

Optimizing Health Across the Lifespan in People with HIV

Hector Bolivar, MD

Jenn Kuretski DNP, APRN, NP-C, AAHIVS



Objectives

1. Understanding the biological mechanisms why people with HIV experience faster biological aging.
2. Review comorbidities associated with aging in people with HIV, including cardiovascular, metabolic, cognitive, and bone health considerations.
3. Discuss evidence-based strategies to optimize long-term outcomes in people with HIV through preventive screenings, vaccination, and individualized antiretroviral therapy management.
4. Identify multidisciplinary and patient-centered approaches that support healthy aging in HIV care.

Disclosures

- Hector Bolivar
 - Speaker's Bureau: ViiV Healthcare, Merck
 - Research: GSK, Gilead Sciences
- Jenn Kuretski
 - Speaker's Bureau: ViiV Healthcare, Gilead Sciences

What is **Aging**?

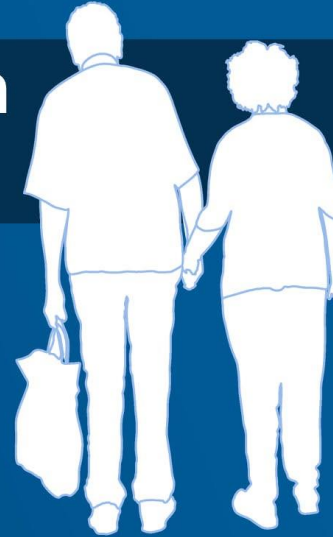
- **Biological aging:** The progressive, time-related decline of cellular and tissue function.
- **Chronological age:** The exact age in years, measuring the number of years someone has been alive.

The world's population is **ageing** at a fast pace

By 2050



1 in **5** people will be over 60



In 2050



426 million

people will be over 80 years old

In 2019



143 million

people are now over the age of 80

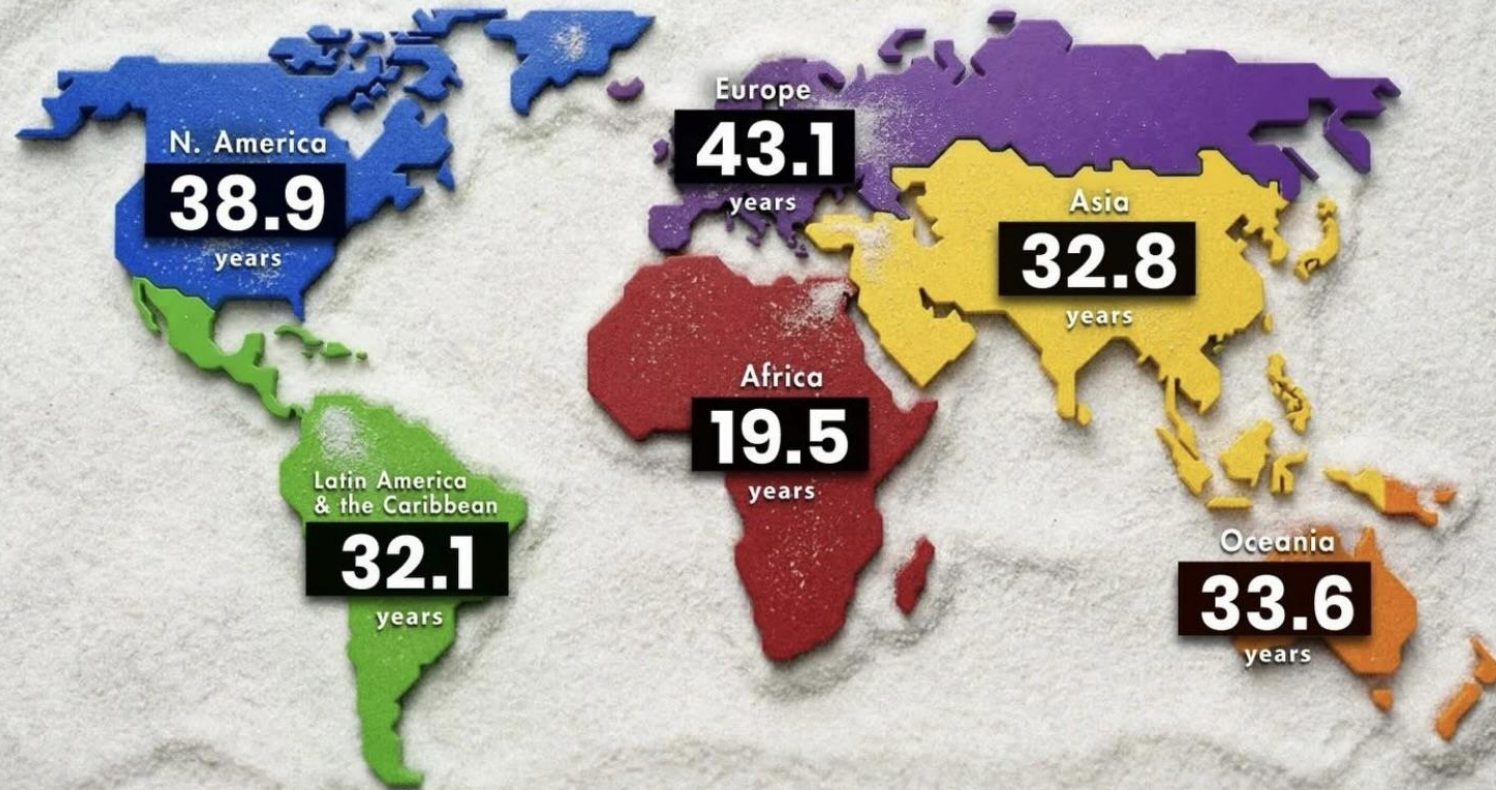


World Health
Organization

#HealthyAgeing



MEDIAN AGE BY REGION

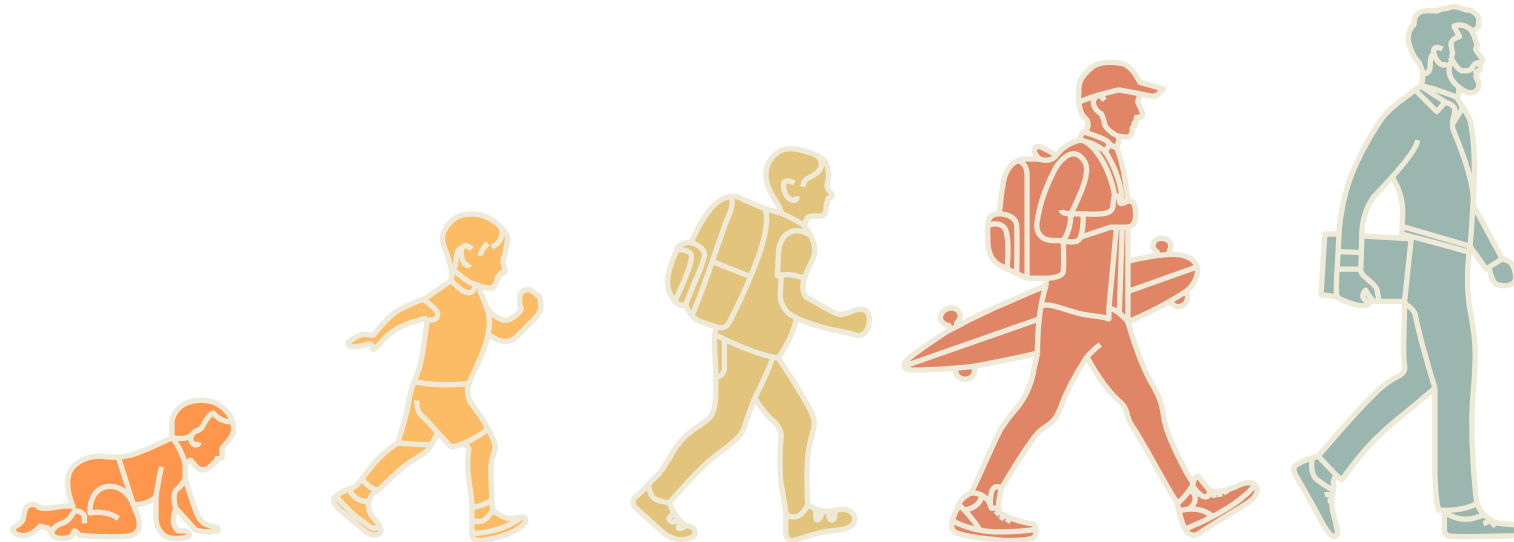


Why do
we
Age?



