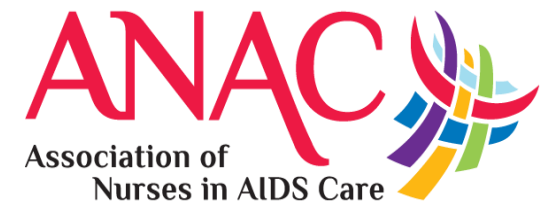


# HIV and Aging: Geriatric Care and ART Adherence

**Faculty:** Brianne Olivieri-Mui, MPH, PHD

**Moderator:**  
Sheila Tumilty, BSN, RN, ACRN

August 27, 2024



# The Association of Nurses in AIDS Care (ANAC)

**Mission:** ANAC fosters the professional development of nurses and others involved in the delivery of health care for persons at risk for, living with and/or affected by the human immunodeficiency virus (HIV) and its comorbidities. ANAC promotes the health, welfare and rights of people living with HIV around the world.

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- Lines will be muted during the webinar
- Type your questions into the Q & A
- There will be a Q & A session at the end of the webinar



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To receive a certificate of completion, attendees must:

- Be registered to attend
- View today's webinar presentation in its entirety
- Complete the online, post-activity evaluation. You will receive a link to the evaluation by email within the next two business days

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# Learning Outcomes

At the conclusion of today's activity, participants will be able to:

- Describe factors associated with adherence to ART among people living with HIV in long-term care facilities
- Discuss opportunities for HIV testing and treatment in long-term care facilities



# Faculty



**Brianne Olivieri-Mui, MPH, PhD  
(she/her)**

**Assistant Professor  
Department of Health Sciences  
The Roux Institute  
Northeastern University**

**Adjunct Scientist  
Hebrew SeniorLife**

# HIV & Aging: Geriatric care and ART adherence

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# Disclosures

▶ None

# Outline

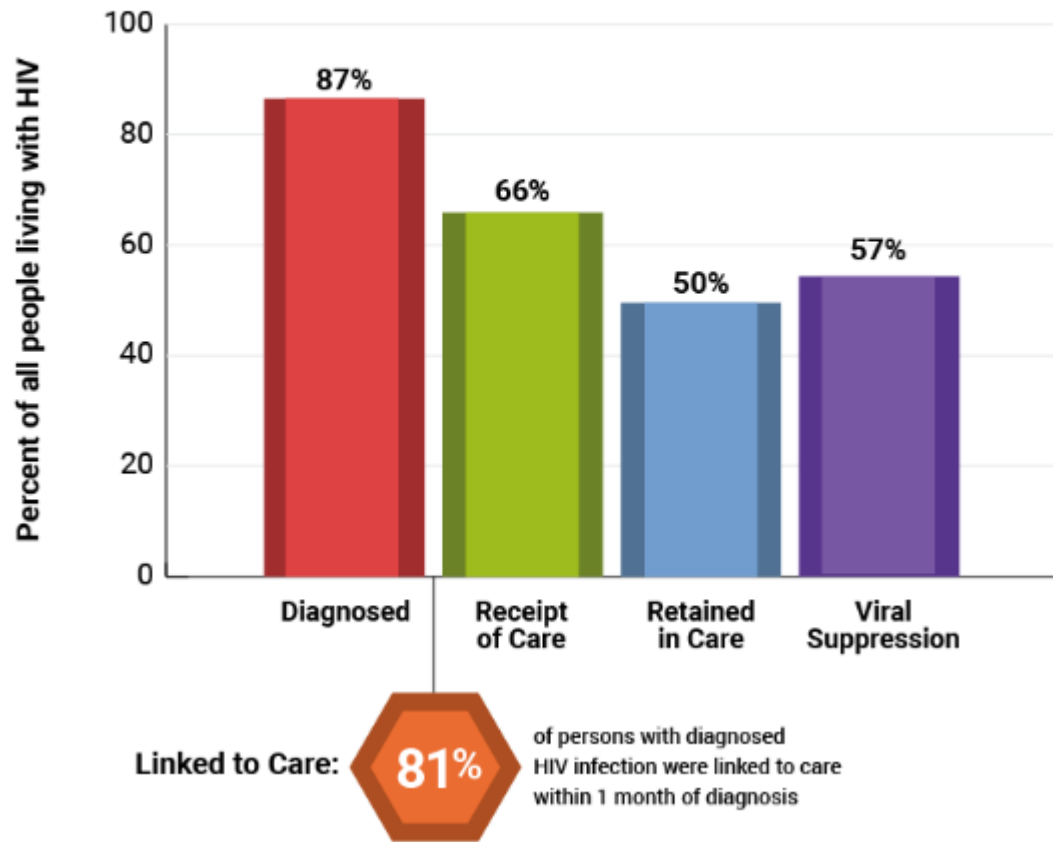
- ▶ Aging and ART guidelines
- ▶ ART options and adherence for PLWH
  - ▶ Why does aging make adherence any different?
- ▶ What specifically is impacting adherence among older PLWH?
  - ▶ Comorbidities
  - ▶ Care sites
  - ▶ Transitions
- ▶ Sum it up
- ▶ What's next?

# Defining aging with HIV

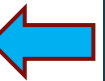
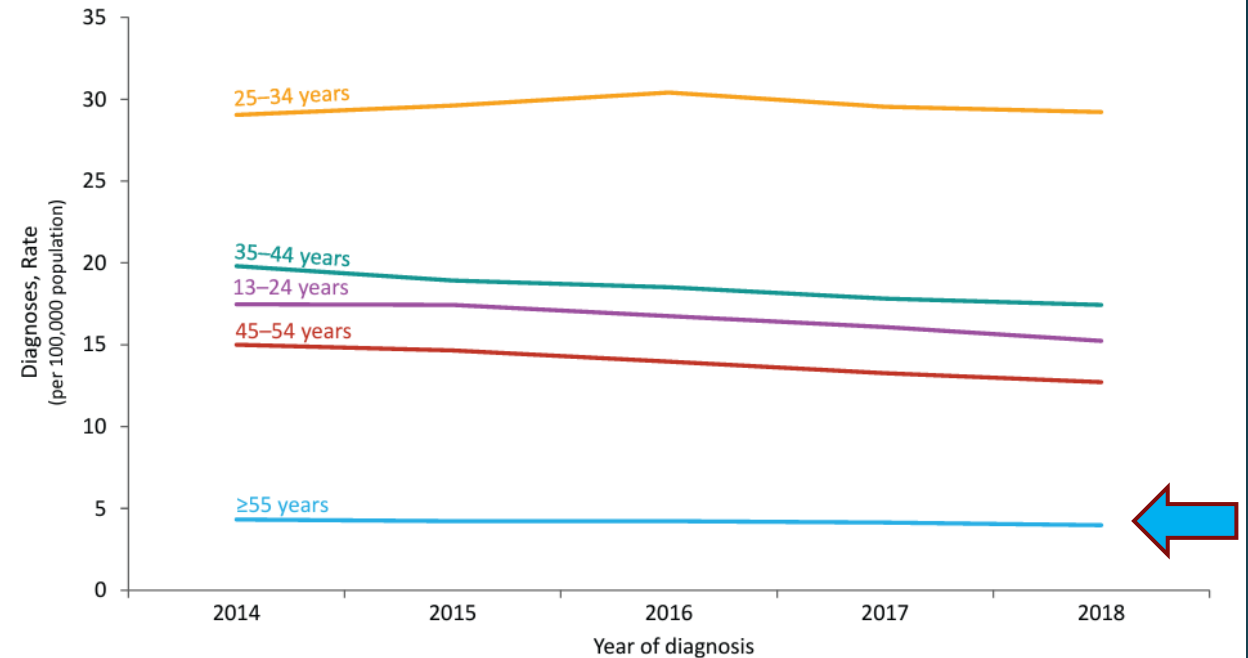
- ▶ Older adults with HIV
- ▶ Older = aged 50+
- ▶ Regardless of date of diagnosis

