group**
- **Stopped early: 21% reduction in mortality in treatment group**
- **Treatment group with fewer strokes and less CHF**
- **Excluded patients with dementia, immobility, and those that lived in nursing homes**

Diastolic Blood Pressure

SBP remains a more accurate predictor of adverse outcomes as compared to DBP

Some evidence that DBP shows a J-shaped curve with respect to adverse outcomes at below 60-70 and at elevated range (INVEST and Systolic Hypertension in the Elderly Program)

PARTAGE – Benetos et al. 2012

Multi-center longitudinal study of 1130 frail nursing home residents over 80 years

Significant interaction between low SBP (<130 mm Hg) and combination antihypertensive treatment (2 or more medications) on 2-year all-cause mortality

no benefit of intensive BP control

SPRINT Trial

- Ambulatory patients average age 68
- Compared SBP goal of <120 to goal of 140
- Significant decrease in cardiovascular events & overall mortality in the intensively controlled group, including subgroups age > 75 and frail
- Higher rates of syncope but no increase in falls with injury in more intensively controlled group
- Patients with dementia and those living in nursing homes were excluded from study

SPRINT-MIND Trial

- All participants in SPRINT trial automatically included in the SPRINT-MIND study arm
- Significant (19%) reduction in incidence of mild cognitive impairment with more intensive blood pressure control

AHA/ACC 2017 guidelines based on SPRINT trial:

- Lowered treatment goal in older adults from ≥ 150/90 to ≥ 130/80

ACC / AHA 2017 Guideline

- **based on results of SPRINT:**
- SPRINT enrolled 2656 participants ≥75 years.
- 34% reduction in cardiovascular outcomes and 33% reduction in total mortality were identified with intensive SBP management to a goal of 120 mmHg.
- Benefits among the frailest older participants and were not accompanied by serious, irreversible adverse events
- **change for definition of the threshold for HTN to blood pressure ≤130/80 mmHg**
- **consider anti-hypertensive medication in patients with blood pressure 130–139/80–89 mmHg in patients with clinical CVD or >10% CVD risk (most adults >70 yrs)**
- **Did not include NH residents or those with dementia**

Controversies of managing HTN in PALTC

Limited life expectancy of some patients:

- Benefits of treatment after 2 years of therapy (SPRINT)

Polypharmacy/medication interactions:

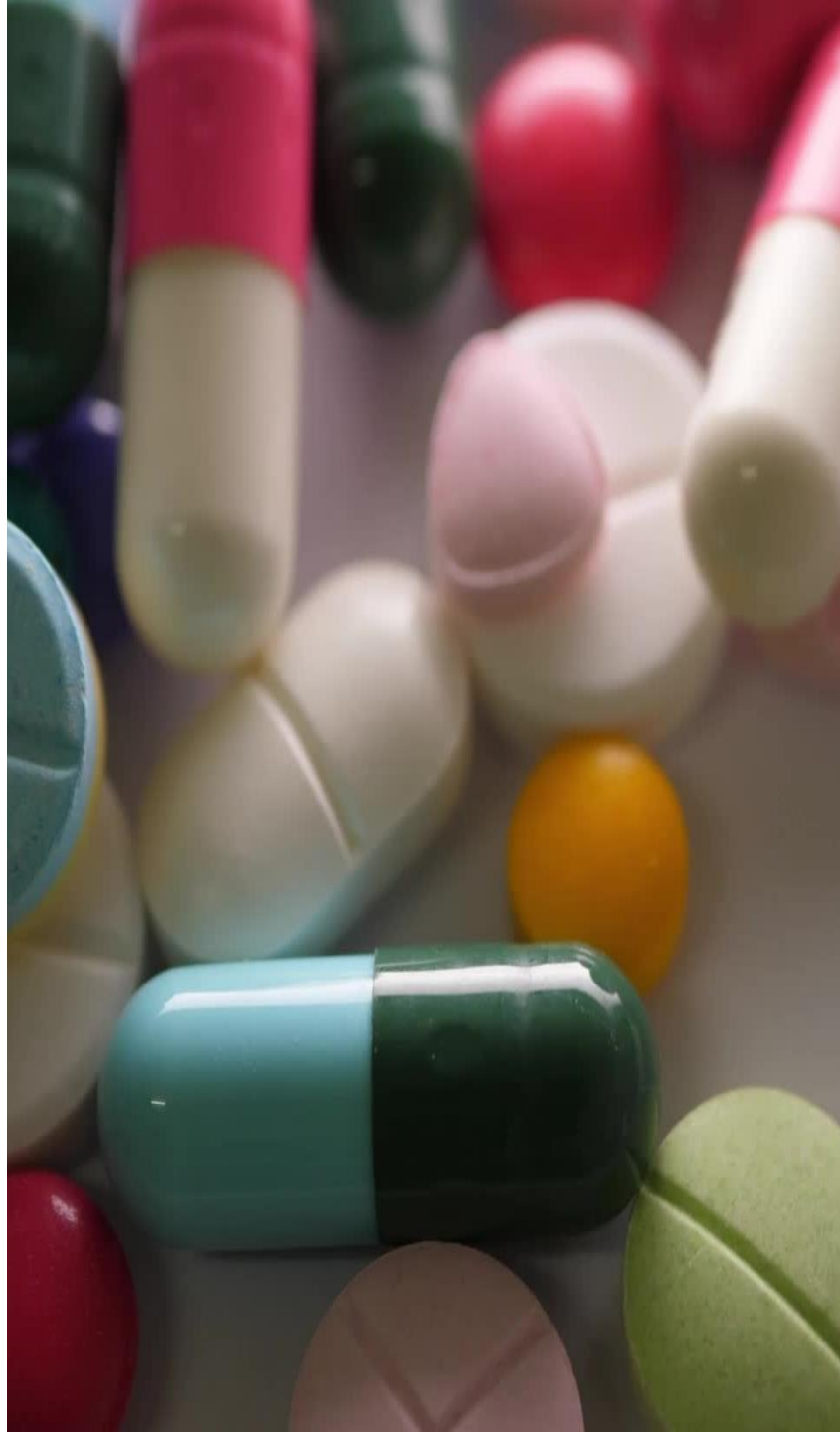
- PALTC average resident 8-10 medications
- Significantly higher mortality if SBP <130 receiving > 2 anti-hypertensives (PARTAGE)

Vasodilator use:

- Several studies note use as independent risk factor for falls

Sodium restriction:

- Risk for malnutrition and hyponatremia



ACC / AHA 2017 Guideline

AHA/ACC 2017 guideline issued a second recommendation:

Older adults with high burden of co-morbidities and limited life expectancy need a team-based approach to assess risks and benefits to determine intensity of therapy

The Literature – Boockvar et al.

