



Comparison of 4 Frailty scores to predict adverse health outcomes and mortality in people living with HIV aged 70 years and more (ANRS EP66 SEPTAVIH study)



ALLAVENA Clotilde¹; ABULIZI Diane²; BLAIN Hubert³; ADRIANTSOANIRINA Valérie²; ABGRALL Sophie⁴; KARMOCHKINE Marina⁵; KATLAMA Christine⁶; PREVILON Miresta⁷; CABIE André⁸; BONNET Fabrice⁹; MEYER Laurence^{2,10}; MAKINSON Alain¹¹

1-Infectious Diseases Department INSERM EA1413, Nantes University Hospital, NANTES, France; 2-INSERM CESP U1018, Paris-Saclay University, Le Kremlin-Bicêtre, France; 3-Geriatrics Department, Montpellier University Hospital, Montpellier, France; 4- Internal Medicine Department, Hop Antoine Bécère AP-HP, Clamart, France; 5-Infectiology, Hôpital Hôtel Dieu AP-HP, Paris, France; 6-Infectious Diseases Department, Hôpital Pitié-Salpêtrière AP-HP, Paris, France; 7-Infectious Diseases Department, Hôpital Saint Louis AP-HP, Paris, France; 8-Infectious Diseases Department, Martinique University Hospital, Fort de France, France; 9-Infectious Diseases Department, Bordeaux University Hospital, Bordeaux, France; 10-Public Health Department, Bicêtre University Hospital AP-HP, Le Kremlin-Bicêtre, France; 11-Infectious Diseases department, Montpellier University Hospital, Montpellier, France

Contact : clotilde.allavena@chu-nantes.fr

Background

Frailty is associated with adverse health outcomes in older persons. Studies have evaluated frailty in middle-aged persons living with HIV (PLWH). Phenotypic frailty standard evaluation uses the 5-item FRIED criteria (exhaustion, weakness, slow walking speed, weight loss and low physical activity), which has been associated in the general and HIV population with adverse health outcomes. Other screening tools of frailty exist: the FRAIL scale (recommended in the last EACS guidelines), Study of Osteoporotic Fractures frailty index (SOF), and the French Authority of Health questionnaire (HAS). We evaluated the association of all these tools with adverse health outcomes or mortality over 36 months in geriatric aged PLWH on ART.

Materials and Methods

Our Study was nested in the French multicenter prospective ANRS EP66 SEPTAVIH study, aimed to assess frailty prevalence and factors in PLWH 70+ taking ART for at least 12 months. At baseline frailty was assessed using the FRIED index score and FRAIL, SOF and HAS screening tools. FRIED score and HAS questionnaire were collected at each visit. FRAIL and SOF scores were calculated, using prospectively collected variables and proxies (table 1).

Adverse health outcomes of falls, hospitalization, emergency room visit, nursing home placement, disability, and mortality were collected at 12, 24 and 36 months.

We used log-binomial regression to analyze the association between frailty and adverse health outcomes or death and Cox proportional hazard model for association between frailty and mortality.

Table 1 - Details of items and adapted items and scoring of the frailty scores

Frailty score	Interpretation	Adapted item if not specifically collected in SEPTAVIH
FRIED		
Loss of weight	Weight loss > 5% or > 4.5 Kg	
Weakness	Grip strenght (by gender and BMI)	
Exhaustion	Self report (question 20 CES-D)	
Slowness	Walking time 4 m	
Low activity	IPAQ questionnaire	
Scoring : Robust (score 0), prefrail (score 1-2), frail (score 3-4-5)		
FRAIL		
Fatigue	« have you felt fatigued ? »	Q-1 HIV Symptom distress
Resistance	« do you have difficulty to climb a flight of stairs ? »	Q-6 HAS questionnaire
Ambulation	« do you have difficulty walking one block ? »	Q-4 HAS questionnaire
Illness	« do you have any of these illnesses : hypertension, diabetes, cancer, chronic lung disease, heart attack, congestive heart failure, angina, asthma, arthritis, stroke, and kidney disease ? »	Listed comorbidities in the eCRF
Loss of weight	weight loss > 5% in the past year	
Scoring : Robust (score 0), prefrail (score 1-2), frail (score 3-4-5)		
SOF		
Loss of weight	weight loss > 5% in the past year	
Inability	Inability to rise from a chair 5 times without use of arms	SPPB 4.3 : rise from a chair (number/60 s)
Energy	« do you feel full of energy ? »	Q-20 CES-D
Scoring : Robust (n=0), prefrail (score 1), frail (score 2-3)		