# Aging and ART guidelines

**Prevalence-based HIV Care Continuum, U.S. and 6 Dependent Areas, 2019**



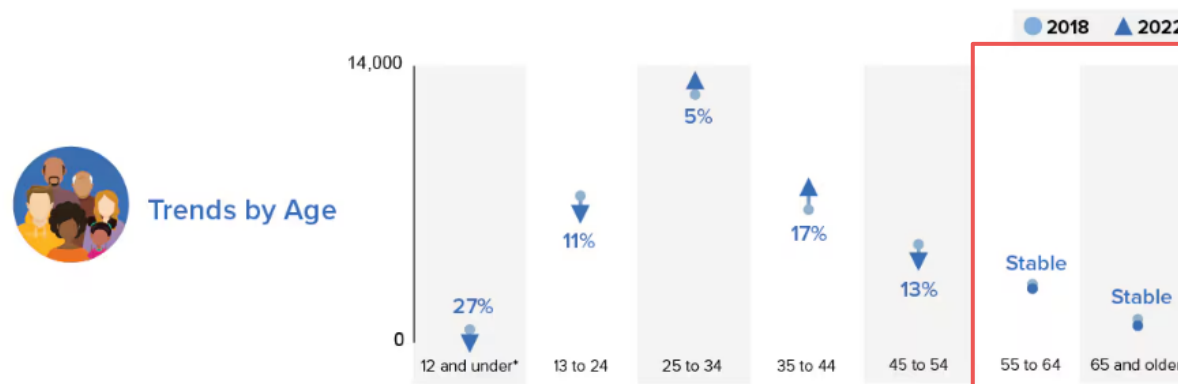
**Figure 3. Rates of diagnoses of HIV infection among adults and adolescents by age at diagnosis, 2014–2018—United States**



1. [www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2018-updated-vol-31.pdf](https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2018-updated-vol-31.pdf)
2. <https://www.cdc.gov/hiv/group/age/diagnoses.html> (old)
3. [https://www.cdc.gov/hiv/data-research/facts-stats/age.html?CDC\\_AAref\\_Val=https://www.cdc.gov/hiv/group/age/diagnoses.html](https://www.cdc.gov/hiv/data-research/facts-stats/age.html?CDC_AAref_Val=https://www.cdc.gov/hiv/group/age/diagnoses.html)

# Aging and ART guidelines

Trends in HIV diagnoses in the US and 6 territories and freely associated states by age, 2018-2022



\* Changes in subpopulations with fewer HIV diagnoses can lead to a large percentage increase or decrease.

Source: CDC. Diagnoses, deaths, and prevalence of HIV in the United States and 6 territories and freely associated states, 2022. *HIV Surveillance Report*, 2022;35.

In 2022 → 9% of infections among men and 17% of infections among women were among those **aged 55 and older**

In the most recent US surveillance reports this trend has not changed



# Aging and ART guidelines

- ▶ Current guidelines state that anyone with HIV regardless of age and comorbidity should be on ART
  - ▶ Interruptions should be less than 1-2 days
  - ▶ All drugs should be stopped and started simultaneously, if needed
- ▶ Early ART is critical particularly for older people newly diagnosed with HIV
  - ▶ Complicated by comorbidities of aging

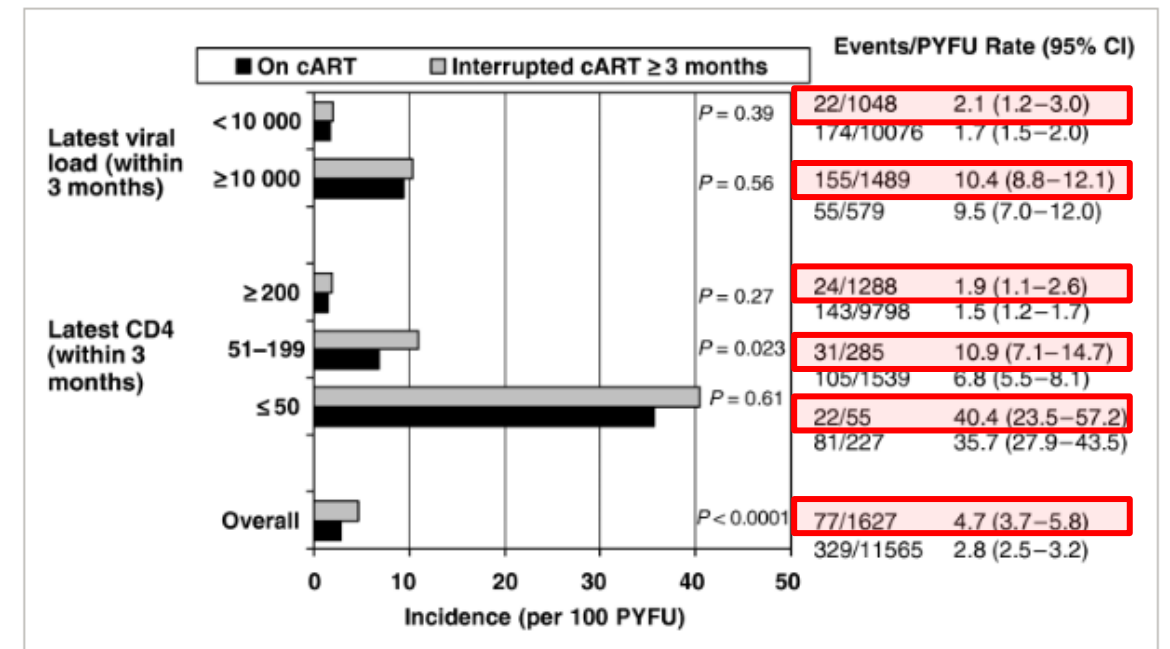


Figure 1


[Open in figure viewer](#) | [Download PowerPoint](#)

Incidence of clinical disease progression to AIDS or death among patients in the treatment interruption (TI) and non-TI groups. PYFU, person-years of follow up.

# Aging and ART guidelines

- ▶ Regimens are determined by providers and based on resistance, HIV disease stage, and tolerability
  - ▶ Oral and injectable
  - ▶ Toxicities
  - ▶ Polypharmacy
  - ▶ Drug-drug interactions
  - ▶ Prior use of PrEP
- ▶ Viral suppression is the goal and ideally durable viral suppression



- 
- ▶ Most ARV clinical trials do not include older people
    - ▶ Ex: Long-acting cabotegravir-rilpivirine Phase III trials only had ages 18-68, median 34 years
      - ▶ Requires sufficient gluteal tissue
    - ▶ Systemic dysregulation due to aging → changes in absorption, metabolism, and ability to achieve suppression
    - ▶ Pill size vs. swallow ability

# ART options

- ▶ Options for drugs are changing every year
  - ▶ Injectables (2021), single tablet (6 by 2016), weekly and monthly regimens (CROI2024)
- ▶ Higher potency and better drug options → 80% adherent and still benefit

TABLE 2. BIVARIATE LOGISTIC REGRESSION ACROSS THREE THRESHOLDS FOR NONADHERENCE

	<i>Nonadherent (&lt;95% PDC) (n=4512)</i>	<i>Nonadherent (&lt;85% PDC) (n=2552)</i>	<i>Nonadherent (&lt;80% PDC) (n=2042)</i>
	<i>OR (95% CI)</i>	<i>OR (95% CI)</i>	<i>OR (90% CI)</i>
Geriatric conditions			
Polypharmacy	<b>0.58 (0.53–0.63)</b>	<b>0.53 (0.48–0.58)</b>	<b>0.51 (0.46–0.56)</b>
Frailty status			
Prefrail	0.93 (0.85–1.02)	0.98 (0.89–1.09)	0.95 (0.85–1.05)
Frail	1.14 (0.99–1.31)	<b>1.24 (1.07–1.45)</b>	<b>1.3 (1.11–1.52)</b>
Robust (Ref.)	—	—	—
Alzheimer’s and related dementias	0.93 (0.71–1.24)	1.04 (0.77–1.42)	0.98 (0.70–1.37)
Depression	1.00 (0.91–1.11)	1.05 (0.94–1.17)	1.01 (0.90–1.14)
Falls	1.01 (0.80–1.28)	<b>1.32 (1.04–1.68)</b>	<b>1.35 (1.05–1.75)</b>
Hip fracture	0.91 (0.51–1.61)	1.14 (0.62–2.12)	1.26 (0.67–2.40)
Sensory impairment (eye, ear)	0.81 (0.65–1.00)	0.78 (0.61–1.00)	0.84 (0.64–1.09)
Osteoporosis	<b>0.79 (0.65–0.97)</b>	0.84 (0.67–1.06)	0.86 (0.67–1.11)
Orthostatic hypotension	1.30 (0.77–2.21)	0.95 (0.53–1.70)	0.79 (0.41–1.52)
Incontinence	0.97 (0.72–1.30)	0.90 (0.64–1.26)	0.99 (0.69–1.40)

Allavena, Hanf, et al. 2018. *PLoS One*.  
 Jolayemi O, et al. 2022. *PLoS One*.  
 Olivieri-Mui, B.. 2022. AIDS patient care and STDs.