Solar Clock, Coral Castle, Florida City, ©HB

Biological Aging Process



Genomic Instability

DNA damage
accumulates

Telomere Attrition

Chromosome caps
shorten

Epigenetic Alterations

Gene expression
changes

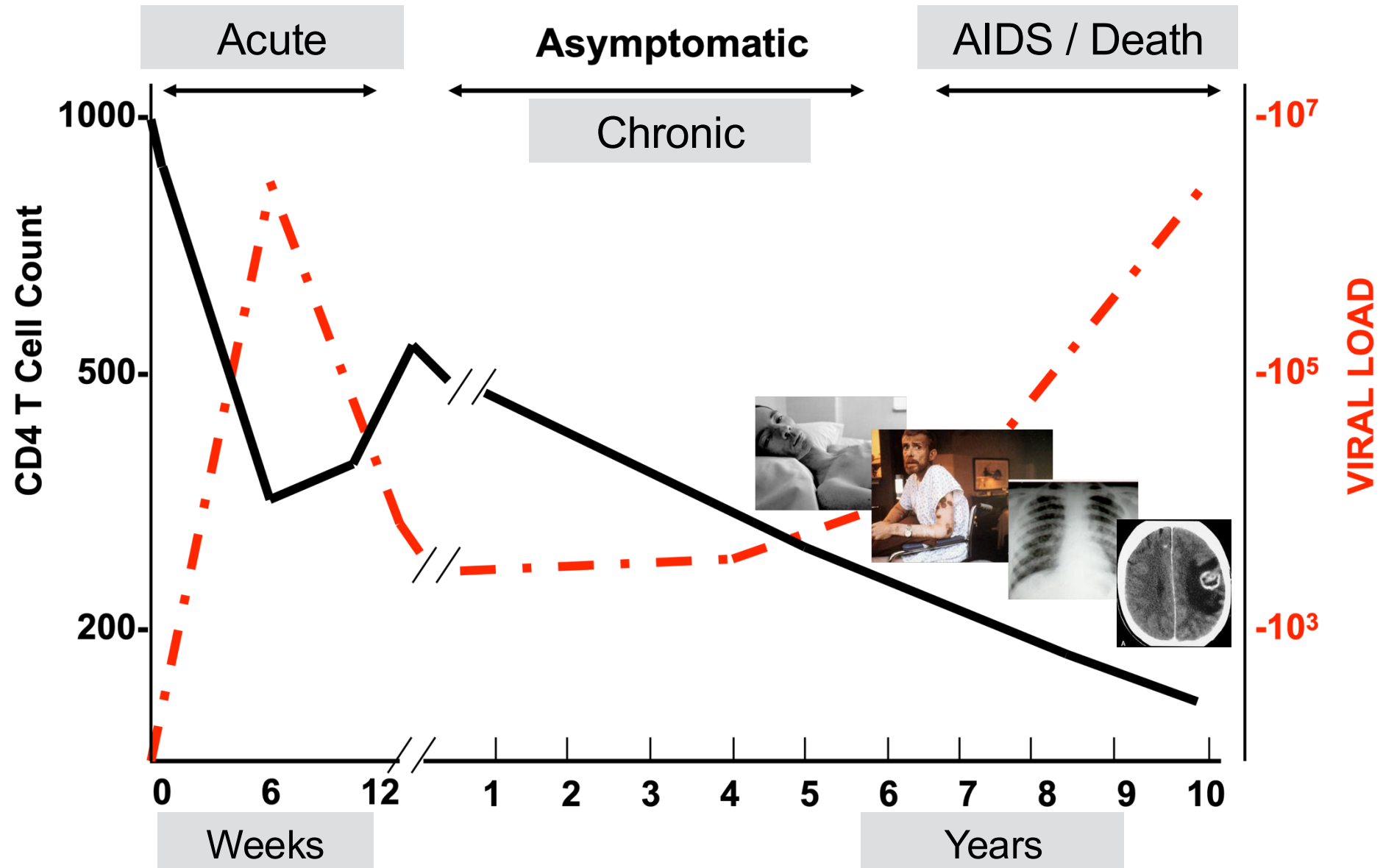
Cellular Senescence

Damaged cells stop
dividing

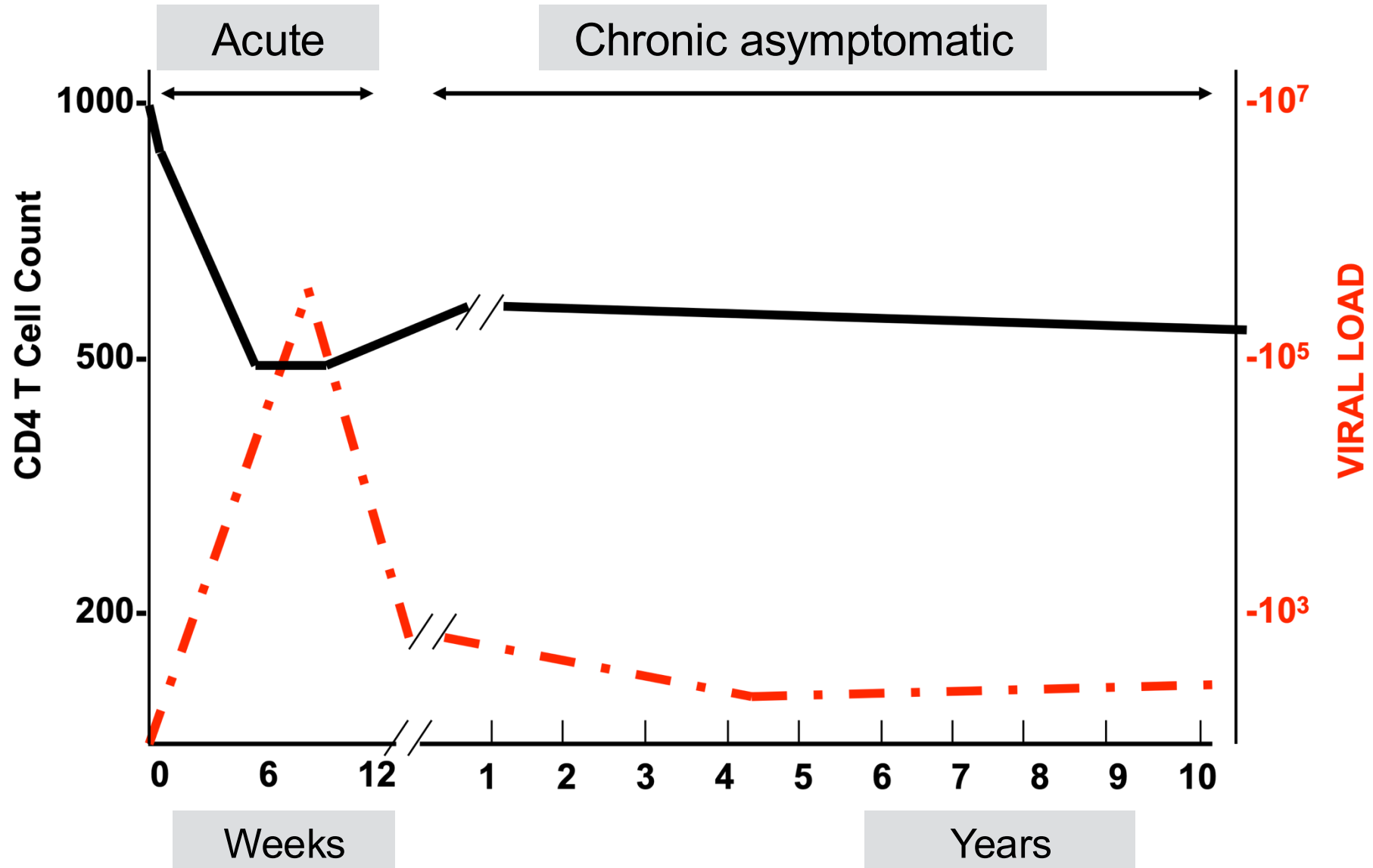
Mitochondria al Dysfunction

Energy production
declines

Natural History of HIV



Non-Progression



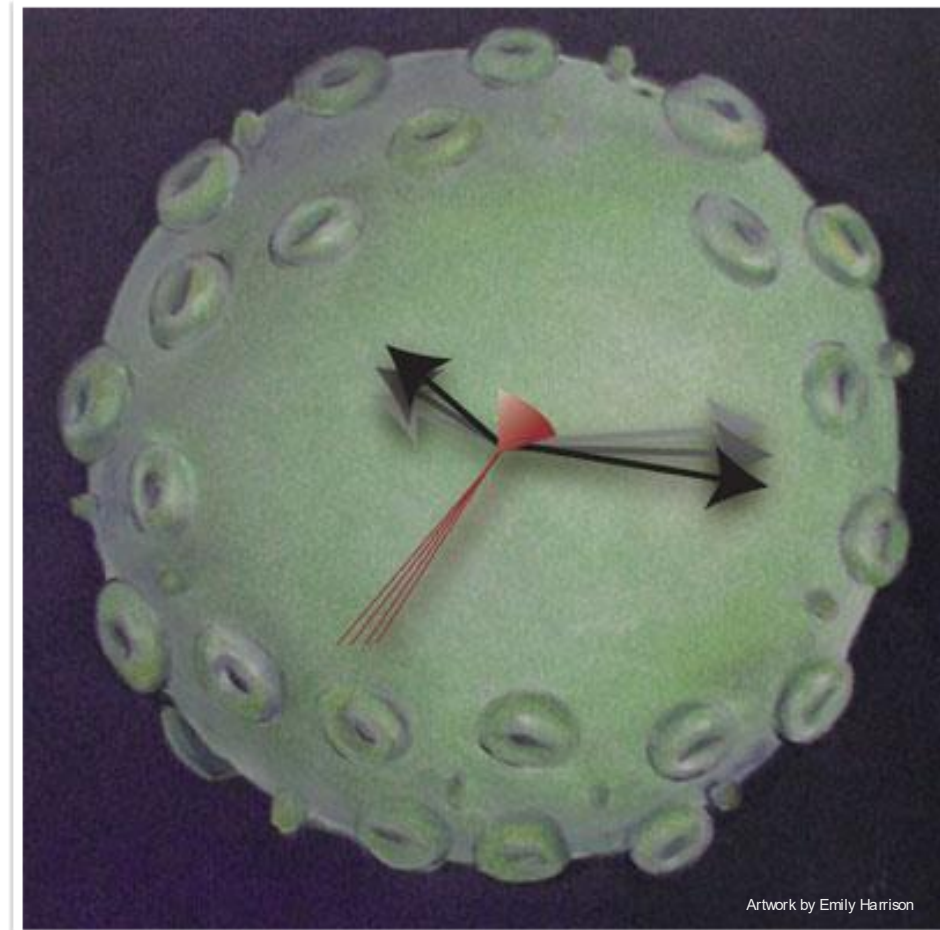
Life expectancy for people living with HIV approaches that of the general population



