# SHORT COMMUNICATION

# Implementation of frailty screening for older people living with HIV in Brighton, UK

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### **Abstract**

**Objectives:** To evaluate the implementation of frailty screening in people living with HIV (PLWH) in a large urban cohort of patients in Brighton, UK.

Methods: Focus group discussions with HIV professionals and PLWH interviews helped inform the design and implementation of the frailty screening pathway in the clinic. Data were collected from PLWH aged over 60 years attending their HIV annual health check from July 2021 to January 2023 (n = 590), who were screened for frailty by nurses using the FRAIL scale. We assessed the proportions of PLWH who screened as frail, prefrail or robust and compared patient characteristics across groups. All PLWH identified as frail were offered a comprehensive geriatric assessment delivered by a combined HIV geriatric clinic, and uptake was recorded. Results: A total of 456/590 (77.3%) PLWH aged over 60 years were screened for frailty. Median age and time since HIV diagnosis (range) for those screened were 66 (60-99) years and 21 (0-32) years, respectively. In total, 56 (12.1%) of those screened were identified as frail, 118 (25.9%) as prefrail and 282 (61.8%) as robust. A total of 10/56 (18%) people identified as frail declined an appointment in the geriatric clinic. Compared with non-frail individuals, frail PLWH

Conclusions: Implementing frailty screening in PLWH over 60 years old is feasible in a large cohort of PLWH, as recommended by the European AIDS Clinical Society. More research is needed to determine if frailty screening can improve clinical outcomes of older PLWH and the use of the comprehensive geriatric assessment within HIV services.

had been living with HIV for longer and had a greater number of comorbid-

ities and comedications but were not chronologically older.

# KEYWORDS

ageing, frailty, geriatrics, HIV, screening

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# INTRODUCTION

People living with HIV (PLWH) over the age of 50 years experience a disproportionate number of comorbidities, particularly in regard to geriatric syndromes [1]. These include complex multimorbidity, polypharmacy, impaired mobility and falls, and functional impairment, leading to difficulties with self-care and activities of daily living and early-onset frailty. Collectively these reduce quality of life and increase healthcare utilization [2].

The European AIDS Clinical Society (EACS) recommend screening for frailty in PLWH above 50 years old, using screening tools such as the FRAIL scale. Additionally, the EACS has devised an algorithm for frailty screening among PLWH (Figure 1) [3], so that they may then be assessed and the frailty potentially reversed [4]. However, the implementation of screening has been hindered by uncertainty around the best screening tool to use, how feasible it is to do in clinical practice and which healthcare professionals (HCPs) are best suited to conduct screening [5].

We conducted a qualitative study with HIV professionals and PLWH to explore their perceptions towards frailty and routine screening for frailty, including screening tools, within HIV services [6]. This demonstrated that whilst PLWH were willing to be screened for frailty as part of their HIV care, our discussions with HIV professionals demonstrated that this did not always happen. We used some of the earlier results from this qualitative work to contribute towards developing a screening and

frailty pathway within the Lawson Unit, an outpatient HIV clinic at the Royal Sussex County Hospital (RSCH), Brighton, UK, and in this study, we aimed to evaluate the implementation of frailty screening in this cohort and to explore whether screening for frailty in PLWH is feasible in routine clinical practice.