# ART options

**Table 1** Clinical trials ( $n > 300$  patients) comparing various combinations of two drugs with triple-drug regimens as initial therapy in HIV-infected patients

Name of study	<i>N</i>	Two-drug regimen	Three-drug regimen	Virological efficacy (%) (DT vs. TT)	Non-inferiority	Comment
NEAT 001	805	DRVr/RAL	DRVr/TDF/FTC	82 vs. 86	Yes	More DRM in the DT arm No differences in D/C for AEs
ACTG 5142	753	LPVr/EFV	EFV/3TC/NRTI LPVr/3TC/NRTI	83 vs. 89 vs. 77	DT similar efficacy to TT. DT had a shorter time to virological failure than EFV-containing triple regimen in patients with HIV RNA plasma HIV RNA > 100 000 copies/mL	More DRM in DT arm More AEs in DT arm
MODERN	797	DRVr/MVC	DRVr/FTC/TDF	77.3 vs. 86.8	No	More DRM in DT arm No differences in D/C for AEs
GARDEL	373	LPVr/3TC	LPVr/3TC/NRTI	88.3 vs. 83.7	Yes	More D/C for AEs in TT arm
GEMINI	1433	DTG/3TC	DTG/FTC/TDF	90 vs. 93	Yes	No selection of DRM in either arm No differences in D/C for AEs


DT, dual therapy; TT, triple therapy; DRM, drug related mutations; D/C, discontinuations; AEs, adverse events; NRTI, nucleoside reverse transcriptase inhibitor. Antiretroviral drugs: DRVr, ritonavir-boosted darunavir; TDF, tenofovir disoproxil fumarate; FTC, emtricitabine; LPVr, ritonavir-boosted lopinavir; EFV, efavirenz; 3TC, lamivudine; MVC, maraviroc; DTG, dolutegravir.

- ▶ Some even favor deprescribing to only 2 ARVs to minimize polypharmacy
- ▶ In well-suppressed PLWH the duals were just as good as triples
- ▶ In treatment naïve select duals work



# ART options

- ▶ Duals are not necessarily less toxic or less effective
- ▶ Presented at AIDS2022 and CROI 2023 conferences
  - ▶ cabotegravir and rilpivirine long-acting injectable
  - ▶ SALSA study (48 week outcomes) OPLWH switched = happier, sustained viral suppression as good as 3-4 drug regimens.
  - ▶ TANGO study shows similar
  - ▶ 3TC+DTG for maintenance viral suppression can have variable effectiveness in the presence of mutations



Why do we think about  
adherence differently with an  
older population?



# Why do we think about adherence differently with an older population?

- ▶ Data has generally shown that older age is associated with better ART adherence
- ▶ But will it stay this way forever?
  - ▶ Comorbidities/Geriatric syndromes
  - ▶ Polypharmacy
  - ▶ Healthcare transitions

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	<i>OR (95% CI)</i>	<i>OR (95% CI)</i>	<i>OR (90% CI)</i>
Age	0.99 (0.98–1.00)	0.99 (0.98–1.00)	0.99 (0.98–1.00)

Risk for non-adherence in older compared to younger patients

	Number of studies (n) (reference numbers)	RR	95%CI	Heterogeneity I <sup>2</sup>	p-value
All Studies	12 [14, 16, 27–29, 32, 38, 42, 44, 45, 49, 51]	0.72	0.64, 0.82	37%	.10
Measurement Follow-Up					
Long-term (>1 month)	4 [29, 38, 45, 49]	0.65	0.50, 0.85	21%	.29
Short-term (≤1 month)	8 [14, 16, 27, 28, 32, 42, 44, 51]	0.75	0.64, 0.87	45%	.08
Measurement Method					
Self Report	7 [14, 27, 32, 38, 42, 44, 51]	0.78	0.69, 0.89	27%	.21
MEMS Caps	2 [16, 28]	0.56	0.42, 0.74	0%	.32
Pharmacy Refill	2 [29, 49]	0.73	0.61, 0.88	0%	.44

RR is relative risk for non adherence in the older participants relative to the younger

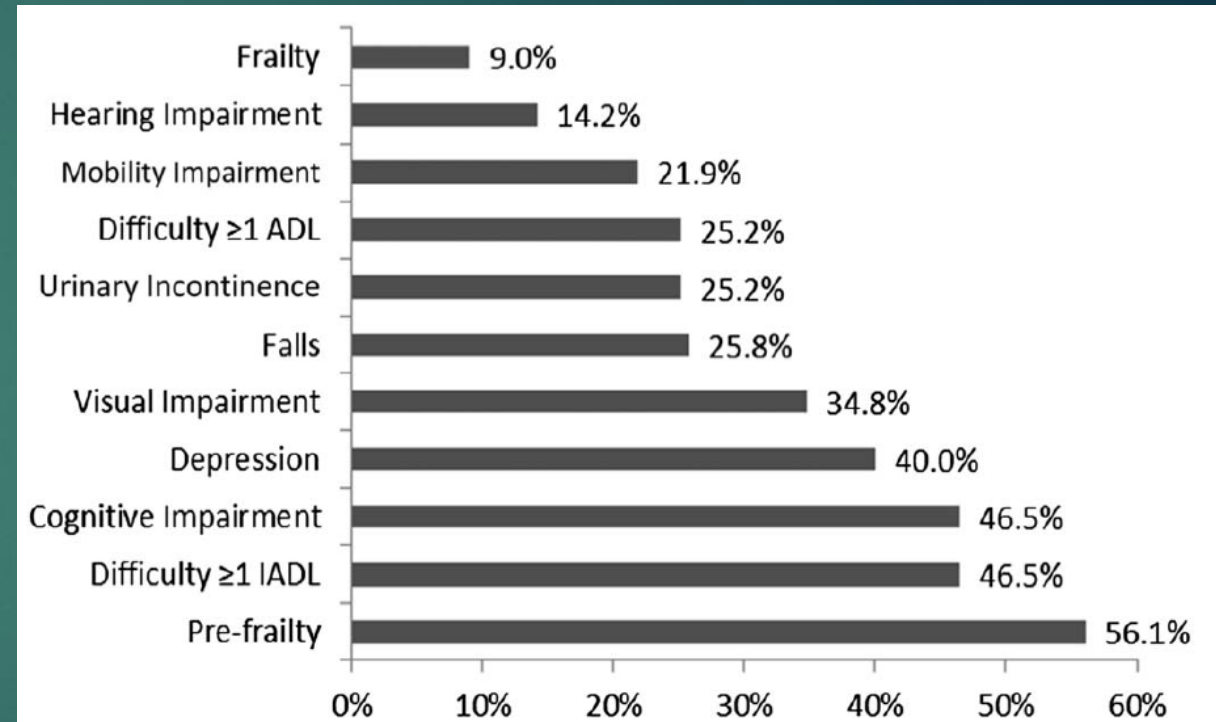
95%CI - 95% Confidence Interval

I<sup>2</sup> is the variation in RR attributable to heterogeneity (lower is better)