HAS questionnaire

Assessment	Assessment		
	Yes	No	Do not Know
Does your patient live alone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has your patient lost weight in the last 3 months?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has your patient felt more tired over the past 3 months?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has your patient had more difficulty getting around in the last 3 months?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does your patient complain about memory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does your patient have a slowed walking speed (more than 4 seconds to cover 4 meters)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you answered YES to any of these questions:

Does your patient seem frail to you: YES NO

1. Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001;56(3):M146–56.
 2. Abellan van Kan G, Rolland YM, Morley JE, Vellas B. Frailty: toward a clinical definition. J Am Med Dir Assoc. 2008;9:71–72.
 3. Ensrud KE, Ewing SK, Taylor BC, et al. Frailty and risk of falls, fracture, and mortality in older women: the study of osteoporotic fractures. J Gerontol A Biol Sci Med Sci. 2007;62(7):744–51.

Results

- 510 PLWH, mostly male (81.4%), with a median age of 73 years, a median HIV infection duration of 22.7 years, were included;
- 13% were classified as frail using FRIED, 9% using FRAIL, 7% using SOF and 26% using the HAS scores (Figure 1).
- During the 36-month follow up, 40 participants (7.9%) died and 254 participants (50%) had at least one adverse health outcome (Figure 2).

The risk of adverse health outcomes or death over 36 months was higher when PLWH were classified as frail using FRIED, FRAIL and HAS but not SOF (table 2).

Frailty was strongly associated with mortality when assessed with FRIED, FRAIL, and HAS but not SOF (Table 3).