Hypertension Treatment in US Long-Term Nursing Home Residents With and Without Dementia

Observational cohort study of PALTC population by Boockvar and team – JAGS July 2019

Included groups with /without moderate to severe dementia

Increased intensity of antihypertensive treatment was not associated with significant difference in mortality --

Increased intensity of antihypertensive treatment was associated with small increases of hospitalization, cardiac-related hospitalization – and small decrease in ADLs.

Trial of Intensive Blood-Pressure Control in Older Patients with Hypertension (Zhang et al. 2021)

RCT of Chinese adults age 60 to 80 with HTN. Standard treatment group with target for SBP 130 to 150 mm Hg. Intensive treatment group SBP target was 110 to 130 mm Hg.

targeting a systolic blood pressure (SBP) of 110 to <130 mmHg (intensive) in Chinese adults aged 60–80 reduced major cardiovascular events by 26% compared to a 130–<150 mmHg target (standard)

During follow-up of 3 years, serious cardiovascular events (stroke, MI, CHF, and atrial fibrillation): 4.6% in standard treatment group, 3.5% intensive treatment group.

Rates of dizziness, syncope, and fractures were similar in both groups, although the intensive-treatment group experienced more hypotension.

2023 analysis of SPRINT-MIND

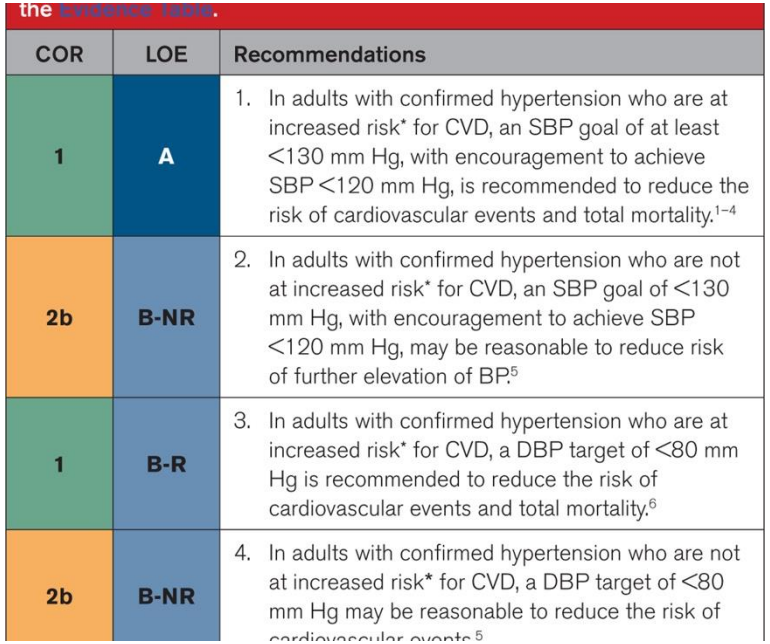
2023 post hoc analysis of SPRINT-MIND analyzed outcomes related to cognition:

- Intensive SBP control < 120 did not have negative impact on cerebral blood flow
- Intensive SBP control < 120 did not have negative impact on cognition
- Intensive SBP control with lower DBP did not have negative impact on cerebral blood flow or cognitive outcomes

- Did not include NH residents or those with dementia

HTN guideline updates 2023-2025

- AHA/ACC 2025
- BP target of <130/80 for older adults who are robust or mildly frail
- Shared decision-making for blood pressure targets in frail patients



the evidence table.

COR	LOE	Recommendations
1	A	1. In adults with confirmed hypertension who are at increased risk* for CVD, an SBP goal of at least <130 mm Hg, with encouragement to achieve SBP <120 mm Hg, is recommended to reduce the risk of cardiovascular events and total mortality.[1–4]
2b	B-NR	2. In adults with confirmed hypertension who are not at increased risk* for CVD, an SBP goal of <130 mm Hg, with encouragement to achieve SBP <120 mm Hg, may be reasonable to reduce risk of further elevation of BP.[5]
1	B-R	3. In adults with confirmed hypertension who are at increased risk* for CVD, a DBP target of <80 mm Hg is recommended to reduce the risk of cardiovascular events and total mortality.[6]
2b	B-NR	4. In adults with confirmed hypertension who are not at increased risk* for CVD, a DBP target of <80 mm Hg may be reasonable to reduce the risk of cardiovascular events.[5]

HTN guideline updates 2023-2025

European Society of Hypertension - ESH 2023

Target SBP of 130-140mmHg for older adults 65-79 years and reduction to <130 if well tolerated

Target SBP of 140-150 mmHg for older adults 80 years and patients with frailty

HTN guideline updates 2023-2025

European Society of Cardiology - ESC 2024

Target BP 120-129/70-79 for patients < 85 years

Target BP < 140/90 for patients ≥ 85 years or patients with moderate to severe frailty

HTN guideline updates 2023-2025

Japanese Society of Hypertension - JSH 2025

Functional status-based categorization for blood pressure goals rather than age-based stratification:

Category 1 – ambulatory / robust to mild frailty

Category 2 – iADL impaired

Category 3 – ADL impaired (often in PALTC)

Category 4 – end of life (often in PALTC)

Begin anti- hypertensives at half standard dose for patients ≥ 75 or patients 65-74 years with significant functional decline and titrate dose

Meta-analysis and systematic review of 7 RCTs

HTN guideline updates 2023-2025

JSH 2025

In functionally independent older adults lowering of SBP to

≤ 130 mmHg significantly reduced cardiovascular events and both cardiovascular and total mortality, without increase of serious adverse events

Category 1 (ambulatory): < 130 mmHg

Category 2 (IADL impaired): < 140 mmHg

Category 3 (ADL impaired): < 150 mmHg

Category 4 (end-of-life): 140–160 mmHg (individualized)