n is the number of studies included

# Why do we think about adherence differently with an older population?

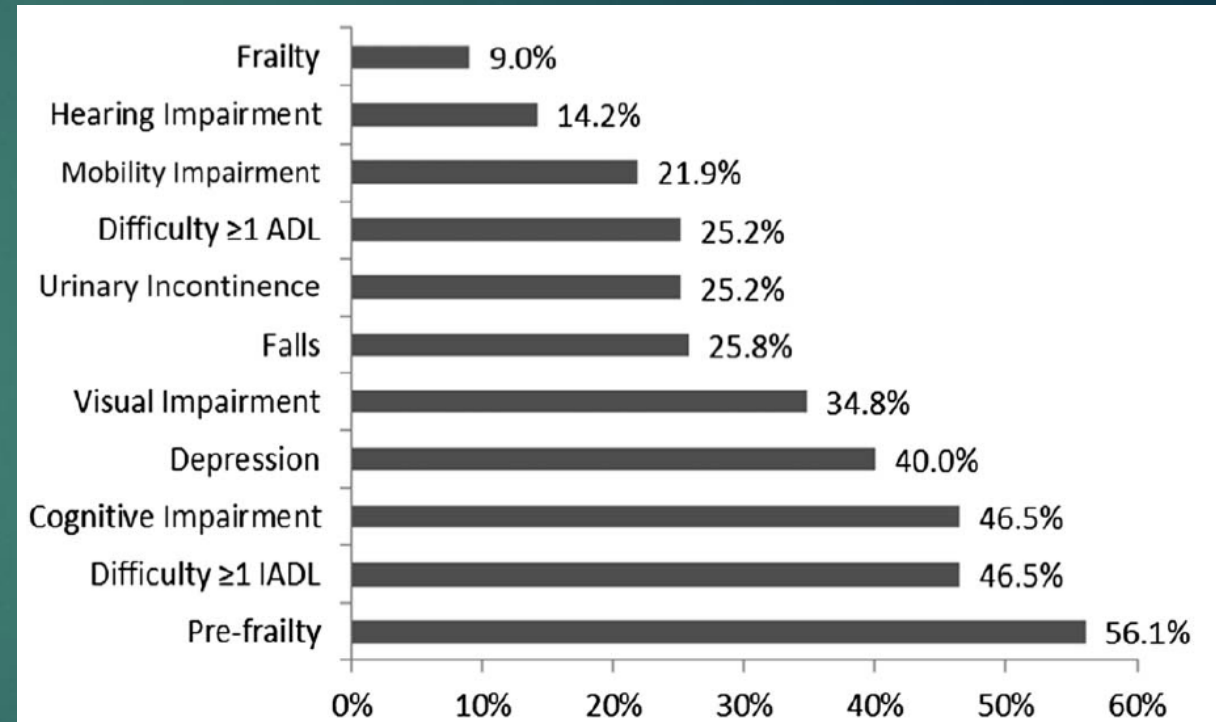
- ▶ Older PLWH have up to 6 more comorbidities than their non-HIV counterparts
  - ▶ Start at younger chronologic ages
- ▶ More comorbidities = more geriatric syndromes



**FIGURE 1.** Frequencies of geriatric syndromes. Each bar reflects the percentage of participants with each geriatric syndrome. Actual percentages are shown at the end of each bar. Horizontal axis only shown to 60%.

# Why do we think about adherence differently with an older population?

- ▶ **Neurocognitive deficits** linked to issues with adherence
- ▶ 30% higher likelihood of reduced physical function which contributes to **frailty**



**FIGURE 1.** Frequencies of geriatric syndromes. Each bar reflects the percentage of participants with each geriatric syndrome. Actual percentages are shown at the end of each bar. Horizontal axis only shown to 60%.

TABLE 3. ADJUSTED ODDS RATIOS FOR NONADHERENCE USING THE CUTOFF <80% OF DAYS COVERED

# What impacts adherence?

## Comorbidities

▶ **Frailty** → 34% increased likelihood of non-adherence

▶ 10% had frailty

	<i>Model 4<sup>d</sup> OR (95% CI)</i>
Age	0.99 (0.99–1.00)
Sex	
Male	<b>0.84 (0.75–0.95)</b>
Female (Ref.)	
Race	
Black	<b>1.77 (1.57–2.00)</b>
Hispanic	<b>1.20 (1.02–1.42)</b>
Other	<b>1.85 (1.36–2.50)</b>
White (Ref.)	
Census region	
Midwest	0.89 (0.74–1.07)
South	1.02 (0.90–1.17)
West	1.08 (0.92–1.26)
Northeast (Ref.)	
History of substance use	<b>1.59 (1.41–1.79)</b>
Dually eligible	<b>0.89 (0.79–0.99)</b>
Polypharmacy	<b>0.48 (0.43–0.54)</b>
Frailty status	
Prefrail	0.97 (0.86–1.1)
<b>Frail</b>	<b>1.34 (1.11–1.61)</b>
Robust (Ref.)	—
Alzheimer’s and related dementias	*
Depression	*
Falls	1.29 (0.98–1.69)
Hip fracture	*
Sensory impairment (eye, ear)	*
Osteoporosis	*
Orthostatic Hypotension	*
Incontinence	*

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Sensory impairment (eye, ear)	*
Osteoporosis	*
Orthostatic Hypotension	*
Incontinence	*

# What impacts adherence?

## Comorbidities

- ▶ Polypharmacy linked to issues with adherence to other drugs, **not** ART.
- ▶ **Polypharmacy** was associated with a **lower likelihood** of non-adherence
  - ▶ Fewer of the non-adherent had polypharmacy than the adherence





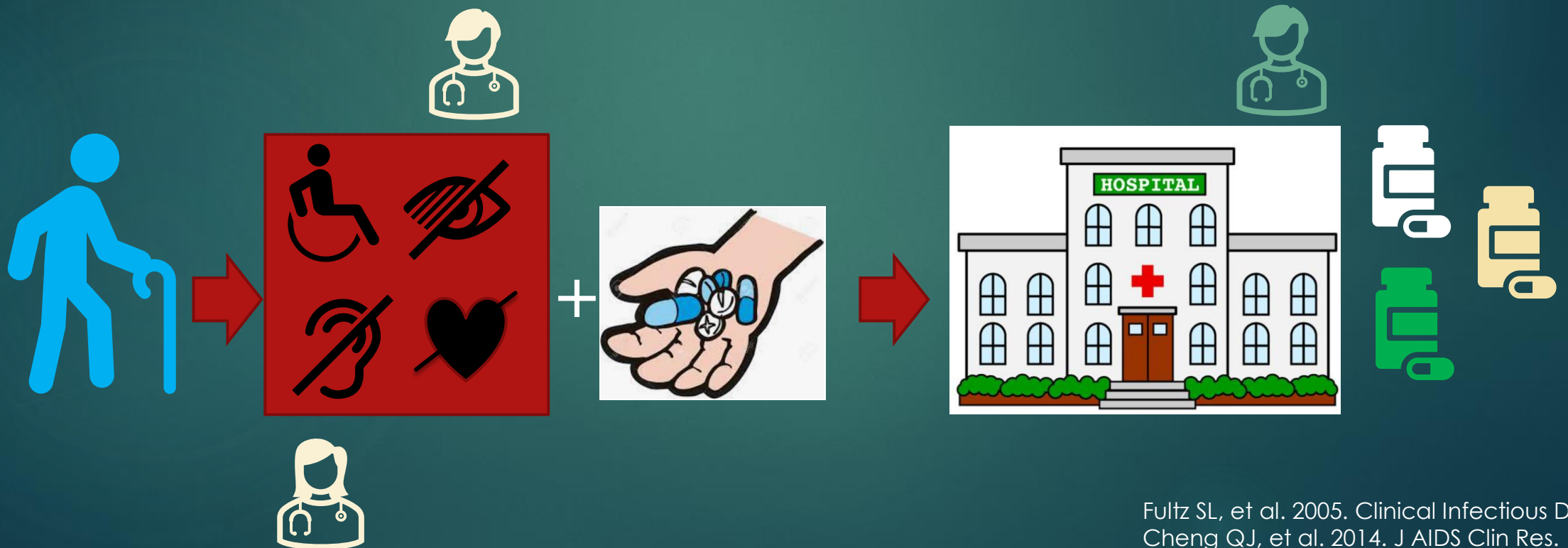
# What impacts adherence?