#### **METHODS**

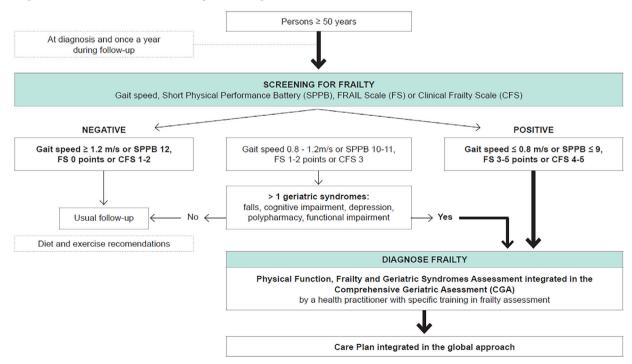
# Pathway design

Focus group discussions with the doctors, nurses and administrative staff from the clinic and interviews with PLWH regarding perceptions of frailty and screening [6] helped to inform the design and implementation of the frailty screening pathway. Focus group and interview discussions included when to screen for frailty, most suitable location, who will be responsible for screening, how to communicate the process to PLWH, what age to start screening (>50 vs. >60 years old) and preferences around which screening tool to use (FRAIL scale, Fried phenotype, Timed Up and Go test).

# Screening pathway

We decided to screen all PLWH aged 60 years and over attending HIV care mainly due to concerns about the

### **Algorithm Recommended for Frailty Screening**



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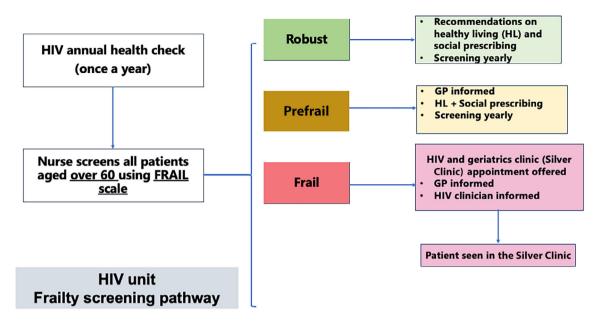


FIGURE 2 Frailty screening pathway.

capacity of the clinic to undertake screening of all those over 50 years old attending the service (64% of a total cohort of 2457). PLWH were screened from July 2021 to January 2023 by nurses during their standard of care HIV annual health check, usually a few weeks before the doctor's appointment (Figure 2) and this was recorded on the electronic health record.

The Frail scale was selected for screening purposes because it is easy to administer, does not have implications for space within the clinic and was identified as the easier tool to implement during the discussions we had with healthcare professionals responsible for the delivery of the intervention [6]. The FRAIL scale is a simple, five-item assessment tool used to evaluate frailty in older adults. It measures five domains: fatigue, resistance (ability to climb stairs), ambulation, illnesses and weight loss. A score of 0 represents robust health, while higher scores indicate increasing frailty, helping healthcare professionals to identify individuals at risk of functional decline, and takes ~3 min to complete [7].

All PLWH identified as robust or prefrail were provided with healthy ageing advice and suggestions on social prescribing interventions. Social prescribing involves linking individuals with non-medical support within their communities such as exercise, peer support and community support, to improve their health and well-being. PLWH identified as prefrail were provided with the same advice as those identified as robust and, if felt necessary by their HIV physician, they could also be referred for a comprehensive geriatric assessment (CGA). Six PLWH who screened as prefrail and had more than one geriatric syndrome present

were referred on for CGA, as per the EACS algorithm, and subsequently attended the Silver Clinic.

All those identified as frail were offered a CGA delivered by a combined HIV-geriatrics clinic (the Silver Clinic), where all that attended were subsequently confirmed as frail. Full details of the combined HIV-geriatrics clinic and our subsequent trial delivering further geriatric assessment are described elsewhere [8]. Briefly, the Silver Clinic consists of a tailored CGA-based joint HIV-geriatrics clinic providing multidisciplinary assessment and management of geriatric syndromes affecting older PLWH, including frailty, falls, polypharmacy, multimorbidity and medication-related problems associated with antiretroviral therapy (ART).

# Statistical analysis

Demographic differences and comparisons of the prevalence of frailty between the three groups were assessed using cross-tabulation and the Kruskal–Wallis test. *p*-values <0.05 were considered statistically significant. All statistical analyses were performed using SPSS version 28 (IBM Ireland Product Distribution Limited, Ballsbridge, Dublin, Ireland).

# RESULTS

A total of 456 of 590 PLWH (77%) were recorded as having been screened for frailty on their electronic health records. Reasons as to why 23% were not screened were

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TABLE 1 Baseline characteristics by frailty status.

