Maturitas 183 (2024) 107937

Contents lists available at ScienceDirect

Maturitas

journal homepage: www.elsevier.com/locate/maturitas

Review article

Management of menopause in women living with HIV – A comparative guideline review

Ditte Scofield [a,*], Ellen Moseholm [a,b], Karoline Aebi-Popp [c,d], Anna Hachfeld [d], Women Against Viruses in Europe (WAVE), European AIDS Clinical Society [e]

[a] Department of Infectious Diseases, Copenhagen University Hospital, Hvidovre, Kettegaard Allé 30, 2650 Hvidovre, Denmark
[b] Department of Public Health, Faculty of Health and Medical Sciences, University of Copenhagen, Øster Farimagsgade 5, 1353 Copenhagen, Denmark
[c] Department of Obstetrics and Gynaecology, Lindenhofspital, Bremgartenstrasse 117, 3001 Bern, Switzerland
[d] Department of Infectious Diseases, University Hospital Bern, University of Bern, Freiburgstrasse 20, 3010 Bern, Switzerland
[e] European AIDS Clinical Society (EACS), rue des Colonies 56, 1000 Brussels, Belgium

ARTICLE INFO

Keywords:
HIV
Menopause
Menopausal management guidelines
Menopausal hormone therapy
Menopausal symptoms

ABSTRACT

Women living with human immunodeficiency virus (HIV) today have life expectancies comparable to the general female population, leading to a growing number transitioning through menopause. Recent studies have highlighted healthcare professionals' lack of confidence in managing menopause in women with HIV, raising concerns about potential mismanagement. This review explores and compares information on menopause management in HIV-specific and general guidelines, with the aim of identifying disparities and assessing the comprehensiveness of HIV guidelines. The focus is on three key areas: the diagnosis of menopause, and the assessment and treatment of menopausal symptoms. Additionally, the review evaluates the usage and characteristics of menopausal symptom assessment scales known to have been used in studies involving women living with HIV.

In total, five HIV and six general menopause management guidelines, published between 2015 and 2023, were identified through medical databases, internet search engines and searches of reference lists. Five menopausal symptom assessment scales were also included for review.

The findings suggest minimal differences in recommendations for treating menopausal symptoms. The HIV guidelines include recommendations on screening for menopause, and some raise awareness of the possibility of drug-to-drug interactions, but none offers guidance on how to diagnose menopause or how to differentiate between HIV-related and menopause-related symptoms. Upon examining the characteristics of the menopausal symptom assessment scales, we found that none had been validated specifically for women with HIV. In conclusion, this review advocates for the development of a comprehensive guideline that addresses all relevant factors in managing menopause in women with HIV.

1. Background

Women account for over half of the 38.4 million people living with human immunodeficiency virus (HIV) globally [1]. Advances in the treatment of HIV with antiretroviral therapy have ensured that women with HIV are living longer and, consequently, ageing with HIV. Hence, the proportion of women with HIV over the age of 50 is increasing [2,3], and as a result, a growing number will spend a significant proportion of their life after menopause. Biological menopause is a natural part of reproductive life for women [4], and this transition has long been associated with significant negative effects on women's health-related quality of life [5,6]. For women with HIV specifically, additional factors may further compromise their health and well-being through menopause. Firstly, studies have shown that diagnosing menopause in women with HIV can be challenging, as amenorrhea and irregular menstrual bleeding patterns are more common when living with HIV [7,8]. Secondly, the menopausal symptoms that most women experience [9] can for women with HIV be difficult to distinguish from symptoms related to HIV [10]. This raises a clinical concern because severe menopausal symptoms not only impact the mental and sexual health of

* Corresponding author.
E-mail addresses: ditte.scofield@regionh.dk (D. Scofield), ellen.froesig.moseholm.larsen@regionh.dk (E. Moseholm), karoline.aebi@lindenhofgruppe.ch (K. Aebi-Popp), anna.hachfeld@insel.ch (A. Hachfeld), wavesecretariat@eacssociety.org (Women Against Viruses in Europe (WAVE), European AIDS Clinical Society).