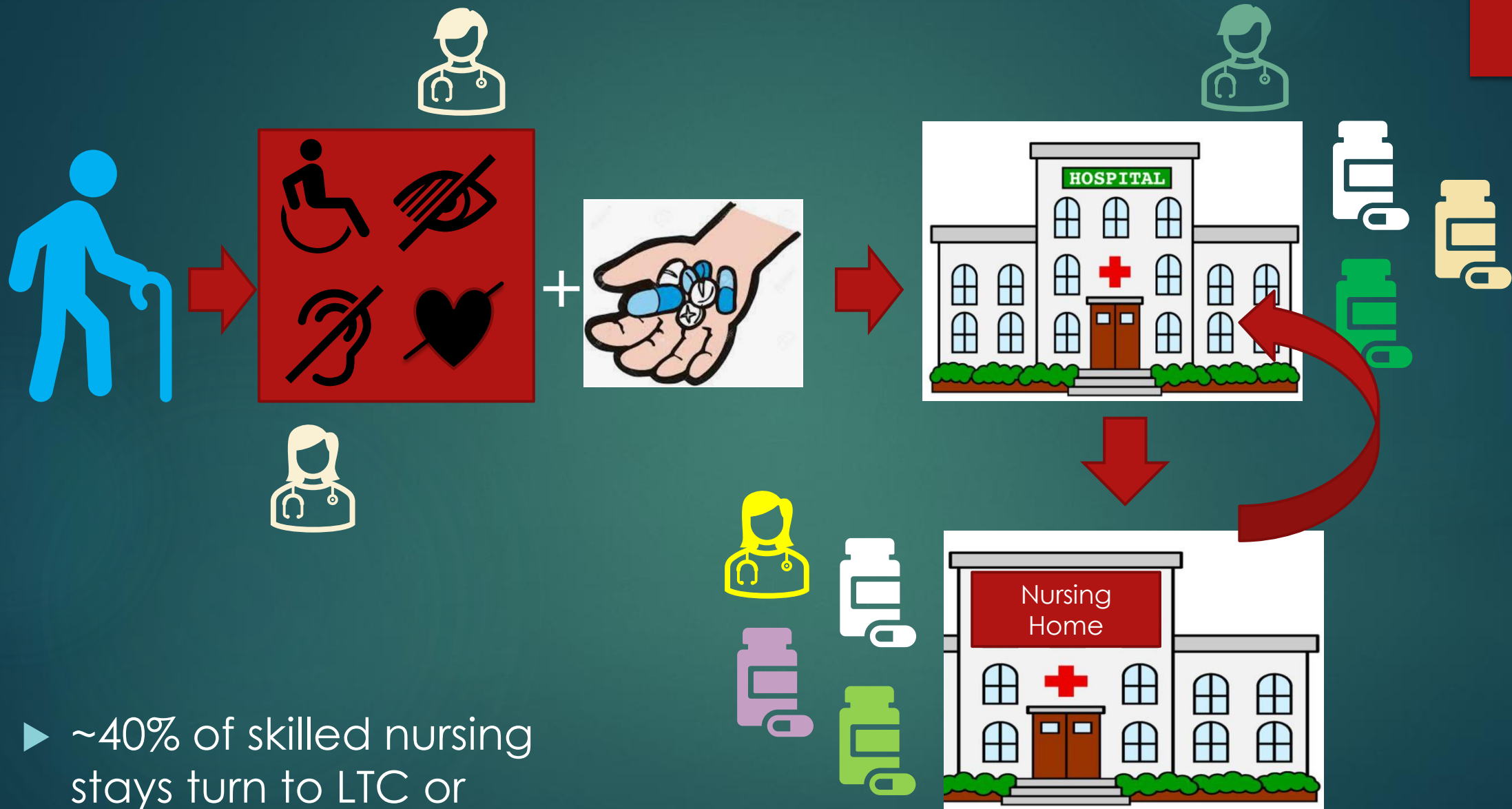
- ▶ Social supports are different for PLWH
  - ▶ Social supports enable people to age at home
  - ▶ 56% reported reliable support
  - ▶ 44% reported little to no help with ADLs
- ▶ Utilization may then include use of nursing homes



# What else should we consider?

- ▶ Comorbidities mean more and more diverse healthcare utilization
  - ▶ 70% of PLWH report using their ID as a PCP
  - ▶ 30% of ID's reported being uncomfortable treating geriatric conditions
- ▶ Formularies dictate medication access

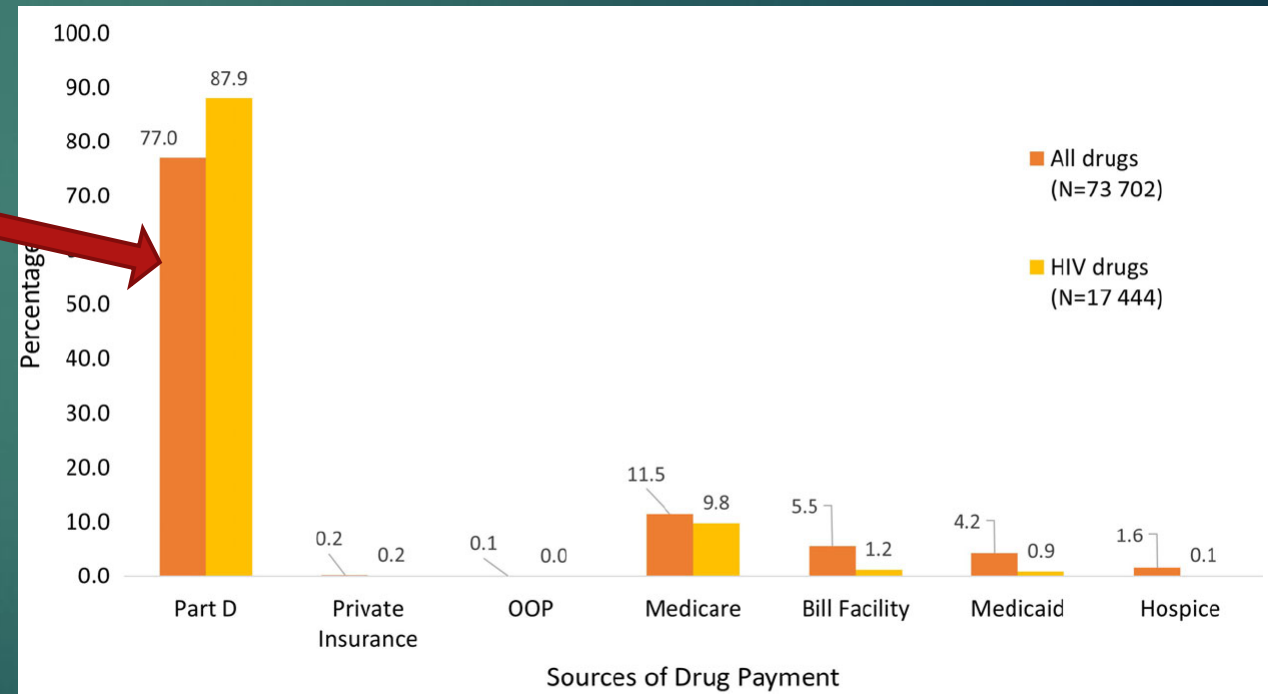




▶ ~40% of skilled nursing stays turn to LTC or rehospitalizations

# ART insurance coverage

- ▶ ARVs are a protected class of medications under Medicare
- ▶ Part D covers them
- ▶ Cost sharing is low, particularly for people who are dually eligible for Medicaid



# ART insurance coverage

- ▶ In a hospital or nursing home stay the cost of medications can be wrapped into a capitated or bundled payment for short stays
  - ▶ Long term care → coverage of medications back to Part D
- ▶ Community cost sharing assistance:
  - ▶ Ryan White AIDS drug assistance program (ADAP)
  - ▶ manufacturer cost-sharing and patient assistance programs
  - ▶ These programs do not apply to an in-patient setting whether that is a nursing home or hospital

# Nursing homes

- ▶ ~50% of older people in the US will ever use a nursing home
- ▶ Short stays are more common
  - ▶ Skilled nursing/Rehab
  - ▶ Covered by Medicare → capitated payment
  - ▶ Medication reconciliation is part of the admission process
- ▶ **~600K PLWH are older and developing age and HIV related comorbidities**