Guideline	Age Stratification	BP Target (Robust/Fit Elderly)	BP Target (Frail/Functional Impaired)
JSH2025	65–74 years (if functional decline, apply ≥ 75 criteria) ≥ 75 years (categorized by function, not age)	Category 1 (ADL independent): <130/80 mmHg	Category 2 (IADL impaired): < 140 mmHg Category 3 (ADL impaired): < 150 mmHg Category 4 (end-of-life): 140–160 mmHg (individualized)
ESH2023	65–79 years ≥ 80 years	65–79 years: 140–130 mmHg initially, <130 mmHg if tolerated ≥80 years (robust): Same as 65–79 years	≥80 years (intermediate function): 140–150 mmHg Severe functional loss: Individualized
ESC2024	< 85 years ≥ 85 years	<85 years: 120–129/70–79 mmHg (if tolerated)	≥ 85 years or moderate-severe frailty: < 140/90 mmHg (ALARA principle)
AHA/ACC 2025	≥ 80 years (minimal age stratification)	All ages: <130/80 mmHg	Frail, institutionalized, or limited life expectancy: Individualized (no specific target)

Reduction of Antihypertensive Treatment in Nursing Home Residents - Benetos, et al.

***NEJM* November 2025**

- Multicenter RCT 1048 nursing home residents age ≥ 80
- SBP <130mmHg, receiving > 1 antihypertensive
- Step-down group: protocol to reduce antihypertensives
- Usual care group: received standard care
- Primary endpoint: death from any cause
- After 38 months: ~10mmHg rise in BP in both groups
  - Step down group reduced from 2.6 to 1.5 antihypertensives
  - Usual care group reduced from 2.5 to 2.0 antihypertensives
- No significant difference in mortality or adverse events

Asymptomatic Acute Hypertension in Nursing Home Residents: Rarely an Emergency – Shih et al. - *JAMDA* 2025

- Recommendations from PALTMed/ACEP: The Geriatric Emergency Department Accreditation and Improved Care of Nursing Home Residents and ED Task Force
- Asymptomatic acute HTN = hypertensive urgency SBP≥180 and/or DBP>110 – no signs end organ damage
- First evaluate for signs of end organ damage: ED if neurologic deficits, encephalopathy, severe headache, chest pain, shortness of breath, back or abdominal pain
- Accurate BP measurement – consider setting, pain, constipation, last void, cuff, timing of last meal, emotional status of patient – recheck
- Supine HTN with postural hypotension – get seated BP
- Know goals of care in relation to hospital transfer
- Degree of BP elevation alone should not qualify for ED transfer - context

Asymptomatic Acute Hypertension in Nursing Home Residents: Rarely an Emergency – Shih et al. - *JAMDA* 2025

If no signs end organ damage:

→ Non-pharmacologic strategies to lower BP first

→ If persistently elevated and more than 3 hours since last antihypertensive dose, give an additional dose.

↓

If additional medication is needed, a third or fourth agent can be considered – captopril or clonidine

→ Data has shown increase of morbidity/mortality with some acute treatment

→ Do not lower BP more than 25% in first 2 hours – goal 160/100 within 6 hours

Case

- An 84 year-old asymptomatic female living in an ALF has past medical history of HTN, COPD on 2L nightly O2, and osteoporosis has an averaged weekly blood pressure log over the last 4 weeks of: 145/80, 150/82, 140/85, and 144/84
- No systolic blood pressure readings were above 155 or below 135, diastolic pressures were in the 80s.
- Medications: lisinopril 20 mg daily and alendronate 70 mg daily, salmeterol/fluticasone inhaler BID
- She is functionally IND for gait and transfers, is assisted for bathing, otherwise IND with ADLs. Assisted for iADLs. A&OX4.
- **Should we make any changes to her anti-hypertensive regimen?**

Take Home Messages

Determining appropriate BP goals for patients in PALTC is complex and there is controversy surrounding evidence

Accurate measurement and consideration of many factors contributing to acute / chronic HTN is needed in patients in PALTC

A patient-centered approach should be taken to determine appropriate BP targets

Acute asymptomatic HTN (without signs of end organ damage) may potentially be managed without transfer to ED

References

- **Probstfield JL, Applegate WB, Borhani NO, Curb JD, Cutler JA, Davis BR, Furberg CD, Hawkins CM, Lakatos E, Page LB, et al.Systolic Hypertension in Elderly Program – SHEP**JAMA 1991; 265:3255–3264. Primary report. JAMA 1997; 278:212-6. Heart failure. JAMA 1998; 279: 778-80.
- **GRS 10/e. American Geriatrics Society, 2024.**
- **Whelton PK, Carey RM, Aronow WS, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/ AGS/APhA/ASH/ASPC/NMA/PCNA. Guideline for the prevention, detection, evaluation and management of high blood pressure in adults. A report of the American College of Cardiology/American heart association task force on clinical practice guidelines. J Am Coll Cardiol. 2018;71:2199—2269.**
- Yusuke O, Atsushi S, Hisatomi A, et al. *Hypertension Research* Key highlights of the Japanese Society of Hypertension Guidelines for the management of elevated blood pressure and hypertension 2025 (JSH2025); **volume 48**, pages2500–2511 (2025)
- Yamamoto, K. JSH2025 Guidelines for Hypertension Management in Older Adults: International Comparison; Hypertension Research; 2026 Jan 26. doi: 10.1038/s41440-026-02550-7. Online ahead of print.
- **Mancia G, Fagard R, NarkiewiczK, et al. 2013 ESH/ESC guidelines for the management of arterial hypertension: the task force for the management of arterial hypertension of the European society of hypertension (ESH) and of the European society of Cardiology (ESC). Eur Heart J. 2013;324:2159—2219.**
- **Benetos A, Labat C, Rossignol P, et al. Treatment with multiple blood pressure medications, achieved blood pressure, and mortality in older nursing home residents: the PARTAGE study. JAMA Intern Med. 2015;175: 989—995.**