PLWH
77 years

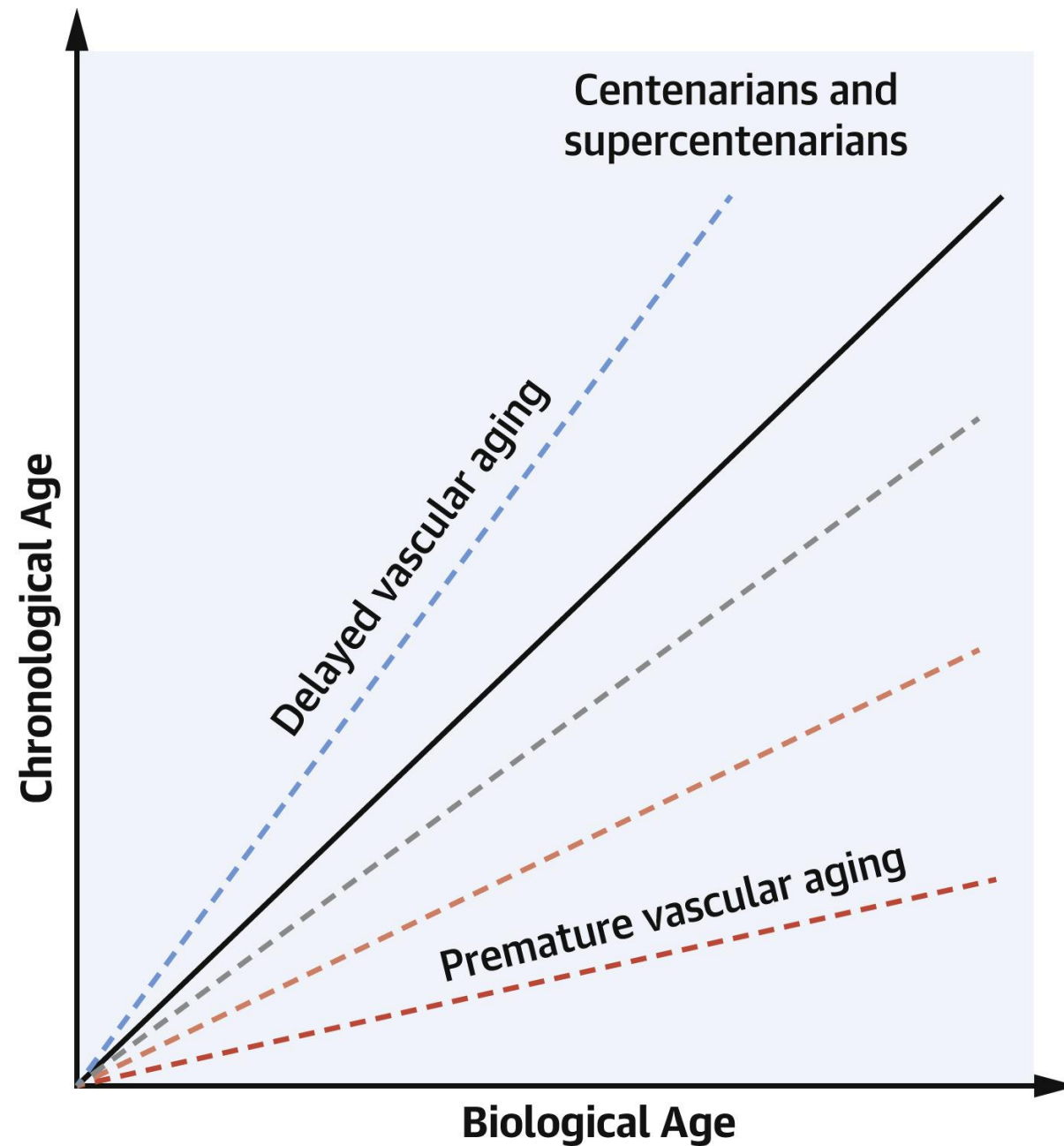
General Population
80 years

*“**HIV** Infection
Prematurely Ages
People by an Average
of Five Years”*



Artwork by Emily Harrison

Gross, et al, *Molecular Cell*, April 2016



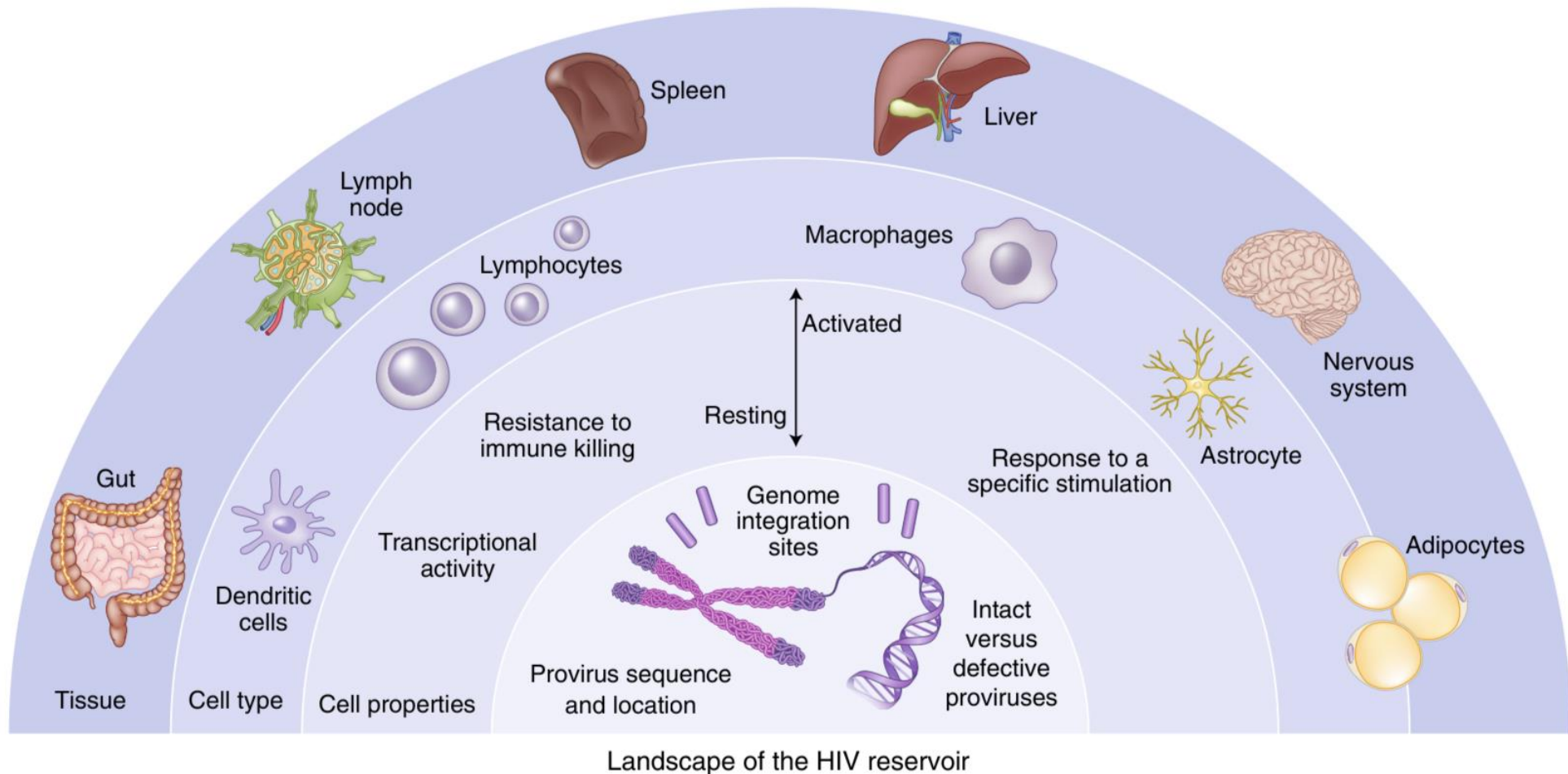
Normally aging individuals

Individuals with unhealthy lifestyle and/or family history of cardiovascular disease

Patients with type 2 diabetes, chronic kidney disease, autoimmune diseases, human immunodeficiency virus infection