Clinical characteristics ( $N = 456$ )	Frail ( <i>N</i> = 56)	Prefrail (N = 118)	<b>Robust (N = 282)</b>
Age (years)	66 (60–84)	68 (60–90)	66 (60-86)
Male [n (%)]	42 (91.3)	106 (89)	260 (92)
White ethnicity $[n \ (\%)]$	41 (89)	110 (93)	257 (91)
Identified sexuality $[n (\%)]$			
MSM	40 (87)	10 (84)	225 (79)
Comorbidities*	5 (2-9)	4 (1–10)	3 (0–19)
Comedications*	10 (1-25)	6 (0-20)	3.5 (0-17)
Bone densitometry $[n (\%)]$			
Osteoporosis	8 (17)	17 (14)	44 (21)
Osteopenia	17 (37)	11 (44)	97 (46)
Normal BMD	10 (23)	36 (30)	65 (31)
HIV clinical parameters			
Time since HIV diagnosis (years)*	27 (13-39)	21 (0-39)	19 (2–38)
Duration of cART (years)*	24 (2-35)	20 (0-35)	17 (1–35)
cART-based regimen $[n(\%)]$			
PI	5 (9)	7 (6)	21 (7.)
NNRTI	16 (29)	53 (45)	125 (44.)
INSTI	33 (59)	53 (45)	131 (46)
INSTI + PI	2 (4)	4 (3)	4(1)
Injectable	0	0	1
HIV RNA viral load <50 copies/mL $[n (\%)]$	56 (100)	114 (96)	277 (98)
Current CD4 count (cells/µL)	689 (181–1956)	609 (100–1499)	647 (62–1383)
CD4:CD8 ratio	0.84 (0.08-2.9)	0.71 (0.1-3)	0.74 (0.09-3.1)

Note: Data are presented as medians (range) unless otherwise stated.

Abbreviations: BMD, bone mineral density; cART, combination antiretroviral therapy; INSTI, integrase strand transfer inhibitor; MSM, men who have sex with men; NNRTI, non-nucleoside reverse transcriptase inhibitor; PI, protease inhibitor.

not recorded. Median age and time since HIV diagnosis (range) for those screened were 66 (60–99) years and 21 (0–32) years, respectively. Of the 456 PLWH who were screened for frailty, a total of 56 (12.1%) were identified as frail, 118 (25.9%) were prefrail and 282 (61.8%) were robust; the results are summarized in Table 1.

A total of 10 (18%) of the PLWH screened as frail subsequently declined an appointment to attend the combined HIV-geriatrics clinic. The reasons cited were a lack of interest in attending or a lack of time. For some, the lack of time was due to caring responsibilities, and for others their own poor health meant they already had multiple hospital visits to attend and did not have the time for more. Health issues also meant for some it was difficult to get to the clinic and therefore they did not want to attend any more than was necessary for their routine HIV care. Distance was also cited as another barrier to attending the clinic more regularly.

Those PLWH screened as frail had been living with HIV for longer, with a median of 27 years, as compared with non-frail individuals (prefrail, 21 years; robust, 19 years; p < 0.001). Frail PLWH, as expected, had a greater number of comorbidities (frail, 5; prefrail, 4; robust, 3; p < 0.001) and non-ART medications (frail, 10; prefrail, 6; robust, 3.5; p < 0.001) and a greater amount of time (years) on combination ART (frail, 24; prefrail, 20; robust, 17; p = 0.000). By contrast, frail PLWH were not chronologically older (66 years) than the prefrail (68 years) or robust groups (66 years).

# DISCUSSION

We have shown that frailty screening in PLWH over 60 years old is feasible in a large cohort of PLWH, and consequently is now part of routine HIV care within the

 $<sup>^*</sup>p <$  0.05, Kruskal–Wallis test.