# Nursing homes

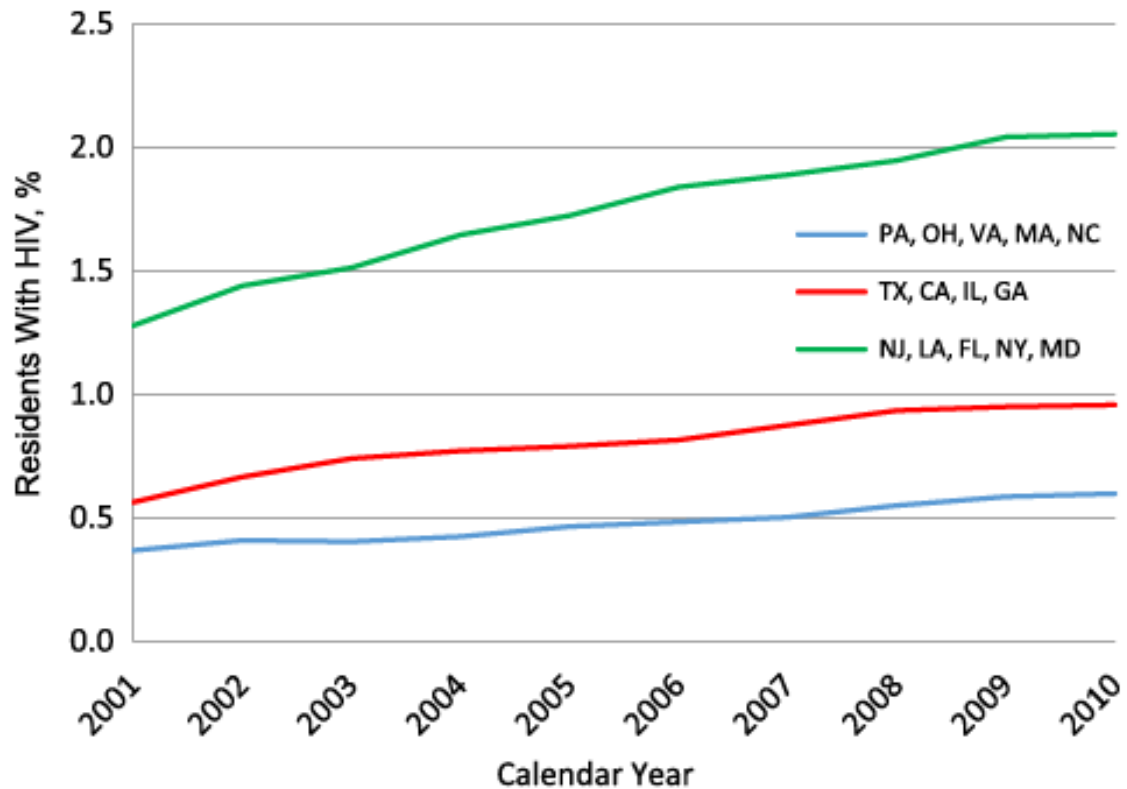
## ▶ Medication reconciliation

- ▶ Creates the most complete and up-to-date list of medications and comparing it to the medications ordered
- ▶ Done at every care transition
- ▶ Can result in changes to prescribed drugs
- ▶ *“At discharge, the steps include determining the postdischarge medication regimen, developing discharge instructions for the patient for home medications, educating the patient, and transmitting the medication list to the followup physician”*





# PLWH in Nursing Homes



**Figure 1.** Annual proportion of long-stay nursing home residents with human immunodeficiency virus (HIV): by states with lower to higher prevalence of HIV in nursing homes. Note: states were categorized into three groups based on their prevalence of HIV in nursing homes: 0.5% or less: Pennsylvania, Ohio, Virginia, Massachusetts, and North Carolina; greater than 0.5% and 1% or less: Texas, California, Illinois, and Georgia; and greater than 1%: New Jersey, Louisiana, Florida, New York, and Maryland.

- ▶ From 2001 to 2010 the proportion of long stay NH residents with HIV more than doubled
- ▶ High concentration of HIV meant larger number of HIV+ in NHs



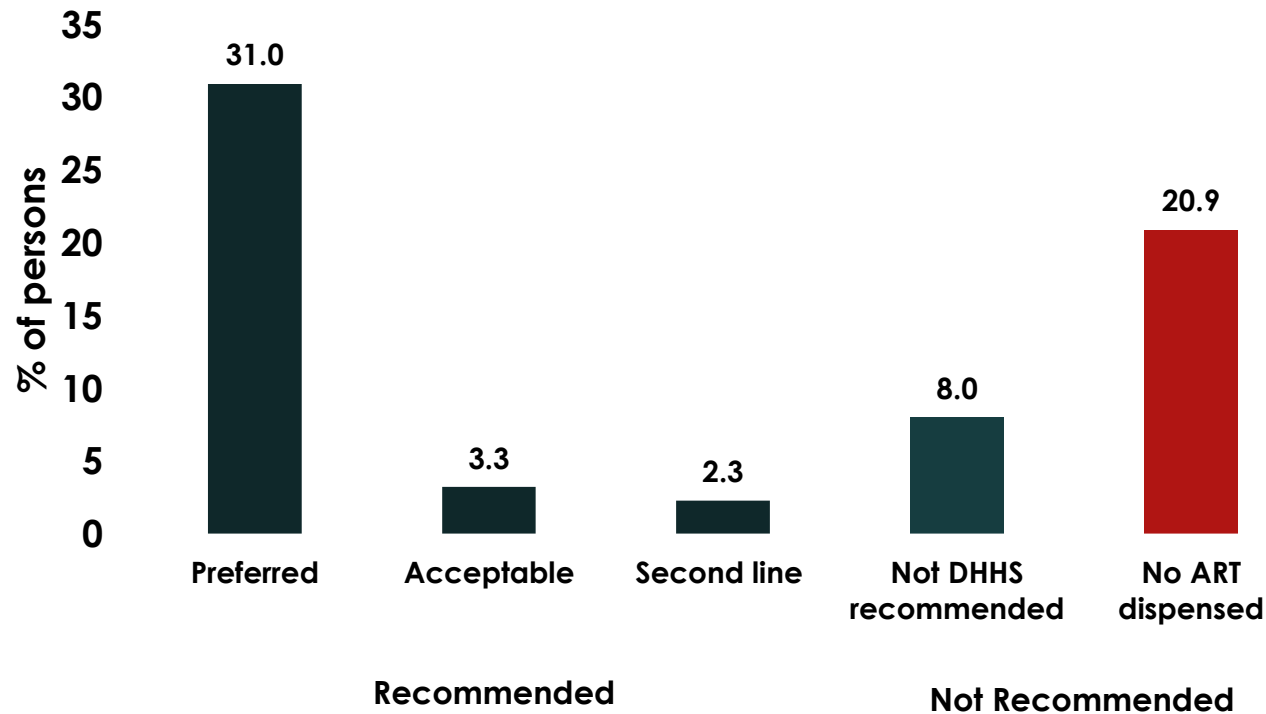
# PLWH in Nursing Homes

		2011-2013 (n=4031)		1998-2000 (n=5115)	
Characteristic		n	%	n	%
<b>Gender</b>					
	Male	2876	<b>71.3</b>	3550	<b>69.4</b>
<b>Age Groups</b>					
	≤30	36	<b>0.9</b>	327	<b>6.4</b>
	31-40	155	<b>3.8</b>	1606	<b>31.4</b>
	41-50	661	<b>16.4</b>	1923	<b>37.6</b>
	51-60	1232	<b>30.6</b>	772	<b>15.1</b>
	61-70	1121	<b>27.8</b>	276	<b>5.4</b>
	71-80	567	<b>14.1</b>	118	<b>2.3</b>
	≥81	259	<b>6.4</b>	93	<b>1.8</b>
<b>Race/Ethnicity</b>					
	Black/African American	2047	<b>50.8</b>	3033	<b>59.3</b>
	Non-Hispanic White	1508	<b>37.4</b>	1202	<b>23.5</b>
	Hispanic	366	<b>9.1</b>	824	<b>16.1</b>
	Other	110	<b>2.7</b>	44	<b>0.9</b>
<b>Marital Status</b>					
	Never Married	2148	<b>53.3</b>	3366	<b>65.8</b>
<b>Admitted to NH from</b>					
	Acute Hospital	3741	<b>92.8</b>	3984	<b>77.9</b>
	Community	140	<b>3.5</b>	532	<b>10.4</b>
	Other	150	<b>3.7</b>	599	<b>11.7</b>

- ▶ Increase in age
- ▶ More often male, and from hospital stay
- ▶ 2.3 hr/pd Aides vs. <1 hr with LPN or RN