Patients with genetic diseases (familial dyslipidemias, progerias and inherited arterial calcification syndromes)

- ➔ Challenge: HIV establishes early integration **latency** into the host cell chromosomes.



Healthy Aging in People with HIV

*Helping Patients
Live Longer—and Better*



Image Source: AI-generated illustration created using OpenAI ChatGPT (DALL-E), 2026.

Evolution of HIV Care

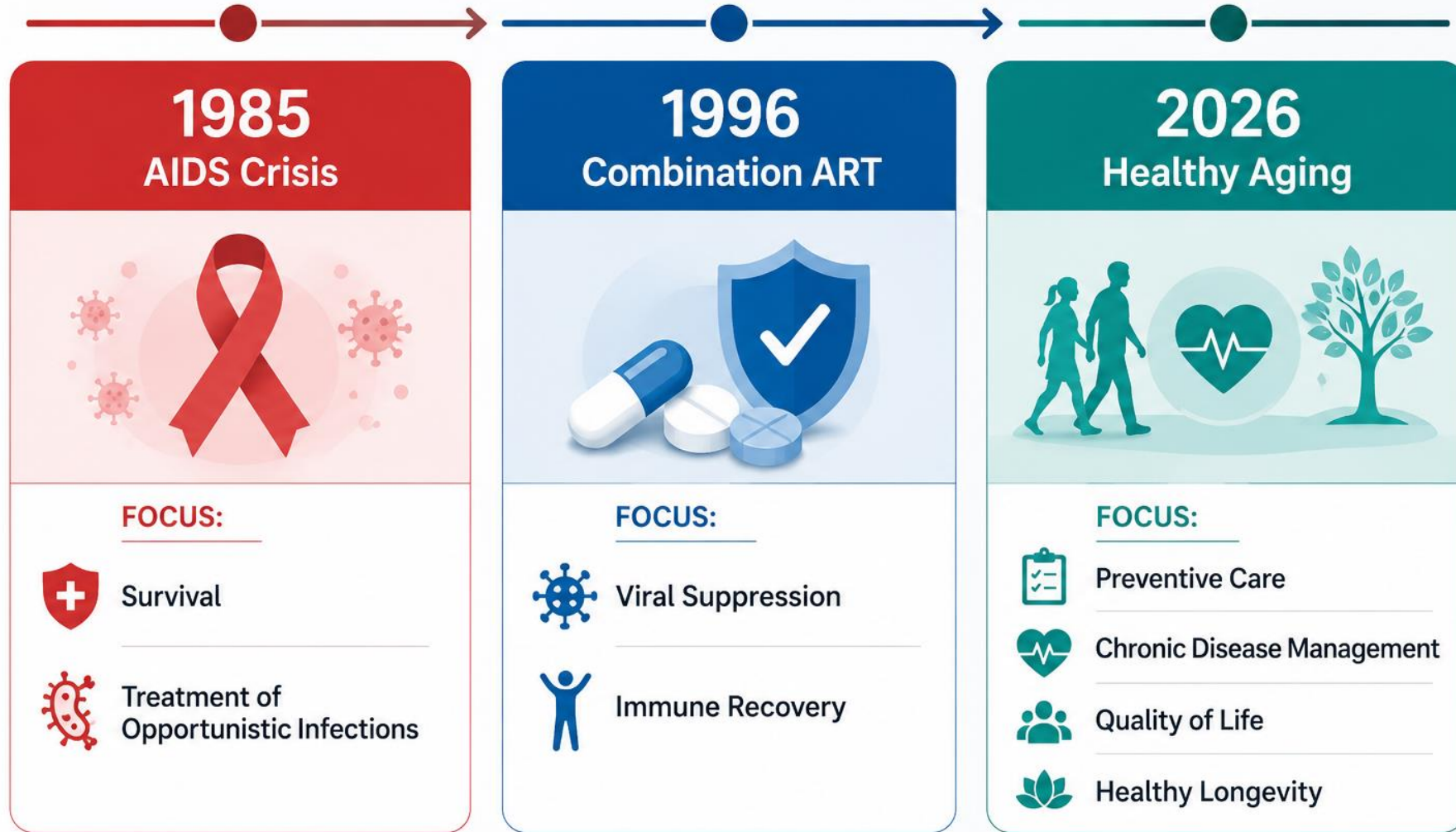


Image Source: AI-generated illustration created using OpenAI ChatGPT (DALL-E), 2026.