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Lawson Unit. However, it may be that the prevalence of positive frailty screening is dependent on factors such as geographical region, clinical setting and the quality of care provided, as observed in a recent systematic review [9], and, as such, frailty screening numbers may be higher elsewhere than in this study. Previous studies have discussed difficulties in screening for frailty in PLWH due to uncertainty around which screening tool to use and the practicalities of screening within clinical settings [5]. As recommended by the EACS, due to its ease of use, we employed the FRAIL scale [3] and successfully screened 77% of all those aged 60 years and over, demonstrating the practicality of the FRAIL scale for implementation within a busy HIV outpatient service. Data from our previous qualitative work showed that while there were no negative feelings expressed from PLWH in relation to the FRAIL scale, HIV clinicians expressed concern around using it due to the negative connotations of the word 'frail', particularly as some of their patients were chronologically younger than those usually associated with frailty [6]. However, this concern was not mirrored by the PLWH who were willing to be screened using this tool. This demonstrates the importance of both ongoing coproduction with service users, to ensure we are approaching new service provision in a way that is acceptable to PLWH, and knowledge sharing with HIV professionals with regard to communication and language so that screening is approached in a positive way and maximizes engagement into care [10].

As the FRAIL scale is a screening tool rather than a diagnostic one, all PLWH identified as frail via screening were offered an appointment in a combined HIVgeriatric clinic. While only 18% declined this offer, the reasons that most offered for this are perhaps pertinent in considering when to screen for frailty. These were largely centred around reasons such as a lack of mobility, meaning it was now difficult for them to get to the clinic; no longer being able to drive due to failing eyesight; other comorbidities, meaning they did not feel well enough to attend; time restrictions due to caring for others; or their own health, meaning they already had multiple hospital appointments. This highlights the importance of annual screening to facilitate early identification of frailty in PLWH so that they may gain access to appropriate support while they are still able to attend, in an attempt to halt or slow the progress of frailty. Where it is not possible for PLWH to attend the hospital, then services must adjust to ensure that screening is being conducted in the community and virtual ward services, to help overcome these barriers and to provide a CGA and ongoing support. Although the use of virtual geriatric care has become increasingly common since COVID-19, there is a lack of HIV-geriatric guidelines on how best to deliver

this, and future research should aim to codesign, implement and report on virtual ward services for older PLWH [11].

Fifty-six per cent of patients screened as frail were on integrase inhibitor-based therapy, reflecting the recent changes in prescribing practices. In ageing people with HIV, new-generation integrase inhibitors have some advantages compared with other combinations, due to fewer drug-drug interactions and increased barrier for resistance [12]. Previously published data on the relationship between the degree of frailty and CD4:CD8 ratio showed varied results, with some studies identifying an inverse relationship between frailty and CD4:CD8 ratio; however, in our study we did not find this. Further research is needed to determine whether the CD4:CD8 ratio is a marker of immune activation and can be utilized in clinical practice to refine frailty screening pathways where individuals with low CD4:CD8 ratio could be targeted with interventions to prevent [13].

Although chronological age was not associated with being screened as frail, the length of time living with HIV and a greater number of comorbidities and comedications were. This raises important questions as to whether it is the time living with HIV itself that contributes to screening as frail, or if it as to do with early HIV/zidovudine (AZT) experiences, as well as whether 'time on ART' could be considered as another screening eligibility criterion. These associations may also have clinical implications, as multiple comorbidities and polypharmacy can contribute to frailty [9] and, when combined, can predict quality of life and survival among older PLWH [14]. As a majority of PLWH in this study were undetectable, it is not suggested that the risk of frailty is related to their current HIV status; however, there is good evidence that living with HIV is associated with having a higher number of comorbidities, which in turn may contribute to becoming frail [1]. Although polypharmacy is often unavoidable when treating PLWH and comorbidities, the concept of de-prescribing is gaining traction in health services as a method to remove any medications that are no longer necessary [15], thus decreasing the risks associated with polypharmacy. Risks such as falls, cognitive impairment and drug-disease interaction, all of which contribute to frailty [16], create the potential for a cycle where increasing frailty indicates the need for increasing medications as per disease-specific guidelines [17]. Therefore, placing a focus on reducing polypharmacy could serve as a preventative approach to frailty.