References

- Benetos, A, Gautier, S, Labat, C, Salvi, P, et al. Mortality and cardiovascular events are best predicted by low central/peripheral pulse pressure amplification but not by high blood pressure levels in elderly nursing home subjects: the PARTAGE (Predictive Values of Blood Pressure and Arterial Stiffness in Institutionalized Very Aged Population) study. J Am Coll Cardiol, 2012 Oct 16;60(16):1503-11.
- 2025 AHA/ACC/AANP/AAPA/ABC/ACCP/ACPM/AGS/AMA/ASPC/NMA/PCNA/SGIM Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. Circulation 152, (11), 2025.
- McEvoy JW, McCarthy CP, Bruno RM, Brouwers S, et al. ESC Scientific Document Group. 2024 ESC Guidelines for the management of elevated blood pressure and hypertension. Eur Heart J. 2024 Oct 7;45(38):3912.
- Mancia G, Kreutz R, Brunström M, Burnier M, et al. 2023 ESH Guidelines for the management of arterial hypertension The Task Force for the management of arterial hypertension of the European Society of Hypertension: Endorsed by the International Society of Hypertension (ISH) and the European Renal Association (ERA). J Hypertens. 2023 Dec 1;41(12):1874-2071.
- Shih, R, Ragsdale, L, Orr, N, and Steinberg, K. Asymptomatic Acute Hypertension in Nursing Home Residents: Rarely an Emergency. *JAMDA,*26(11),2025.
- Pepine CJ, Handberg EM, Cooper-DeHoff RM, et al. A calcium antagonist vs a non-calcium antagonist hypertension treatment strategy for patients with coronary artery disease. The International Verapamil-Trandolapril Study (INVEST): a randomized controlled trial. JAMA 2003;290:2805-16.
- Boockvar KS, Song W, Lee S, Intrator O. Hypertension Treatment in US Long-Term Nursing Home Residents With and Without Dementia. J Am Geriatr Soc. 2019 Oct;67(10):2058-2064. doi: 10.1111/jgs.16081. Epub 2019 Jul 22. PMID: 31328791; PMCID: PMC6820134.
- Zhang, W, Zhang,S, Deng,Y, Wu, S, et al. Trial of Intensive Blood-Pressure Control in Older Patients with Hypertension. N Engl J Med 2021;385 (14):1268-1279.

Protecting Our Most Vulnerable: Vaccination Strategies in Long-Term Care

Melanie Trigo, Pharm.D, C.Ph

Apothecon

Learning Objectives

By the end of the presentation, participants will be able to:

1. Describe current CDC/ACIP recommendations for adult immunizations relevant to long-term care, including influenza, pneumococcal, COVID-19, RSV, herpes zoster, and Tdap vaccines.
2. Select appropriate vaccines for older adults and long-term care residents based on age, risk factors, immunization history, and current clinical guidance.
3. Apply CDC decision-support tools to manage complex vaccination scenarios, including prior pneumococcal vaccination and immunocompromised status.
4. Identify safety considerations, contraindications, and documentation requirements related to vaccine administration in long-term care settings, including CMS F883 compliance.

Why Vaccines Matter in Long Term Care

Vaccination Gaps Remain

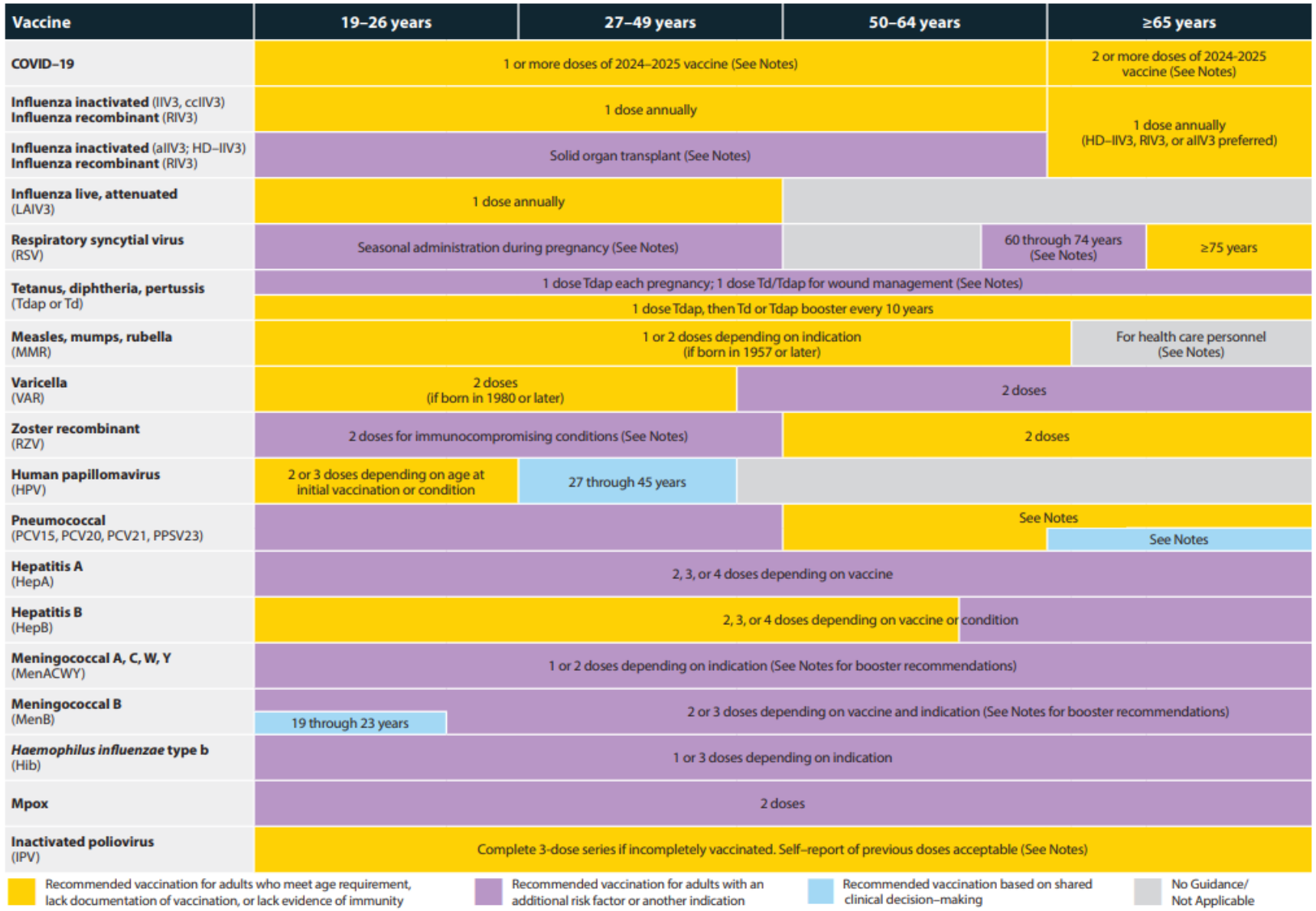
- Coverage below national targets for influenza, pneumococcal, RSV, and shingles
- Provider recommendation is a key drive of uptake