Figure 1 - Prevalence of frailty according to different scores

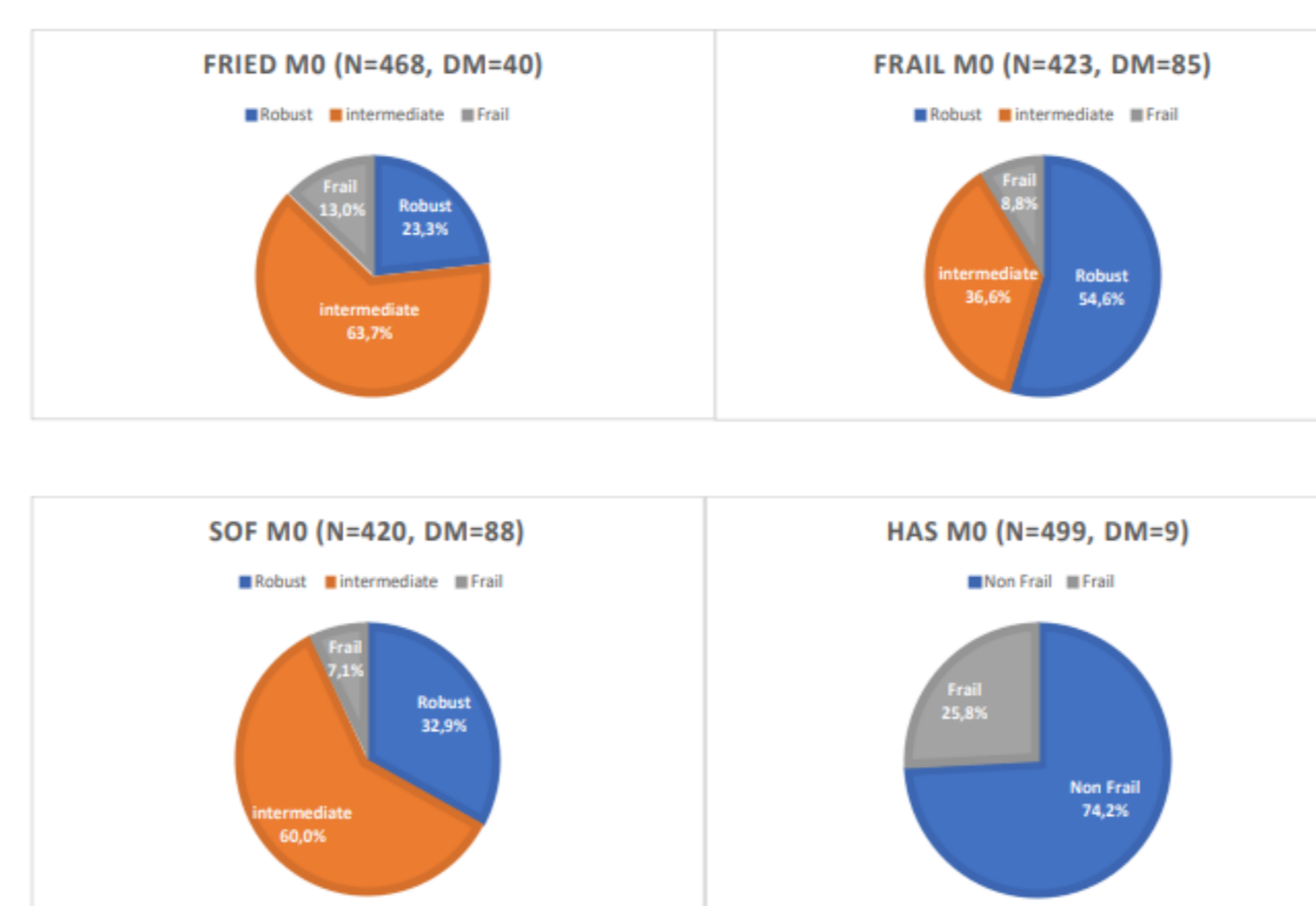


Figure 2 - Adverse Health Outcomes at M12, M24 and M36

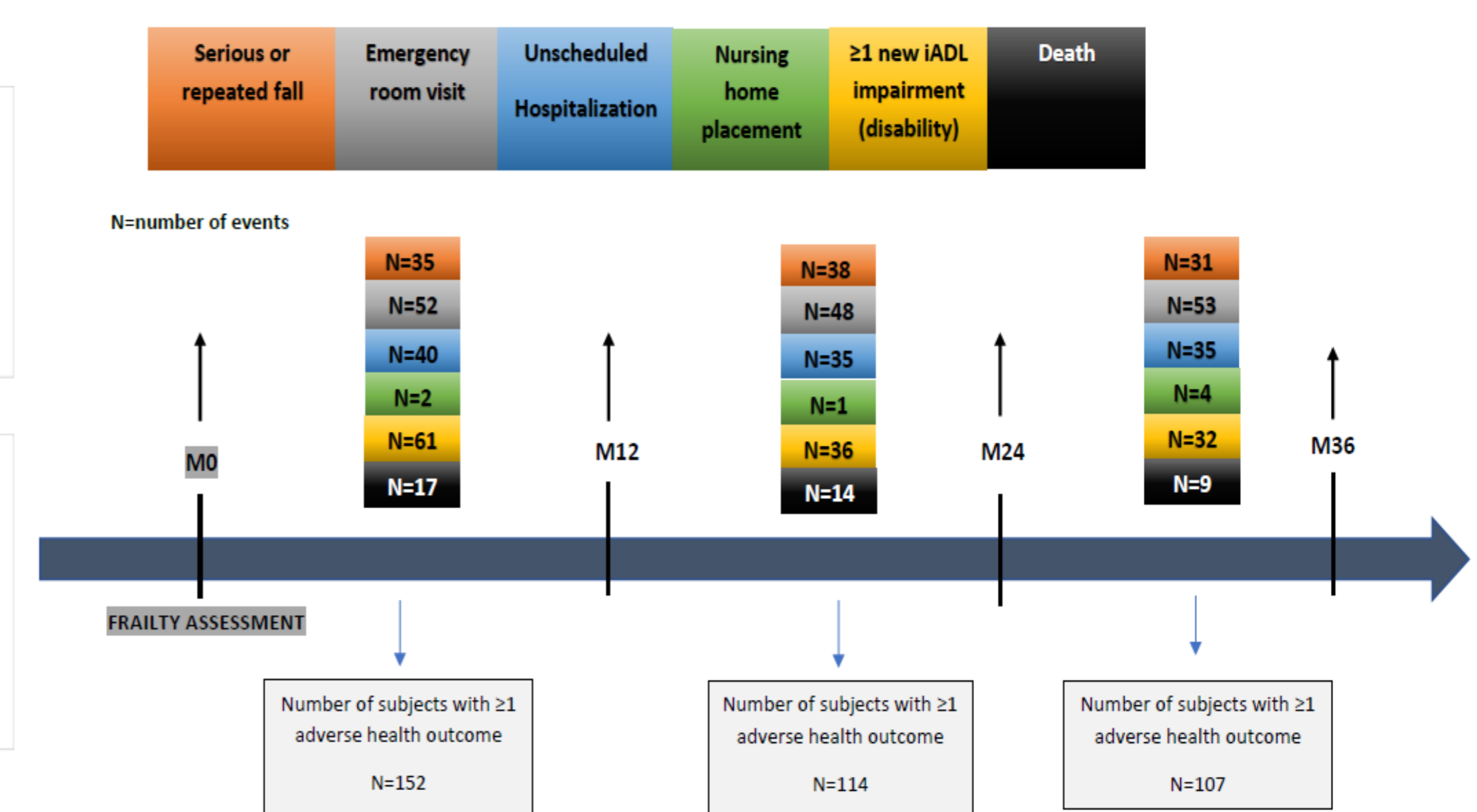


Table 2 - Association of frailty status assessed with FRIED phenotype, FRAIL score, SOF index and HAS questionnaire, and adverse health outcomes or mortality over 36 months.

Frailty score at Baseline	Log-Binomial regression		
	Relative Risk	[95% CI]	p-value
FRIED			
Robustness (n=84)	1.0	[reference]	
Prefrailty (n=211)	1.01	[0.85-1.20]	0.89
Frailty (n=39)	1.25	[1.02-1.52]	0.03
FRAIL			
Robustness (n=166)	1.0	[reference]	
Prefrailty (n=116)	1.30	[1.11-1.52]	0.001
Frailty (n=25)	1.66	[1.47-1.88]	<0.001
SOF			
Robustness (n=97)	1.0	[reference]	
Prefrailty (n=182)	1.10	[0.93-1.31]	0.28
Frailty (n=20)	1.23	[0.95-1.60]	0.12
HAS			
No frailty (n=261)	1.0	[reference]	
Frailty (n=94)	1.41	[1.26-1.59]	<0.001

Table 3 - Association of frailty status assessed with FRIED phenotype, FRAIL score, SOF index and HAS questionnaire, and mortality over 36 months.

Frailty score at Baseline	Cox model		
	Hazard ratio	[95% CI]	p-value
FRIED			
Robustness (n=109)	1.0	[reference]	
Prefrailty (n=298)	2.35	[0.81-6.79]	0.11
Frailty (n=61)	5.37	[1.65-17.47]	0.005
FRAIL			