The greatest success in modern HIV care is no longer measured by viral suppression alone. It is measured by helping our patients live longer, healthier, and more independent lives.

The Pathway to Chronic Disease in HIV



Persistent inflammation

Even with viral suppression, some people with HIV have ongoing low-grade inflammation.



Immune activation

Chronic immune activation can contribute to complications in blood vessels, metabolism, bone, kidneys, and the brain.



Immunosenescence

The immune system ages faster and becomes less effective.



Frailty

Physical reserves decline, increasing vulnerability.



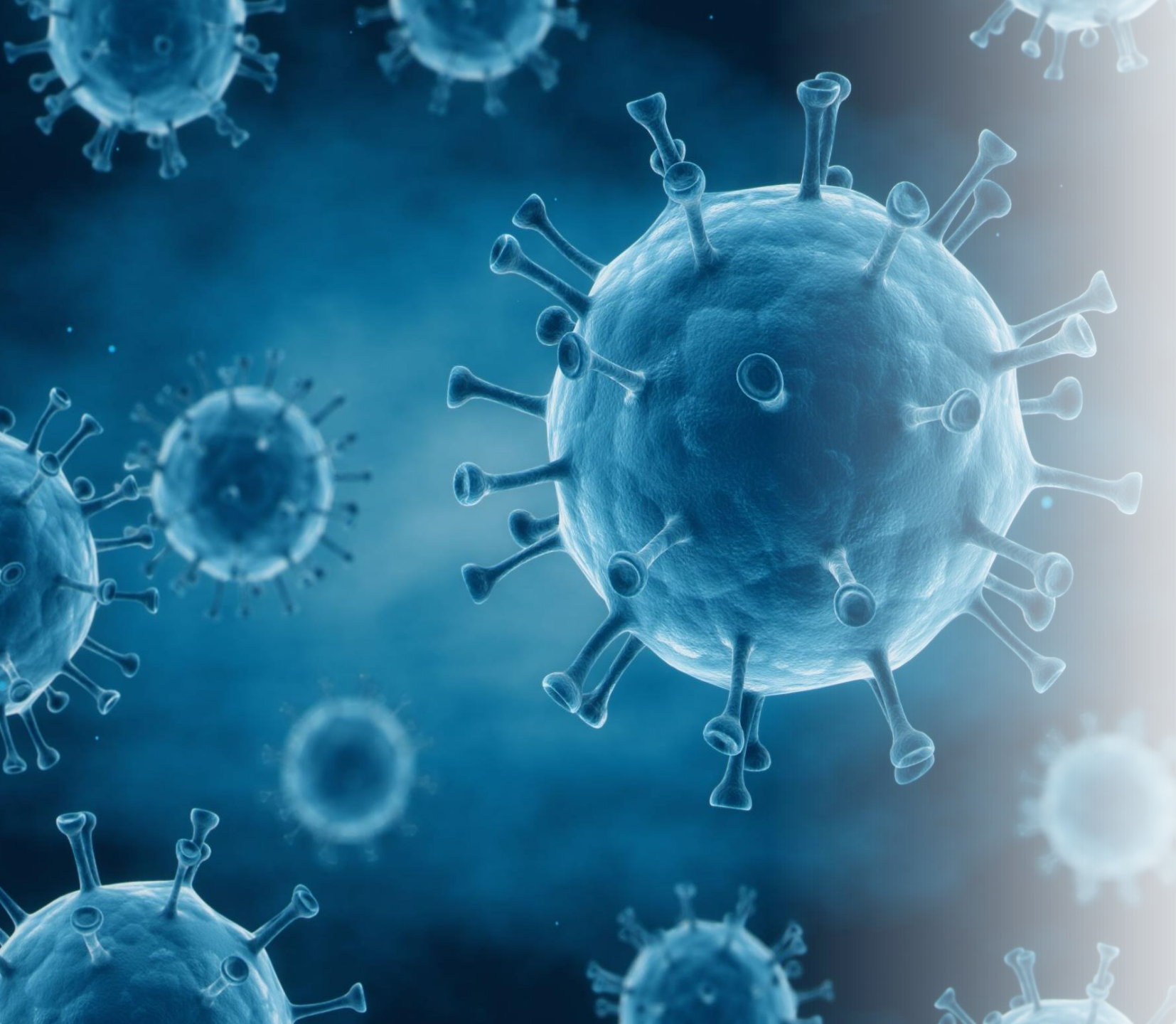
Chronic disease

Higher risk of heart disease, kidney disease, diabetes, and cognitive decline.



CLINICAL PEARL

*Viral suppression is essential—
but it does not always mean
immune normalization.*



Viral suppression
is essential but it
does not always
mean immune
normalization.

Frailty:
The Geriatric Syndrome
We Cannot Ignore

What is Frailty?

- Frailty is a biologic syndrome characterized by decreased physiologic reserve, increased vulnerability to stressors, and a higher risk of adverse health outcomes. It is distinct from normal aging and may occur earlier in people with HIV.
- Frailty reflects a decline across multiple physiologic systems, resulting in:
 - ↓ Strength
 - ↓ Endurance
 - ↓ Mobility
 - ↓ Physiologic reserve
 - ↑ Vulnerability to illness and hospitalization

Clinical Features



Falls



Slow gait speed



Decreased grip strength



Weight loss



Fatigue



Reduced physical activity



Why It Matters in HIV

- People with HIV may experience frailty at younger ages due to:
 - Chronic inflammation
 - Immune activation
 - Multiple comorbidities
 - Polypharmacy
 - Social determinants of health
-

Frailty: More Than Chronologic Age

A Multi-Dimensional Syndrome



Image Source: AI-generated illustration created using OpenAI ChatGPT (DALL-E), 2026.

Assessing Frailty in Clinical Practice:

What Should We Measure?

Physical Performance

- Gait speed
- Grip strength
- Timed Up and Go (TUG)
- Chair Stand Test

Functional Assessment

- Evaluate
- Falls
- Mobility
- Activities of Daily Living (ADLs)
- Instrumental Activities of Daily Living (IADLs)

Nutrition

- Assess
- Unintentional weight loss
- Sarcopenia
- Protein intake
- Food insecurity

Social Health

- Screen for
- Social isolation
- Depression
- Transportation barriers
- Caregiver support