https://doi.org/10.1016/j.maturitas.2024.107937
Received 29 November 2023; Received in revised form 18 January 2024; Accepted 5 February 2024
Available online 9 February 2024

women with HIV [11] but have also been found to be associated with sub-optimal HIV self-management [12,13]. Thirdly, menopausal hormone therapy (MHT) is recognised as an effective treatment for alleviating bothersome menopausal symptoms [14], and evidence suggests that the benefits of MHT in terms of its protective effect on bone and cardiovascular health outweigh its risks when given per treatment guidelines [15,16]. As postmenopausal women with HIV face an increased risk of osteoporosis and cardiovascular disease [17,18], MHT may help reduce the risk for the development of these comorbid conditions [19]. However, several studies indicate that MHT is underprescribed to women with HIV [20–22] due to factors such as a lack of knowledge about menopausal management in women with HIV and concerns about possible drug-to-drug interactions between antiretroviral therapy and MHT. A recently conducted survey across 25 European countries highlighted that almost half of the 121 participating HIV healthcare providers did not feel confident in assessing and managing menopause, with the majority identifying a need for an HIV-specific menopausal management guideline [23]. Based on these challenges faced by both women with HIV and their healthcare providers, there is a pertinent need to explore the current availability and content of menopausal management guidelines developed for HIV care.

The overall aim of this review was to explore clinical guidelines on menopausal management in women with HIV, comparing their information and comprehensiveness to guidelines developed for the general female population. Discrepancies between the two were highlighted and discussed in the context of future guideline developments and other relevant research investigations. Additionally, given the challenges associated with differentiating between menopausal symptoms and HIV-related symptoms, we explored the characteristics of the most commonly used tools for assessing menopausal symptoms in women with HIV.

2. Methods

The review was initiated by Women Against Viruses in Europe (WAVE), a subgroup of the European AIDS Clinical Society. WAVE's mission is to promote the welfare of women with HIV in Europe and to address the numerous gaps identified in the care of women with HIV.

2.1. Search strategy

This comparative guideline review is not a systematic review based on a systematic search, as typically considered best practice. This method was not feasible as clinical guidelines are not systematically published in peer-reviewed scientific journals, and medical databases do not comprehensively catalogue all clinical guidelines. Instead, we relied on several sources of information.

2.1.1. Information sources

The medical databases MEDLINE and Embase were searched between 2 March 2023 and 10 May 2023 using various synonyms for menopause including ‘perimenopause’ and ‘postmenopause’ in combinations of free text words and medical subject headings (further details can be seen in Supplementary Table 1). Internet search engines were searched using the same search words. Reference lists were explored, and members of the WAVE menopause steering committee were also invited to contribute to the search process.

2.2. Eligibility criteria

Menopausal guidelines were included if developed for the general population of women or for women with HIV. Guidelines were excluded if specific to one aspects of menopause (e.g., osteoporosis) or developed for a specific health condition other than HIV. Only latest editions of previously published guidelines were eligible for inclusion, and all guidelines had to be published within the last ten year (2013−2023) in English or a language native to one of the authors. There were no regional limitations set.

2.3. Data extraction

In the data extraction process, it became apparent that the general guidelines contained many topics relevant to menopausal management, all of which were not possible to discuss in this work. Based on findings from the existing literature about the challenges in relation to HIV and menopause, we chose to focus on three main aspects, namely diagnosis of menopause and assessment and treatment of menopausal symptoms.

2.4. Menopausal symptom assessments scale

The menopausal symptom assessment scales were not systematically searched out in accordance with the aim of this review. Instead, scales were included for review if either mentioned in one of the included menopausal guidelines, or if previously used in research involving menopausal data from women with HIV, as identified in a recently published systematic literature review [24].

2.5. Definition of ‘woman’

Throughout this review, the terms ‘women’ or ‘woman’ are used, though the authors acknowledge that not all who are female at birth and are experiencing menopause identify as women.

3. Results

3.1. HIV guidelines

The search yielded a total of five clinical HIV guidelines, published between 2017 and 2023. Among them, three were authored by official HIV societies, one European [25] and two British [26,27], one was published by a UK national menopause society [28], and one by a Canadian infectious disease association [29] (Table 1). Four out of the five guidelines integrated the menopause recommendations within sexual and reproductive health sections, either as part of the larger official ‘Standard of Care’ issues [25,26], a ‘consultation version’ accessible on an HIV association website [27], or as a clinical guide published in a peer-reviewed journal [29]. One guideline [28] was available on their website as part of a series titled ‘Tools for Clinicians’.