Clinical Impact

- Influenza & Pneumonia remain leading cause of death in older adults
- Vaccination reduces:
  - Influenza related **deaths** by ~80% in older adults
  - Pneumococcal **invasive disease** by ~60-70%
  - COVID-19 **hospitalizations** by up to ~46%
  - RSV **lower respiratory tract infection** by ~80-90%
  - Shingles by >90% with 2-dose recombinant vaccine

VACCINE USE	AGE GROUP ASSESSED	% RECEIVING VACCINATION
Influenza	≥ 65 years	58.6%
Pneumococcal*	≥ 65 years	64%
RSV	≥ 75 years	39.7%
COVID-19	≥ 65 years	89.8%
Herpes Zoster	≥ 65 years	30.3%

CDC Recommended Adult Immunization Schedule (2025)



CDC: Centers for Disease Control and Prevention
Centers for Disease Control and Prevention. Recommended Adult Immunization Schedule for ages 19 years or older, United States, 2025. https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html

Influenza: What Clinicians Need to Know

Why Influenza is Different in LTC

- High-risk population due to age, comorbidities and immunosenescence
- Congregate living enable rapid transmission
- Symptoms may be atypical or subtle in older adults

Clinical Impact

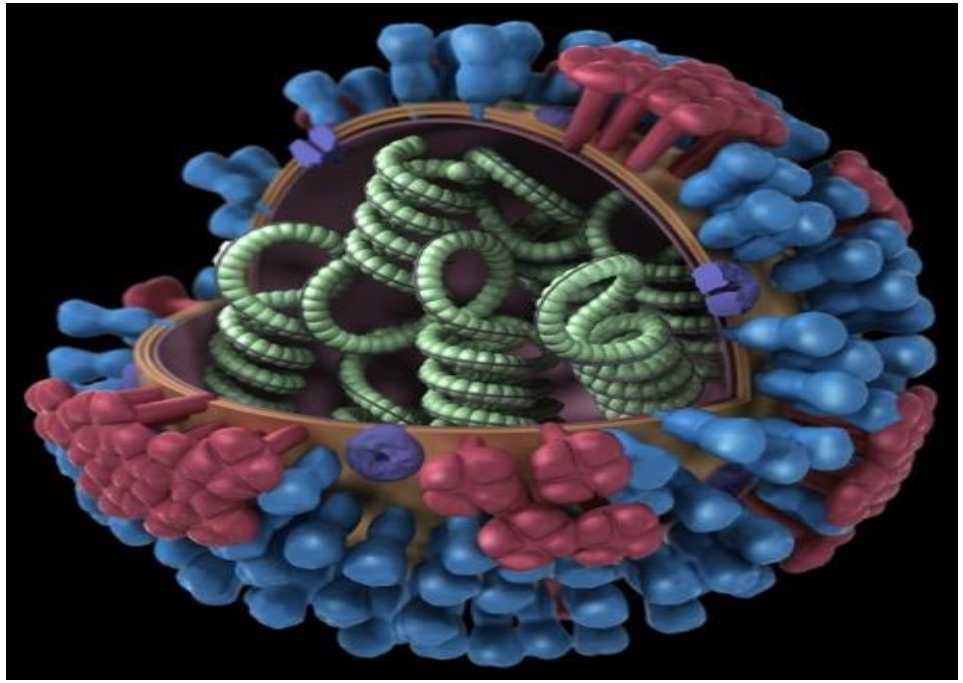
- Increased risk of:
  - Hospitalization
  - Functional decline
  - Secondary bacterial pneumonia
  - Mortality
- Outbreaks can escalate quickly and affect entire units

Prevention is Critical

- Vaccination is the most effective intervention
- Delayed vaccination increases outbreak risk
- Early recognition and prompt antiviral treatment reduces severity

LTC Takeaway

- Residents should be assumed **high-risk by default**
- Prevention strategies must be **proactive, not reactive**



Influenza Vaccines 2025-2026: What Changed

Egg Based Influenza Vaccine

TRADE NAME	MANUFACTURER	APPROVED AGE GROUP
Trivalent, Standard Dose, Inactivated Influenza Vaccine (SD-IIV3)		
Afluria	Seqirus	≥ 6 months*
Fluarix	GlaxoSmithKline	≥ 6 months
FluLaval	GlaxoSmithKline	≥ 6 months
Fluzone	Sanofi Pasteur	≥ 6 months
Trivalent, High Dose, Inactivated Influenza Vaccine (HD-IIV3)		
Fluzone High-Dose	Sanofi Pasteur	≥ 65 years†
Trivalent, Inactivated Influenza Vaccine with Adjuvant (aIIV3)		
Fluad	Seqirus	≥ 65 years†
Intranasal, Trivalent, Live Attenuated Influenza Vaccine (LAIV3)		
FluMist	AstraZeneca	2 through 49 years

Non-Egg Based Influenza Vaccine

TRADE NAME	MANUFACTURER	APPROVED AGE GROUP
Trivalent, Cell Culture-based Inactivated Influenza Vaccine (ccIIV3)		
Flucelvax	Seqirus	≥ 6 months
Trivalent, Recombinant Influenza Vaccine (RIV3)		
Flublok	Sanofi Pasteur	≥ 9 years

Which Flu Vaccine for Older Adults?