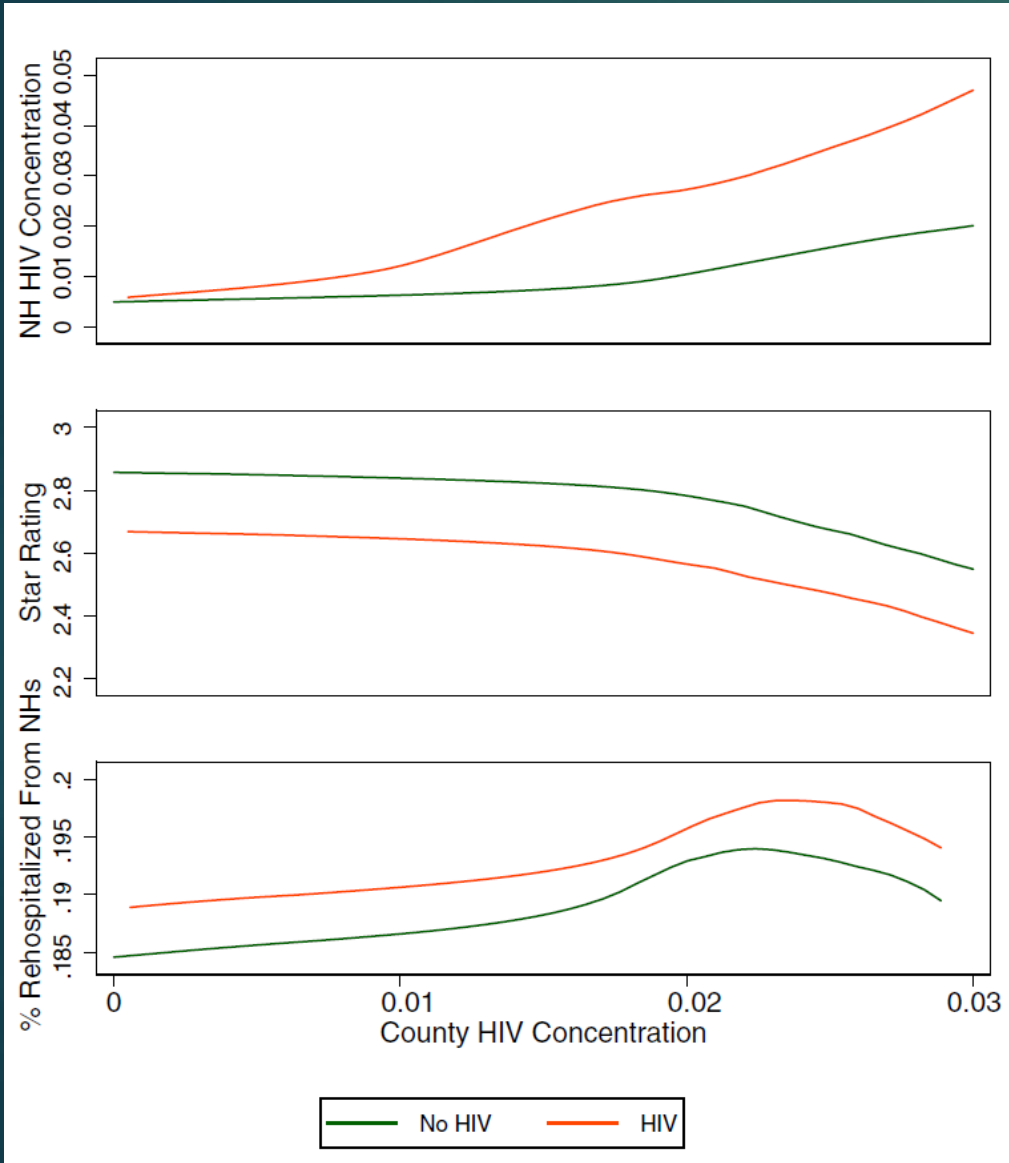
# PLWH in Nursing Homes

**Figure 1.** Proportion of PLWH in NHs receiving ART by DHHS recommendation categories, 2011-2013



Note: ART=antiretroviral therapy; DHHS=Department of Health and Human Services. DHHS recommendations are a hierarchy in the order: Preferred, Acceptable, Second Line, Not recommended, No ART; Second line=regimens recommended for individuals that no longer respond to preferred or acceptable regimens; Not DHHS recommended=ART regimens that were not recommended by DHHS

# Care sites

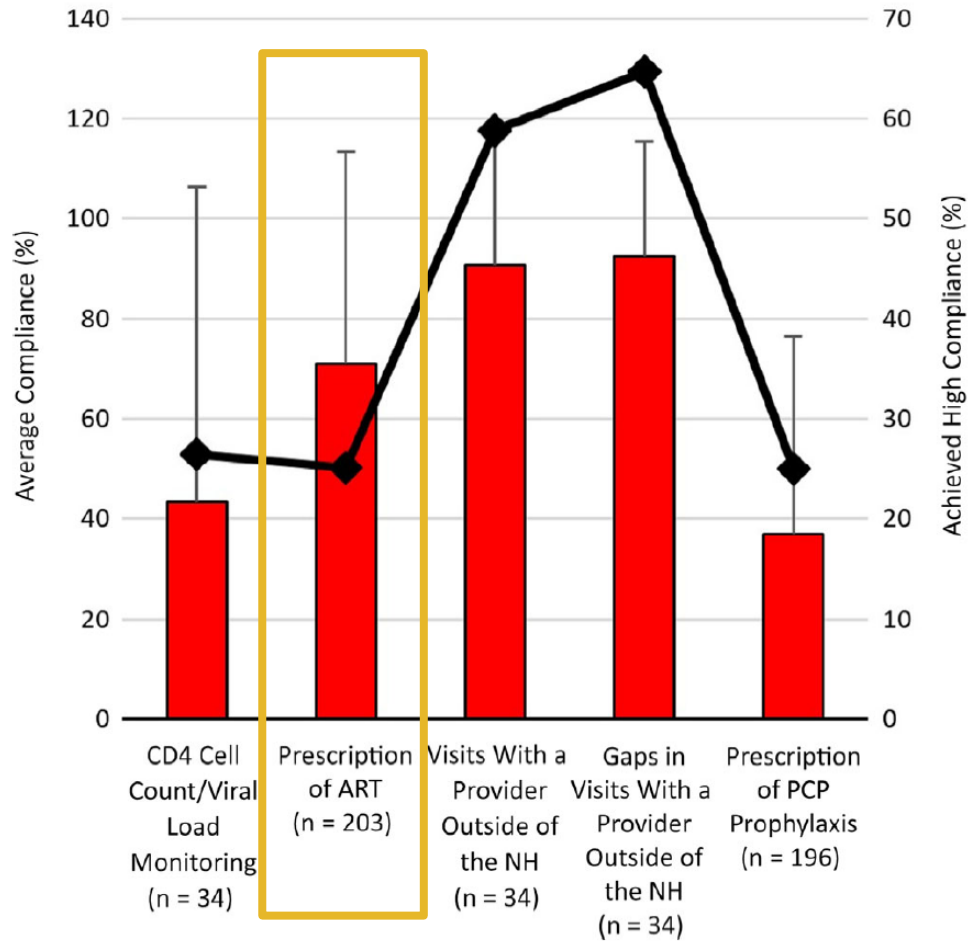


- ▶ HIV+ admitted to NHs with higher concentrations of HIV
- ▶ HIV+ in counties with higher concentrations of HIV are more often admitted to lower star rating NHs
- ▶ Higher concentration counties = higher rehospitalization rate for HIV+

“NHs with higher HIV concentrations tended to be less white, larger, and more often for profit, with the exception of the greater than 50% NHs, which appeared markedly different.”

Meyers DJ, et al. 2019. JAGS.

# HIV Care quality



**Figure 1.** Average compliance and percentage of nursing homes (NHs) that achieved high compliance for each adapted measure of human immunodeficiency virus care quality. ART indicates antiretroviral therapy; PCP, *Pneumocystis jiroveci* pneumonia.

- ▶ Average compliance with ART ~70%
- ▶ Rx are dispensed to patients
- ▶ Loss of autonomy as it relates to adherence

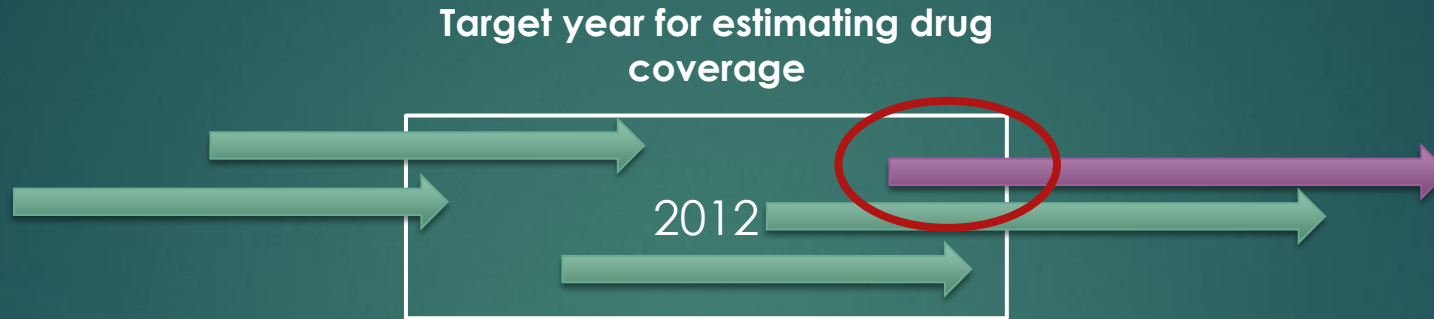
# HIV care quality

## Long-term care facility

Long-term care pharmacies contract with Medicare drug plans to provide drug coverage to their residents. If you're entering, living in, or leaving a nursing home, you'll have the opportunity to choose or switch your Medicare drug plan. This allows you to choose a plan that contracts with your nursing home's pharmacy.