3.2. General guidelines

A total of six general guidelines were identified, published between 2015 and 2022 (Table 1). These included two from menopausal societies, one international [30] and one European [6], three from medical societies, one European [31], one Australian [33] and one international [34], and one from a UK national health advisory society [32]. All the general guidelines were published as standalone menopausal guidelines available on the organisations' websites, with four of them also published in peer-reviewed journals [6,30,31,34].

3.3. Menopausal symptom scales

In total, five menopausal symptom scales were included. Two scales were identified from a menopausal guideline [25] and an additional three, known to have been used in HIV-related studies [24], were also included. These scales were originally published between 1986 and 2001 (Table 2) based on studies conducted in Canada [35], Germany [36], the US [37] and the UK [38,39]. The scales were validated in study populations from their countries of publication, except one [39] which included data from women living across multiple regions. All the scales are published in peer-reviewed journals.

Table 1
Overview of HIV-specific and general guidelines.

Authors	Title	Year of publication	Region[a]
HIV guidelines			
European AIDS Clinical Society (EACS) [25]	Guidelines version 12.0	2023	Europe
British HIV Association (BHIVA) [26]	Standards of Care for people living with HIV	2018	UK
British HIV Association (BHIVA), British Association for Sexual Health and HIV (BASHH) and Faculty of Sexual and Reproductive Health (FSRH) [27]	Guidelines for the sexual & reproductive health of people living with HIV	2017	UK
The Association of Medical Microbiology and Infectious Disease of Canada (AMMI) [29]	A practical clinical guide to counselling on and managing contraception, pre-conception planning, and menopause for women living with HIV	2021	Canada
British Menopause Society (BMS) [28]	HIV and the menopause – Tools for clinicians	2021	UK
General guidelines			
International Menopause Society (IMS) [30]	Recommendations on women's midlife health and menopause hormone therapy	2016	International
European Menopause and Andropause Society (EMAS) [6]	Menopause, wellbeing and health: A care pathway from the European Menopause and Andropause Society	2022	Europe
Association of Scientific Medical Societies (AWMF) [31]	Guidelines for Peri- and Postmenopause Diagnostics and Intervention	2020	Germany Austria Switzerland
National Institute of Clinical Excellence (NICE) [32]	Menopause: diagnosis and management	2015 (2019)	UK
The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZOG) [33]	Managing menopausal symptoms	2020	Australia New Zealand
Endocrine Society (ENSO) [34]	Treatment of Symptoms of the Menopause: An Endocrine Society Clinical Practice Guideline	2015	International

[a] Refers to the regional background of the authoring associations or societies.

Table 2
Overview of menopausal symptom assessment scales.

Authors	Title	Year of publication	Region[a]
Hilditch et al. [35]	Menopause-Specific Quality of Life (MENQOL)	1996	Canada
Heinemann et al. [36]	Menopause Rating Scale (MRS)	1994	Germany
Carpenter et al. [37]	Hot Daily Flash Interference Scale (MFRDIS)	2001	US
Hunter [38]	Women's Health Questionnaire (WHQ)	1986	UK
Greene [39]	Greene Climacteric Scale (GCS)	1976 and 1998	UK, India, Norway and Japan

[a] Refers to the study participants' countries of the residence from the original scale validation studies.

4. Discussion

This review focuses on recommendations regarding three specific aspects of menopause, namely diagnosing menopause and the assessment and treatment of menopausal symptoms (Table 3).

4.1. Diagnosing menopause

It remains unclear whether women with HIV transition through menopause earlier than women in the general population [14,41]. Nevertheless, it is clear that HIV is associated with increased risks of cardiovascular disease and osteoporosis [42], especially among postmenopausal women with HIV [17,18]. Consequently, the timely diagnosis of menopause is crucial in providing comprehensive and preventative healthcare for women with HIV.

4.1.1. HIV guidelines

None of the HIV guidelines provide a definition of menopause, nor do they offer a method for diagnosing menopause or assessing menstrual cycles. Three [27–29] include recommendations for diagnosing menopause in women with HIV and suggest that healthcare providers integrate routine reviews of menstrual cycles into their care. One guideline [29] recommends screening for and counselling on perimenopause and menopause from around age 40. Three guidelines [27–29] specify that routine confirmatory blood- or FSH tests are not recommended in women aged ≥45 who present with symptoms of menopause.