ACIP Recommendation (Since 2022)

- Adults 65 years and older should preferentially receive:
  - High-dose inactivated influenza vaccine (HD-IIV3)
  - Recombinant influenza vaccine (RIV3)
  - Adjuvanted influenza vaccine (aIIV3)

HIGHER DOSE	ADJUVANTED
Fluzone High-Dose (HD-IIV3)	Fluad (aIIV3)
Flublok (RIV3)	

ACIP states:

No evidence that one preferred product is superior to another

Vaccination should not be delayed if a preferred product is unavailable

If needed, give any age-appropriate influenza vaccine

Influenza Safety, Allergies, and Treatment

Common Adverse Effects

Soreness, redness, swelling at injection site

- Generally last only 1 to 2 days after injection
- More frequent with:
  - high-dose vaccine (i.e., Fluzone High-Dose)
  - adjuvanted vaccine (e.g., Fluad)
  - the jet-injector spray (i.e., Afluria)

Egg Allergy Clarification

- Severe allergic reactions to egg-based influenza vaccines is now considered "rare"
- "Egg allergy alone necessitates no additional safety measures for influenza vaccination beyond those recommended for any recipient of any vaccine, regardless of severity or previous reaction egg"
- "Any influenza vaccine (egg based or nonegg based) that is otherwise appropriate for the recipient's age and health status can be used"

Antiviral Treatment

All long-term care facility residents who have confirmed or suspected influenza should receive antiviral treatment immediately

- Relenza (zanamivir)
- Tamiflu (oseltamivir)
- Xofluza (baloxavir)
- Rapivab (peramivir)

Pneumococcal Disease

Clinical Impact

- Common cause of bacterial pneumonia, bacteremia, and meningitis
- Disproportionately affects older adult and LTC residents
- Increased risk for age, chronic disease, and immunocompromise

Why Prevention Matters

- Disease may present abruptly and progress rapidly
- Associated with hospitalization, functional decline, and mortality
- Treatment does not eliminate risk of poor outcome

LTC Takeaway

- Pneumococcal vaccination is a high-impact, usually one-time intervention
- Uses CDC decision tools when vaccination history is unclear

Pneumococcal Vaccines: What to Give

Adults 19 to 49 years of age with underlying conditions or risk factors

Adults 50 years and older

1 dose of PCV20 or

1 dose of PCV21 or

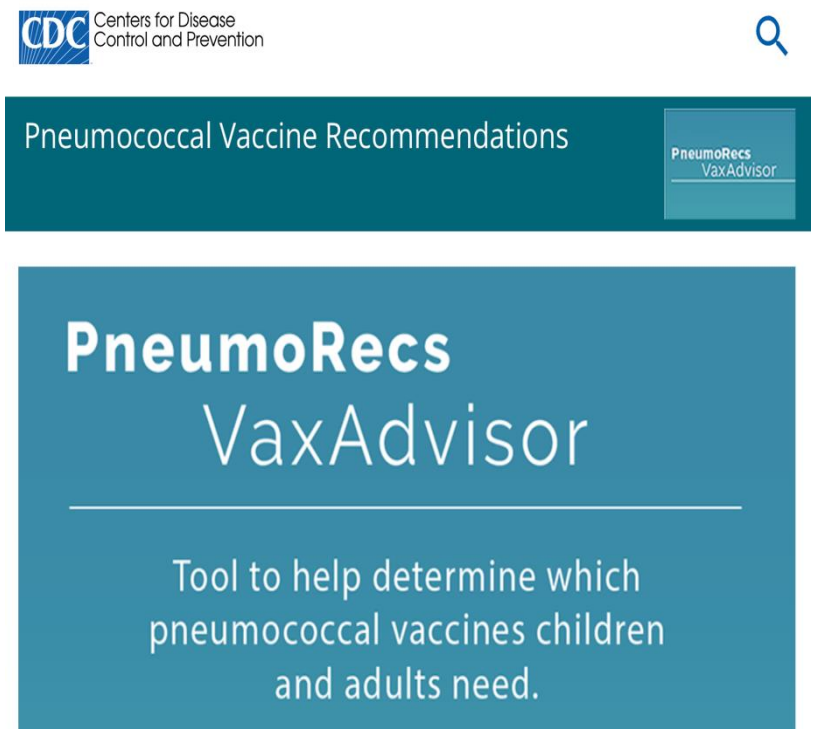
1 dose of PCV15 followed by 1 dose of PPSV23*

Formulations:

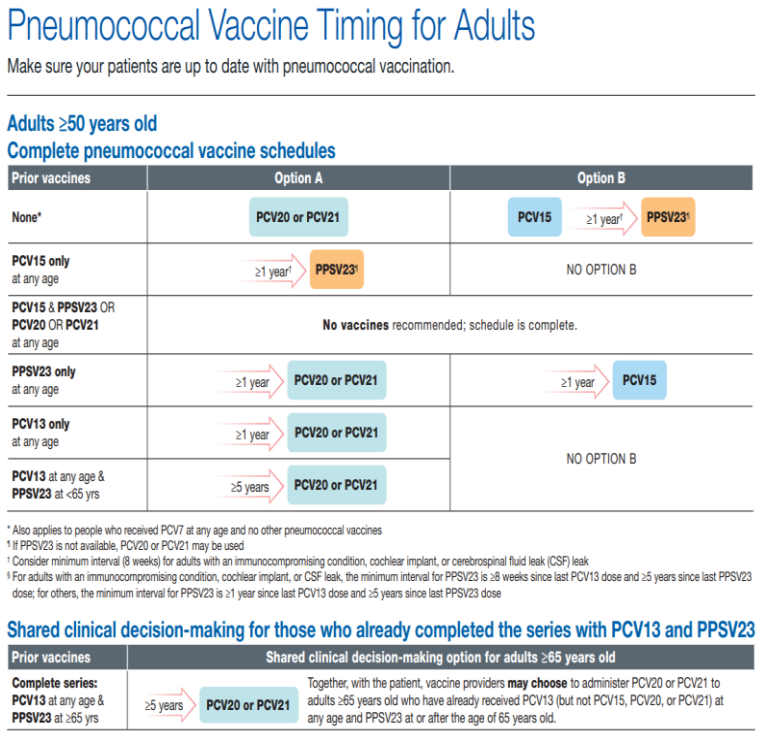
- **Prevnar 20**
- **Capvaxive**
- **Vaxneuvance**
- **Pneumovax 23**

*Timing of the PPSV23 dose is most often after 1 year or later, but for individuals with immunocompromising conditions, cochlear implants or cerebrospinal fluid leak, a shorter interval may be advisable (but at least 8 or more weeks)

Pneumococcal Decision Support



Available as a free App or online at:
https://www.cdc.gov/pneumococcal/hcp/vaccine-recommendations/app.html



Pneumococcal Vaccine Timing for Adults

Make sure your patients are up to date with pneumococcal vaccination.