Another preventive approach to the accumulation of age-related health conditions and frailty is exercise, with multiple studies suggesting it is currently the most effective intervention for preventing and slowing physical frailty [18, 19], while also reducing the presence of

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comorbidities [20]. This raises important questions about when to screen for frailty and, once PLWH have been screened and their frailty status ascertained, which groups should be the focus of interventions and management services. Focusing on identifying prefrail PLWH via screening within routine HIV care offers an opportunity for slowing and reversing frailty, particularly in the context of people in their 50s, who may likely welcome an intervention that enables them to live well. As such, an early preventative intervention such as reducing polypharmacy and promoting physical activity, as currently recommended as optimal management of older PLWH by the EACS [3], and shifting from a 'reactive' to a 'proactive' model may be a more appropriate and acceptable model of care [18]. Alongside this, focusing on raising awareness of frailty in PLWH and providing education as to how it may be delayed or prevented should be prioritized, in order to empower PLWH to age well with HIV.

Finally, it is worth reflecting on the language we use when broaching screening for frailty with PLWH. Our HIV professionals discussed concerns around using the word 'frail' in line with other studies [21], with some suggesting that a negatively perceived label such as frailty can lead to a sense of nihilism and personal failure. Consequently, identifying frailty may serve instead to disempower and discriminate against older PLWH, and result in disengagement with care [22]. Although this does not pose a barrier in itself to screening for frailty, it could present problems for engagement with ongoing frailty assessment and care for PLWH. Therefore, further research is needed to ensure that we understand how PLWH feel about frailty screening and management, and that it is implemented in such a way that these risks are decreased and the benefits to PLWH are clear [23]. That being said, our recent qualitative work found that PLWH want to be told if they are frail, provided it is combined with support strategies. They expressed the importance of honesty and sensitivity, to ensure they are provided with the information they need to understand what they can do to live well [6].

A limitation of the report is that while there was a statistically significant association between frailty status and time living with HIV, number of comorbidities and comedications, there was no sample size calculation for this as there were no prior hypotheses about these variables. Although a functional measure such as the Barthel Index was not used when screening to determine if the PLWH already had an established disability, all those who screened as being appropriate for CGA as per EACS guidelines were subsequently referred on, where a more thorough assessment of their overall health was conducted. Although the FRAIL scale has been validated in the general population, its performance in PLWH is

currently unknown. As the phenotype of frailty in people with HIV is no different from that of the general population, with the exception that it appears earlier, it is expected that the FRAIL scale would have similar sensitivity and specificity to identify frail PLWH. We are currently in the final stages of a mixed-methods feasibility randomized controlled trial that will explore further the use of various frailty screening and diagnostics tools in PLWH [8]. Finally, we only screened PLWH aged 60 years and older, wherease EACS guidelines state that PLWH should be screened at 50 years and older, due to clinic capacity concerns. However, as this report has demonstrated the feasibility of screening with an older subset of the population, attention at this site should now turn to implementing screening in all those above 50. Although almost twothirds of our cohort were identified as robust, frailty is known to be both preventable and reversible, and as such early identification is paramount. Therefore, further work is needed to ascertain whether screening all PLWH over 50 is acceptable and feasible within routine HIV care.

#### **AUTHOR CONTRIBUTIONS**

JHV, KB, MM, SB, IK and NSC-S contributed to the design of the study. JHV, NSC-S and IK collected the data and NSC-S analysed the data under guidance from JHV, with input from SB and KB. MM and NSC-S drafted the first version of the manuscript. All authors contributed to the interpretation of the data and the revising of the manuscript and gave final approval of the manuscript.

# CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

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