- ▶ Part D coverage depends on the patient switching plans to one that contract with the nursing home they are using

# Transitions in care



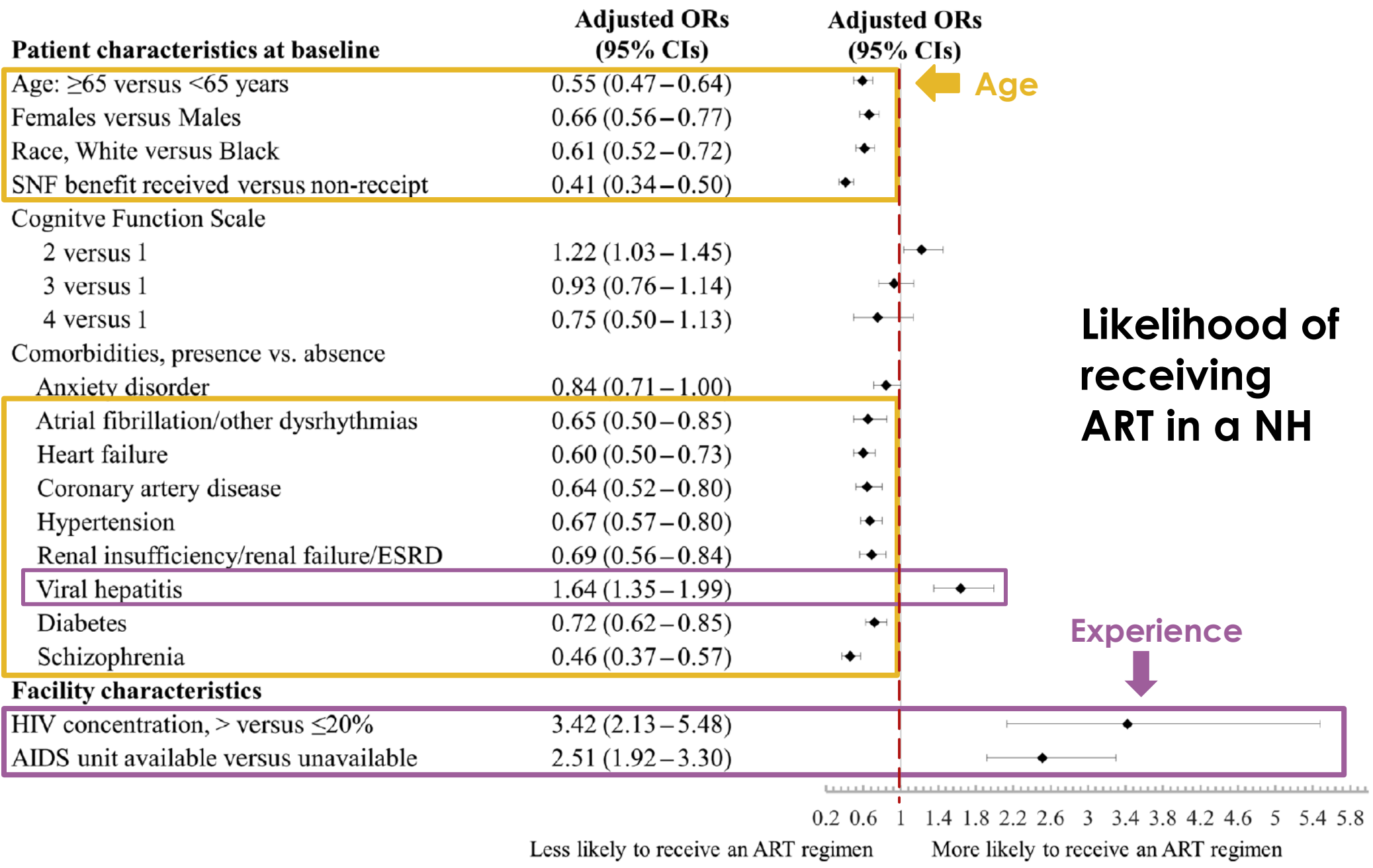
- ▶ Being in the early part of a NH stay (<100 days) = predictive of **not receiving ART**
- ▶ Longer stays = greater likelihood of receiving ART



# Transitions in care

- ▶ significant “non-adherence” in nursing homes
  - ▶ NH experience with HIV matters

“Only 36% ...received any ART regimen during an average of 11.6 months of observation.”



← Age

**Likelihood of receiving ART in a NH**

Experience ↓

Zhang, T., et al. 2022. Use of antiretroviral therapy in nursing home residents with HIV. Journal of the American Geriatrics Society.

# Research in progress

- ▶ Previous studies have looked at adherence in the community or in a facility
- ▶ Study across the transition
  - ▶ Few PWH lose their ART upon entering the NH
  - ▶ Many gain ART
  - ▶ Most remain the same in terms of access
    - ▶ Changes are often made due to cost

# Nursing homes and HIV care

- ▶ Naudet et al. studied NHs in France
  - ▶ ~20% of NH staff **opposed**

## Reasons related to HIV:

1. **lack of training**
2. concerns about **transmission**
3. NHs needed **more resources**
4. a certain setup
5. problems with other residents, confidentiality and sexual activity

“38.8% of physicians and 25.9% of staff had received training about HIV during the last two years”

**Table 1**

Questionnaires and answers.

### Questionnaire

1. Have you already admitted HIV patients to your NH?
2. Have you had a demand for admission of HIV patients?
3. Have you refused admission to HIV patients?
4. Do you agree with the admission of HIV patients to your NH?
5. If you answered no or indicated obstacles in question 4, what were the reasons? (for staff)
  - 5.a. Age < 65 years
  - 5.b. Fear of contamination of other residents
  - 5.c. Fear of staff contamination
  - 5.c. High level of care
  - 5.d. Cost of treatment
  - 5.e. Lack of formal teaching or training
6. Do you think that you need teaching on HIV?
7. During the last 5 years, did you receive any teaching or training on HIV?
8. Do you consider this survey useful?

NH: nursing home; NA: not applicable; HIV = human immunodeficiency virus.

# Research in progress

- ▶ Examine nursing home formularies
- ▶ Determine the adherence of PLWH prior to and after admission to the NH
- ▶ Establish the experiences of PLWH who have been in NHs
  - ▶ What about the facilities and care received characterizes their experiences

# We want to hear your stories about managing ART in the NH setting

- ▶ Providers (nurses, pharmacists, MDs, or similar) working in nursing homes
- ▶ PLWH that have ever used a nursing home and are aged 50+

Leave a voice message or send an email with your contact information (phone number or email). A member of our team will get back to you the next day. To protect your privacy, we will refer to our study as the nursing home study in all communications. All participants that complete the study will be compensated with a \$40 gift card.

**Email: [nursinghomestudy1@gmail.com](mailto:nursinghomestudy1@gmail.com)**

**Phone: (617) 373 7486**





# Summary and next steps

- ▶ NH have little experience with HIV
  - ▶ More experience have better adherence
- ▶ Being in the early part of a NH stay (<100 days) = not receiving ART
- ▶ Non-adherence in a NH seems to be increasingly more common but we don't know why
- ▶ Longer stays = greater likelihood of receiving ART
  
- ▶ More research is needed to identify issues with transitions in care which can include
  - ▶ Medications listed on discharge
  - ▶ Education of NH staff about ART
  - ▶ Access to medication: drugs not on formulary, drug formulation (single pills or injections) not on formulary, Rx plan that is compatible with a facility

# Thank you

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Leave a voice message or send an email with your contact information (phone number or email). A member of our team will get back to you the next day. To protect your privacy, we will refer to our study as the nursing home study in all communications. All participants that complete the study will be compensated with a \$40 gift card.

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