Adults ≥50 years old
Complete pneumococcal vaccine schedules

Prior vaccines	Option A	Option B
None*	PCV20 or PCV21	PCV15 → ≥1 year† → PPSV23¶
PCV15 only at any age	≥1 year† → PPSV23¶	NO OPTION B
PCV15 & PPSV23 OR PCV20 OR PCV21 at any age	No vaccines recommended; schedule is complete.	
PPSV23 only at any age	≥1 year → PCV20 or PCV21	≥1 year → PCV15
PCV13 only at any age	≥1 year → PCV20 or PCV21	NO OPTION B
PCV13 at any age & PPSV23 at <65 yrs	≥5 years → PCV20 or PCV21	

* Also applies to people who received PCV7 at any age and no other pneumococcal vaccines
¶ If PPSV23 is not available, PCV20 or PCV21 may be used
† Consider minimum interval (8 weeks) for adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak (CSF) leak
§ For adults with an immunocompromising condition, cochlear implant, or CSF leak, the minimum interval for PPSV23 is ≥8 weeks since last PCV13 dose and ≥5 years since last PPSV23 dose; for others, the minimum interval for PPSV23 is ≥1 year since last PCV13 dose and ≥5 years since last PPSV23 dose

Shared clinical decision-making for those who already completed the series with PCV13 and PPSV23

Prior vaccines	Shared clinical decision-making option for adults ≥65 years old
Complete series: PCV13 at any age & PPSV23 at ≥65 yrs	≥5 years → PCV20 or PCV21 — Together, with the patient, vaccine providers **may choose** to administer PCV20 or PCV21 to adults ≥65 years old who have already received PCV13 (but not PCV15, PCV20, or PCV21) at any age and PPSV23 at or after the age of 65 years old.

Available at:
https://www.cdc.gov/pneumococcal/downloads/Vaccine-Timing-Adults-JobAid.pdf

Determination may include consideration of:

- Age
- Past pneumococcal vaccination history
- Chronic health conditions (e.g., cigarette smoking, diabetes)
- High risk conditions (i.e., CSF leak, cochlear implant)
- Immunocompromising conditions (e.g., kidney failure, cancer)
- Shared decision making

COVID-19 Infection: Implications for LTC Residents

High Impact

Advanced age strongest risk factor for severe outcomes

High prevalence of chronic conditions increase risk of hospitalization and death

Rapid transmission and outbreak

Clinical Consequences

Increase risk of

- Severe illness/hospitalization
- Functional decline/deconditioning
- Delirium
- Mortality

May progress rapidly, even after initial mild symptoms

Facility Impact

Entire units can be affected

Early detection is complicated by asymptomatic and presymptomatic transmission

COVID-19 Vaccines in Long-Term Care

Adults 18 to 64 years of age who live or work in long-term care → 1 dose of updated COVID-19 vaccine

Adults 65 years of age or older who live or work in long-term care → 2 doses of updated COVID-19 vaccine 6 months apart

Precaution

History of non-severe allergy to component of COVID-19 vaccine OR non-severe immediate allergic reaction after previous dose of one COVID-19 vaccine type

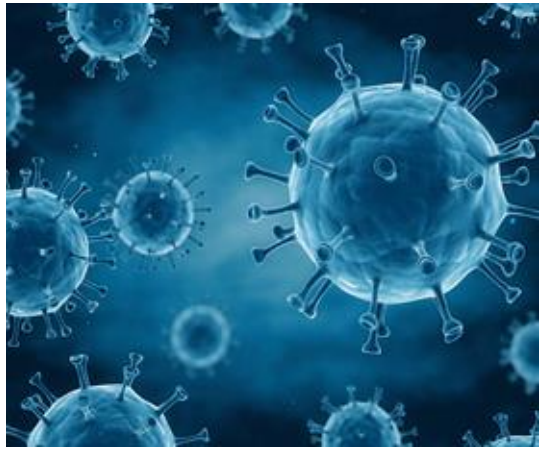
History of MIS-C or MIS-A

Defer vaccination for the following scenarios:

- Know current COVID-19 infection or acute moderate-to-severe illness – until recovered
- Myocarditis or pericarditis after any COVID-10 vaccine – consider if benefits outweigh risks and defer second dose until episode has resolved

COVID-19 Vaccine Formulations

Vaccine	Manufacturer	Platform	Age Indication
Comirnaty	Pfizer-BioNTech	mRNA	≥65 ≥5 yrs – 64 yrs at high risk for severe COVID-19
Spikevax	Moderna	mRNA	≥65 ≥6 mos – 64 yrs at high risk for severe COVID-19
mNexspike	Moderna	mRNA	≥65 ≥12 yrs – 64 yrs at high risk for severe COVID-19
Nuvaxovid	Sanofi	Protein subunit	≥65 ≥12 yrs – 64 yrs at high risk for severe COVID-19



RSV: Who Should Get Vaccinated

- RSV is under-recognized cause of severe respiratory illness in older adults
- Outcomes comparable to influenza and Covid-19
- LTC residents are at higher risk
- Rapid spread in close living environments
- Leads to hospitalizations and ICU admissions, functional decline and deconditioning, and increased mortality

Adults 50 to 74 years old who are at increased risk:

- Chronic lung diseases (e.g., COPD, asthma)
- Chronic cardiovascular diseases (e.g., heart failure and coronary artery disease)
- Immunocompromising conditions
- Blood disorders
- Residents of nursing homes and other long-term care facilities
- Neurologic disorders
- Diabetes mellitus
- Kidney disorders
- Liver disorders (e.g., cirrhosis)
- Severe obesity (BMI ≥ 40)
- Other underlying conditions that the provider determines might increase risk of severe respiratory illness

CDC recommends adults 75 years of age and older receive a single dose of RSV vaccine

CDC recommends adults 50 to 74 years of age who are at increased risk of severe RSV disease receive a single dose of RSV vaccine

RSV Vaccines at a Glance

Arexvy	**Adjuvanted, recombinant vaccine** FDA approved in adults 50 years and older	**For adults, administer 0.5 mL intramuscularly** Requires reconstitution prior to injection
Abrysvo	**Recombinant vaccine** FDA approved in adults 18 years and older	**For adults, administer 0.5 mL intramuscularly** Requires reconstitution prior to injection
mResvia	**mRNA vaccine** FDA approved in adults 18 years and older	**For adults, administer 0.5 mL intramuscularly**

Herpes Zoster (Shingles): Risks, Complications, and Management

What is Herpes Zoster?