Recommended Tools

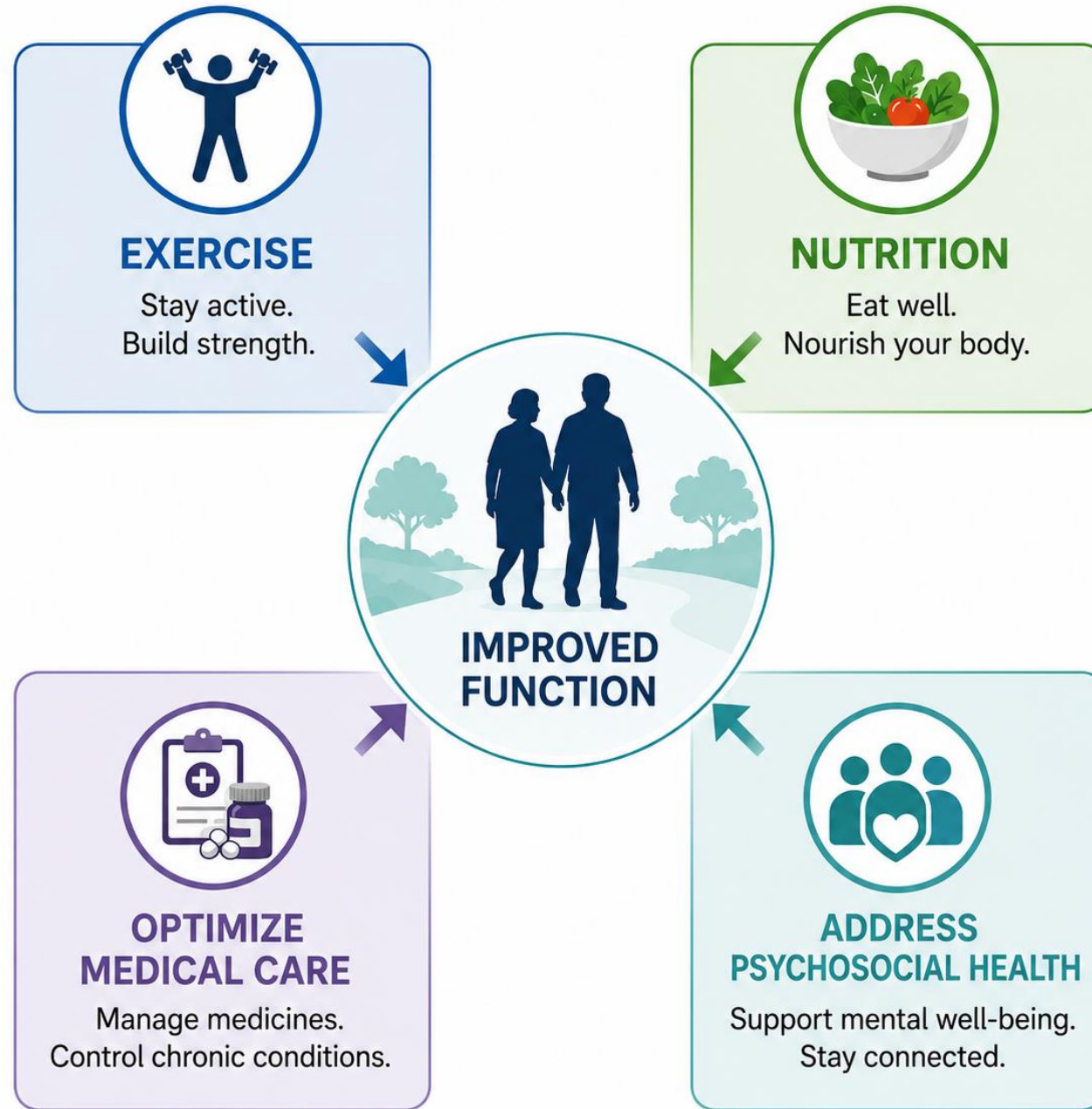
Tool	Purpose	Time
Clinical Frailty Scale	Global frailty assessment	<1 min
FRAIL Scale	Simple questionnaire	2 min
Timed Up and Go	Mobility & fall risk	<2 min



Preventing and Reversing Frailty

A Multidisciplinary Approach





MEDICATIONS MATTER

A Comprehensive Medication Review Supports Healthy Aging



Image Source: AI-generated illustration created using OpenAI ChatGPT (DALL-E), 2026.



Major Comorbidities

Key Takeaways



People with HIV have **higher cardiovascular risk**—even with viral suppression.



Chronic **inflammation** and **immune activation** are key drivers of atherosclerosis.



Early prevention and risk assessment are essential.



A **multidisciplinary approach** improves outcomes and reduces cardiovascular events.

Prevent today. Protect tomorrow.



Metabolic Health

Kidney Disease



eGFR



ALBUMINURIA



**MEDICATION
DOSING**



NEPHROTOXINS

Bone Health



DEXA



VITAMIN D



EXERCISE



FALLS



**FRACTURE
PREVENTION**

Mental Health



HAND



DEPRESSION



SLEEP



LONELINESS



SUBSTANCE
USE

Cancer Screening

Cancer	Recommendation	HIV Consideration
Colon	USPSTF	Same
Breast	USPSTF	Same
Cervical	HIV-specific	More frequent
Lung	USPSTF	Smoking prevalence
Anal	New guidelines	High-risk groups
Liver	HCC surveillance	Chronic HBV/HCV

Preventive Care Checklist

Cardiovascular

- ☐ Blood Pressure
- ☐ ASCVD Risk Assessment
- ☐ Lipid Panel
- ☐ Smoking Status

Metabolic

- ☐ Weight & BMI
- ☐ Hemoglobin A1c
- ☐ Waist Circumference
- ☐ Assess for MASLD

Kidney

- ☐ eGFR
- ☐ Urine Albumin/ACR
- ☐ Review Renally Dosed Medications
- ☐ Avoid Nephrotoxins

Bone Health

- ☐ DEXA (when indicated)
- ☐ Vitamin D (if indicated)
- ☐ Fall Risk Assessment
- ☐ Exercise Counseling

Brain Health

- ☐ Depression (PHQ-9)
- ☐ Cognitive Screening (MoCA/Mini-Cog)
- ☐ Sleep Assessment
- ☐ Social Isolation

Cancer Screening

- ☐ Breast
- ☐ Cervical
- ☐ Colorectal
- ☐ Lung (eligible patients)
- ☐ Anal (high-risk individuals)

Vaccinations

- ☐ Influenza
- ☐ COVID-19
- ☐ Pneumococcal
- ☐ Shingrix
- ☐ RSV (eligible adults)
- ☐ Hepatitis A/B (if indicated)

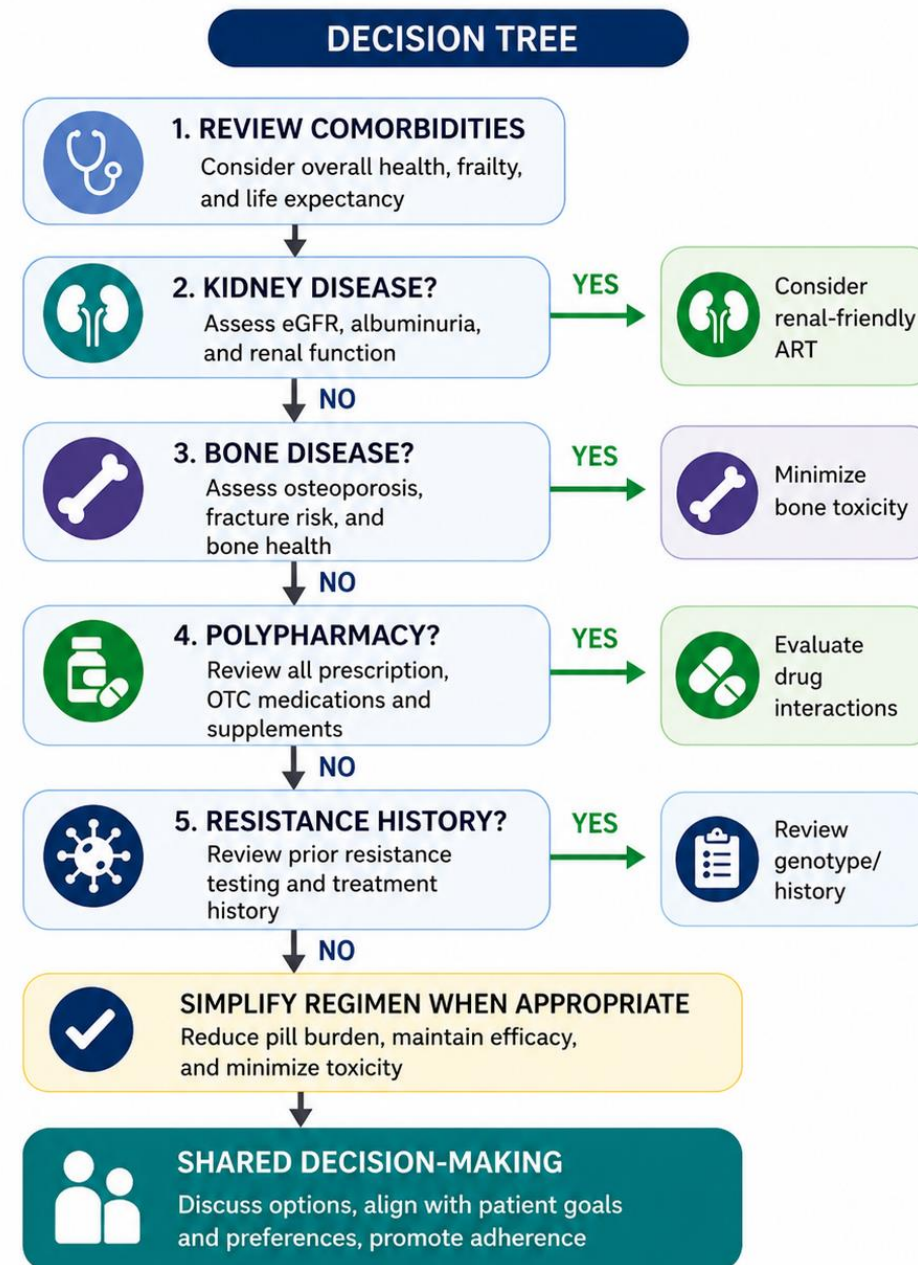
Medication Review

- ☐ Medication Reconciliation
- ☐ Drug-Drug Interactions
- ☐ Polypharmacy Review
- ☐ ART Optimization