Robustness (n=231)	1.0	[reference]	
Prefrailty (n=155)	4.69	[1.99-11.02]	<0.0001
Frailty (n=37)	4.54	[1.33-15.53]	0.016
SOF			
Robustness (n=138)	1.0	[reference]	
Prefrailty (n=252)	1.60	[0.67-3.77]	0.29
Frailty (n=30)	2.84	[0.83-9.72]	0.10
HAS			
No frailty (n=370)	1.0	[reference]	
Frailty (n=129)	5.00	[2.65-9.41]	<0.001

Conclusion

- ✓ This study is one of the first one to compare different scores of frailty in a geriatric population living with HIV aged 70-year or more on the occurrence of adverse health outcomes over 3 years.
- ✓ FRIED phenotype, FRAIL score and HAS tools, but not SOF index strongly predicted the risk of adverse health outcomes or mortality in a geriatric population living with HIV.
- ✓ Mortality over 36 months was strongly associated with frailty status when assessed with FRIED phenotype (HR 5.37), FRAIL score (HR 4.54), and HAS questionnaire (HR 5.00), but not SOF index.
- ✓ These results are reassuring concerning the choice of both the FRAIL EACS guidelines V12.0 and the HAS questionnaire in the French guidelines as a screening test for frailty in an elderly population living with HIV.

Sponsor : Inserm-ANRS MIE

The study was supported in part by a research grant from Investigator-Initiated Studies Program of Merck Sharp & Dohme LLC and by ViiV Healthcare