Reactivation of latent varicella-zoster virus (VZV)

Risk increases with age and immunosuppression

Without vaccination

- ~1 in 3 people develop shingles
- Risk increases to ~50% by age 85

Clinical Impact

Painful, blistering rash

Postherpetic neuralgia (10-18%) may persist months to years

Serious complications

- Bacterial superinfection
- Cranial nerve palsies
- Pneumonia, encephalitis
- Vision or hearing loss

Why Prevention is Critical

Treatment must start early and does not reliably prevent PHN

Antivirals reduce severity but do not eliminate complications

Vaccination is the most effective strategy

Herpes Zoster (Shingles): Vaccination, Eligibility, and Key Considerations

Shingrix (Recombinant Zoster Vaccine)

Two-dose series

Highly effective

- ~97% (ages 50-69)
- ~91% (ages >69)

Does not contain live virus

Prior Zostavax is not protective – revaccinate with Shingrix

Do NOT Vaccinate

Severe allergy to vaccine components

Moderate or severe acute illness

Current shingles infection

Pregnancy

Who Should Be Vaccinated

1st	50 years of age and older
2nd	2 to 6 months after 1st dose

(Immunocompromised)

1st	19 years of age and older
2nd	1 to 2 months after 1st dose

Immunocompromised adults have a shorter immunization schedule

Tetanus, Diphtheria, Pertussis (Tdap)

Why It Matters in LTC

- Protects against tetanus, diphtheria, and pertussis
- Pertussis immunity wanes over time, even in previously vaccinated
- Congregate living increases risk of exposure and transmission
- Severe disease risk increases with age and comorbid conditions

Formulations

Tdap
- Boostrix
- Adacel

Td
- Tenivac

Who Should Be Vaccinated

- All adults who never received Tdap:

  1 dose of Tdap
- After Tdap, give Td or Tdap booster every 10 years

Vaccination Hesitancy & Hospice Considerations

Hesitancy commonly reflects concerns about:

- Safety and side effects
- Perceived lack of benefit due to age or comorbidities

Reasons for non-vaccination may include:

- Refusal after education
- Medical contraindications
- End of life comfort-focused care

These decisions must be documented in the medical record

Hospice enrollment does not automatically exclude vaccination

Decision should align with:

- Goals of care
- Prognosis
- Risk of exposure / potential benefit

Influenza and pneumococcal vaccines may be appropriate when consistent with comfort-focused goals

CMS F883: Influenza & Pneumococcal Immunization Requirement

Facility Responsibilities

- Provide education on benefits and potential side effects
- Offer:
  - Influenza vaccine annually
  - Pneumococcal vaccines per CDC/ACIP guidance
- Allow residents or legal representatives to **accept or refuse**

Policies & Procedures

- Vaccination policies must align with **national recommendations (CDC/ACIP)**
- Standing orders may be used if permitted by state and local law
- When a precaution exists:
  - Discuss risks vs benefits
  - Vaccine may still be given if benefit outweighs risk and physician approves

Documentation Requirements

- Document education provided
- Document vaccine given, refused, or medically contraindicated
- Self-reporting permitted ONLY for influenza vaccine and PPSV23
  - Written documentation required for all other vaccines

Case Study

Mrs. L, 82 year-old nursing facility resident. Past medical history of CHF (EF 35%), COPD on oxygen, DM2, stage 3 CKD, mild cognitive impairment, and recurrent pneumonia (2 hospitalizations in the past 3 years). She is wheelchair-dependent and requires assistance with ADLs. She has no documented vaccine allergies.

Family is unsure of about prior vaccinations. Records from previous providers are not complete.

Immunization History (from chart review):

Influenza: last documented 2 years ago

COVID-19: primary series completed, no updated booster

Pneumococcal: PPSV23 given at age 65, no PCV documented

Tdap: unknown

Zoster and RSV: not received

Question #1

Based on Mrs. L’s age, comorbidities, and incomplete records, which vaccines would you administer today?

A. Give influenza + updated COVID now; plan the rest later

B. Give influenza + updated COVID + RSV today

C. Focus on pneumococcal vaccination first because of pneumonia history

D. Start Shingrix series first

E. Hold vaccines until prior records are confirmed

Question #2

Which pneumococcal approach would you choose for Mrs. L (PPSV23 at age 65; no PCV documented; records incomplete)?

A. PCV20

B. PCV21

C. PCV15 now, then PPSV23 later

D. Repeat PPSV23 only

E. Defer until documentation is confirmed

Question #3

Mrs. L is agreeable to vaccination today. Which statement best reflects the most appropriate approach to vaccine timing and co-administration in her case?

A. Administer only on vaccine today to reduce adverse effects
B. Space vaccines at least 2 weeks apart due to her comorbidities
C. Co-administer indicated vaccines today using different injection sites
D. Delay vaccination until all prior records are obtained
E. Avoid co-administration in residents over age 80

Take Home Messages

- Older adults should receive age-appropriate, preferred vaccines when available
- Don’t delay vaccination
- Use decision tools
- LTC residents are high-risk by default
- Provider recommendation strongly influences vaccination uptake

Bibliography and Resources

Centers for Disease Control and Prevention (CDC)

Recommended Adult Immunization Schedule (2025)

https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html

Influenza Vaccination – Information for Health Professionals

https://www.cdc.gov/flu/professionals

Pneumococcal Vaccination: Clinical Guidance & Decision Support

https://www.cdc.gov/pneumococcal

PneumoRecs VaxAdvisor: https://www.cdc.gov/pneumococcal/hcp/vaccine-recommendations/app.html

COVID-19 Vaccines: Interim Clinical Considerations

https://www.cdc.gov/covid/hcp/vaccine-considerations

Respiratory Syncytial Virus (RSV) Vaccination for Older Adults

https://www.cdc.gov/rsv

Herpes Zoster (Shingles) Vaccination

https://www.cdc.gov/shingles

Bibliography and Resources

Advisory Committee on Immunization Practices (ACIP)

ACIP Vaccine Recommendations and Statements

https://www.cdc.gov/vaccines/acip

Centers for Medicare & Medicaid Services (CMS)

State Operations Manual – Appendix PP

F883: Influenza and Pneumococcal Immunization Requirements

https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Downloads/som107ap_pp_guidelines_ltcf.pdf

Vaccine Information & Prescribing Resources

DailyMed – Official Prescribing Information

https://dailymed.nlm.nih.gov

CDC Vaccine Information Statements (VIS)

https://www.cdc.gov/vaccines/hcp/vis

Clinical guidance subject to change. Refer to current CDC and CMS resources for updates.