Lifestyle

- ☐ Physical Activity
- ☐ Nutrition
- ☐ Tobacco Cessation
- ☐ Alcohol/Substance Use
- ☐ Mental Well-being

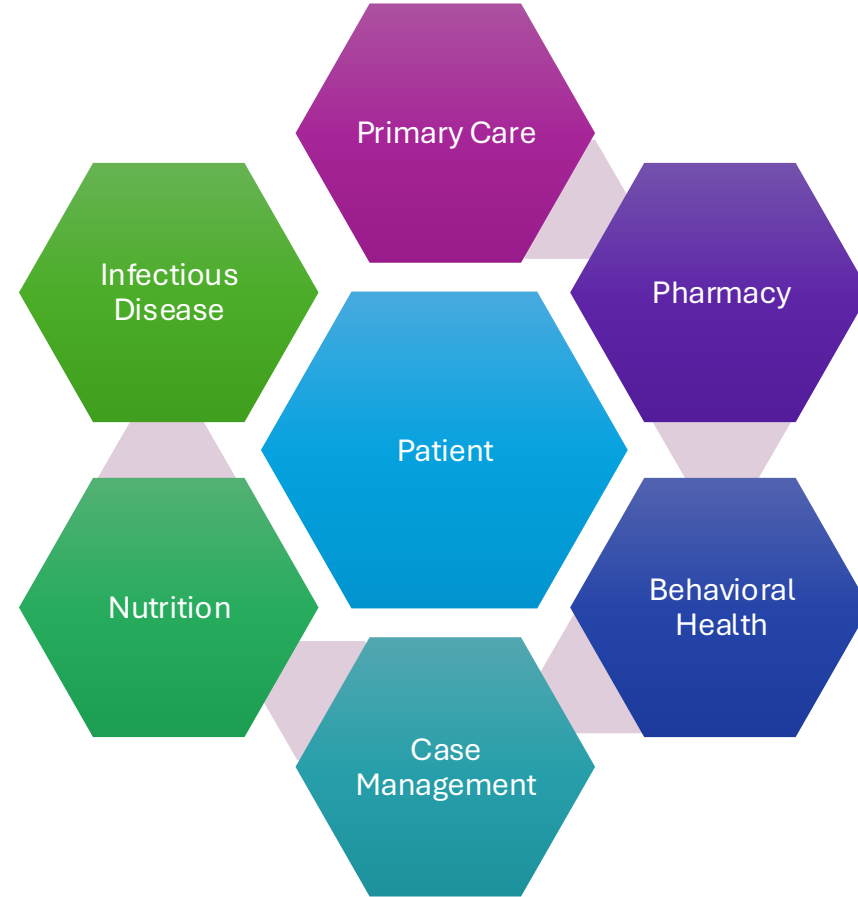
Optimizing Long-Term Care





Sources: DHHS Adult & Adolescent HIV Guidelines (2025–2026); IDSA/HIVMA Primary Care Guidance; American College of Lifestyle Medicine; WHO Healthy Ageing Framework; USPSTF Preventive Services Recommendations.

Team-Based Care for Healthy Aging with HIV



Top 10 Clinical Pearls

Top 10 Clinical Pearls



1 Healthy aging begins with viral suppression.



2 Treat the person, not just the viral load.



3 Persistent immune activation may continue despite viral suppression.



4 Frailty is not an inevitable part of aging.



5 Cardiovascular disease is one of the leading causes of morbidity in people with HIV.



6 Every medication should have a purpose.



7 Brain health is more than cognition.



8 Prevention is the best treatment.



9 The best antiretroviral regimen is individualized.



10 Healthy aging is a team sport.

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Case Study



Case Introduction

PATIENT SNAPSHOT

AGE

50 years

ETHNICITY

Hispanic

SEX

Male

HIV DIAGNOSIS

2018

ANTIRETROVIRAL THERAPY TIMELINE

STEP 1 · 2018

HIV Diagnosis

Diagnosed with HIV and started on antiretroviral therapy



STEP 2 · INITIAL ART

TAF/FTC (Descovy) + DTG (Tivicay)

Emtricitabine/tenofovir alafenamide + dolutegravir

Three-drug regimen



STEP 3 · CURRENT REGIMEN

DTG/3TC (Dovato)

Dolutegravir/lamivudine

Simplified two-drug regimen

Clinical Background

PAST MEDICAL HISTORY

- Myocardial infarction (2022)
- Hypertension
- Hyperlipidemia

SURGICAL HISTORY

- None

CONCOMITANT MEDICATIONS

- Amlodipine, Atorvastatin

SOCIAL HISTORY

- Former smoker (quit > 10 years ago)
- Insertive vaginal sex
- Stable housing
- No alcohol use
- No drug use

DISCUSSION

How would you approach healthy aging in this patient?

Approach to Healthy Aging

CARDIOVASCULAR · PRIORITY

- High-intensity statin
- Control BP and lipids
- Reinforce lifelong smoking abstinence

METABOLIC HEALTH

- Screen A1c, weight/BMI, waist circumference
- Assess for MASLD; manage lipids

ART OPTIMIZATION

- Maintain suppression on Dovato (2-drug regimen)
- Check cardiac drug interactions and renal dosing

CANCER SCREENING

- Age-appropriate colorectal and routine screening
- Assess lung CT eligibility (former smoker)
- PSA?

BONE & BRAIN HEALTH

- DEXA when indicated; fall-risk assessment
- Screen depression (PHQ-9) and cognition

IMMUNIZATIONS & LIFESTYLE

- Influenza, COVID-19, pneumococcal, Shingrix, RSV
- Exercise, nutrition, sleep, social connection

Case Progression: One Year Later (2023)

PRESENTING SYMPTOMS · SEPTEMBER 2023

- **Polydipsia** - excessive thirst
- **Polyphagia** - excessive hunger
- **Polyuria** - frequent urination
- **Unintentional weight loss**

LABORATORY COURSE

APRIL 2023

118

mg/dL non-fasting glucose

Near-normal

SEPTEMBER 2023

659

mg/dL non-fasting glucose

HbA1c 13.5%

Markedly elevated

Rapid progression to severe hyperglycemia consistent with new-onset diabetes

Management & Treatment Response

MANAGEMENT PLAN

- **Insulin glargine (Lantus)** - 10 units daily
- **Metformin** - 500 mg PO twice daily
- **Managed outpatient** - declined hospitalization
- **Ophthalmology referral** - retinopathy screening
- **Daily foot-exam education**

GLYCEMIC RESPONSE · HbA1c



Oct 16, 2023: fingerstick glucose 96 mg/dL - normalized within weeks of therapy

HIV STATUS MAINTAINED

HIV RNA remained suppressed · CD4 stable at 650–815 cells/ μ L

Case Update: 2025–2026

PREVENTIVE SCREENING

- **Cologuard** — negative (2025)
- **Dilated eye exam** — most recent 6/26/2026

CARDIOVASCULAR & LABS

- **LDL 90–101** mg/dL · HDL 39 mg/dL
- **Blood pressure mildly elevated** — HCTZ added (2025)
- **Low vitamin D** — supplementation started (2025)

DIABETES MANAGEMENT

- **Switched Lantus → Ozempic** — semaglutide 1 mg/dose
- **Patient preference** — declined daily insulin injections

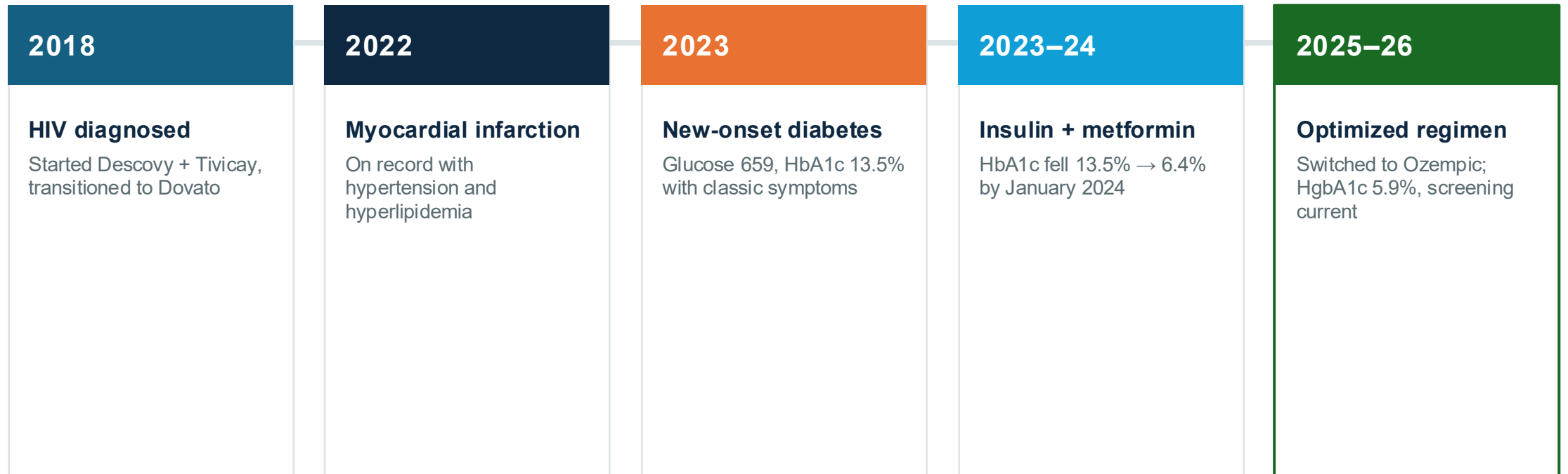
MOST RECENT HbA1c

5.9% At goal

HEALTHY AGING IN ACTION

Screening current, HbA1c at goal on weekly GLP-1, cardiometabolic risks actively managed, HIV remains controlled

Case Summary: From Diagnosis to Control



CURRENT STATUS

Virologically suppressed with CD4 650–815, HbA1c 5.9%, and preventive care up to date

Teaching Point: GLP-1 Therapy & Cardiometabolic Risk

WHY A GLP-1 HERE

Once-weekly semaglutide improved adherence after the patient declined daily insulin - delivering potent HbA1c reduction (to 5.9%) with weight benefit.

HIV & AGING RISK

People aging with HIV carry higher cardiometabolic risk - hyperlipidemia, insulin resistance, and hypertension warrant proactive approach.

CARDIOVASCULAR BENEFIT

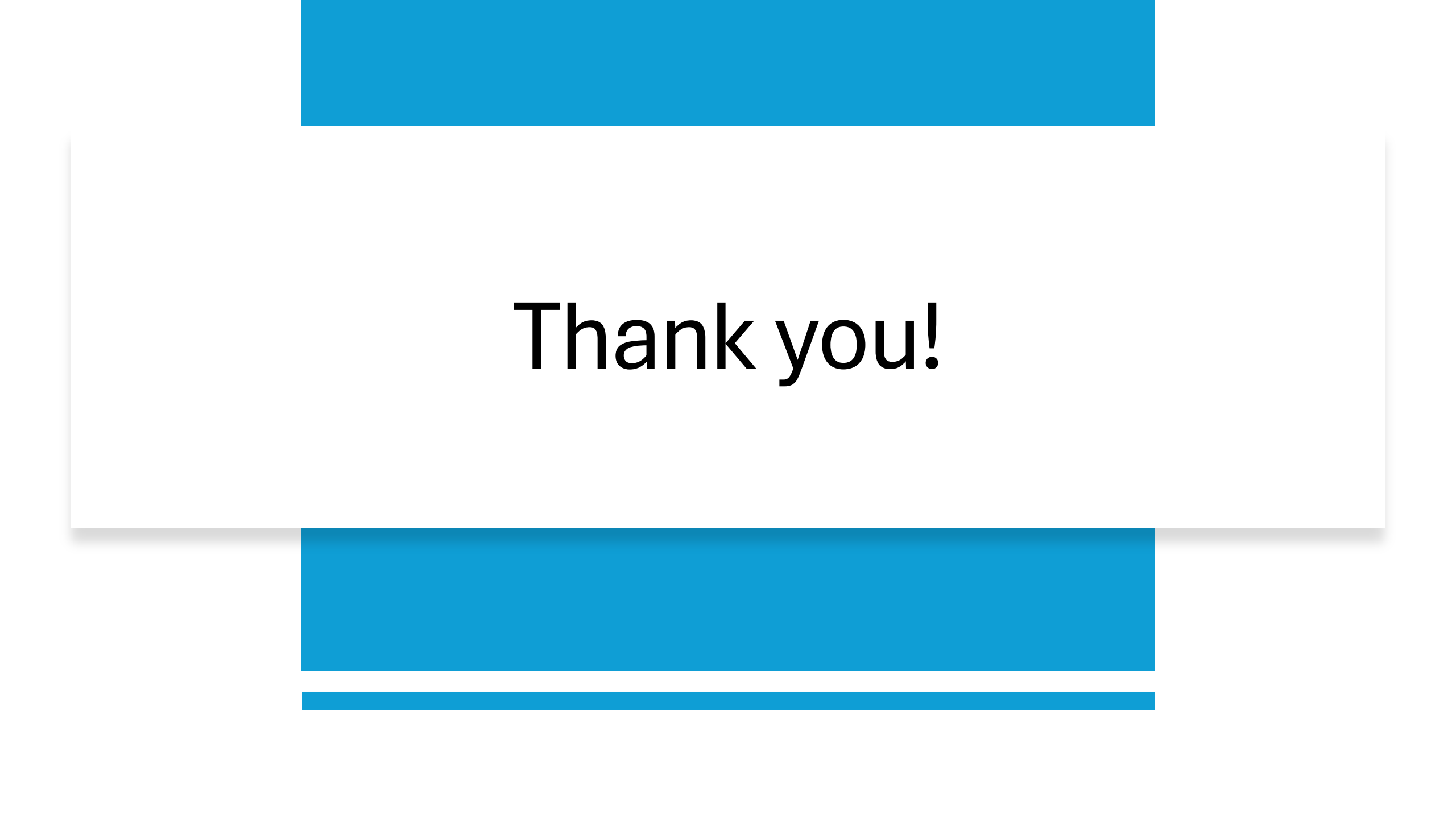
GLP-1 receptor agonists reduce major adverse cardiovascular events - a meaningful advantage given this patient's prior myocardial infarction.

PRACTICE POINTS

Titrate for GI tolerance, maintain statin and blood-pressure therapy, monitor the retina during rapid glucose lowering, and continue INSTI-based ART.

KEY TAKEAWAY

Integrated cardiometabolic care, not glucose alone, drives healthy aging in people with HIV



Thank you!