4.1.2. General guidelines

All the included general menopausal management guidelines are consistent in their definition of menopause, wherein it is considered to be present in the absence of menstrual periods for 12 consecutive months with no other alternative explanations. Two guidelines [31,32] define perimenopause as possibly present in women with irregular menstrual periods and vasomotor symptoms. Two guidelines [30,33] follow the Stages of Reproductive Ageing Workshop +10 criteria (STRAW +10) [40] with one guideline [30] emphasising the importance of precise reproductive age staging and recommending the STRAW +10 staging tool as the gold standard.

4.1.3. Consolidation and scope for practice

There appear to be gaps in the current HIV guidelines regarding the diagnosis of menopause, as reflected in findings of a recent systematic review where the methods of diagnosing menopause in menopause-related studies in women with HIV showed considerable heterogeneity [24]. While three guidelines suggest annual reviews of menstrual cycles in women with HIV, none offer guidance on how to conduct the assessment. One recent study found that menstrual history alone could be used as a reliable source for ascertaining menopausal status in women with HIV aged ≥45 who report amenorrhea [43]. However, the data are sparse, and future research into accurate menopausal staging in women with HIV would be valuable to clinical practice. This could be done either by validating the STRAW +10 criteria in women with HIV or by developing an HIV-specific menopausal staging tool.

4.2. Menopausal symptoms - assessment

Menopausal symptoms have been linked to a diminished quality of life in women, regardless of their HIV status [44,45]. The question of whether women with HIV suffer more severe menopausal symptoms

Table 3
A summary of the main recommendations on diagnosing menopause and the assessment and treatment of menopausal symptoms in HIV and general menopausal guidelines.

	HIV guidelines recommendations	General guidelines recommendations	Main differences
Diagnosing menopause	• Conduct an annual review of menstrual cycles [27–29] • Provide information and counselling on perimenopause and menopause from around the age of 40 [29] • Confirmatory blood tests not indicated in women younger than 45 years [27–29]	• Diagnose menopause following 12 months of amenorrhoea in women with no other likely explanations [6,30–34] • Consider perimenopause likely in women aged 45 and older with irregular menstrual periods and VMS [31,32,34] • Use the STRAW +10 criteria as a tool for staging reproductive ageing [30,33] • For women without a uterus experiencing VMS, perimenopause or menopause is the likely diagnosis [31,32] • Confirmatory blood tests are not indicated in women younger than 45 years [6,31–33] • Do not use menopausal symptoms to diagnose menopause as they can occur years before actual menopause [30]	The HIV guidelines do not provide a definition of menopause
Menopausal symptoms - assessment	• Conduct proactive, yearly assessments from the age of 40 using a validated scale [25] • Conduct a proactive assessment from the age of 45 [27,28]		The general guidelines do not include recommendations on assessment of menopausal symptoms
Menopausal symptoms - treatment	• MHT is not contraindicated in HIV [26–28] • Consider MHT for the management of menopausal symptoms [25,26,29] • Consider MHT for early, premature or surgically induced menopause [29] • Consider transdermal MHT as first choice due to lower risk of side effects and thromboembolic events [25,27–29] • MHT should consist of oestrogen and progestogen for women with a uterus, in women without, oestrogen alone may be used [25,26,29] • Use topical vaginal oestrogen for all women [25] or women with vulvovaginal atrophy/ urogenital symptoms [26,29] • Use the NICE guidelines as a source of guidance for MHT use [26–28] • Be aware of potential drug-to-drug interactions with some antiretroviral therapy [25,26,28,29], requiring dose titration of MHT based on symptoms [26,28] • Consider contraindications and make a risk/ benefit profile for MHT use [29] • Individualise and adapt MHT according to changing symptoms [29] • Asses the duration of MHT at least annually [29]	• MHT is first choice of treatment for menopausal symptoms after the age of 45 [6] • Offer MHT to all women with VMS [31–33] and consider it for menopause mood-related symptoms [32] • MHT should consist of oestrogen and progestogen for women with a uterus, in women without, oestrogen alone may be used [6,30,32–34] • MHT should be considered for the treatment of VMS in menopausal women <60 years or <10 years past menopause [34] • Consider topical vaginal oestrogen for the treatment of vulvovaginal/urogenital symptoms atrophy [6,30–33] • Consider testosterone therapy for loss of sexual desire and/or arousal [30], if MHT alone is insufficient [31,32] • Titrate MHT dosage to the lowest effective dose [30,34] • There is no evidence to suggest mandating a limitation on the duration of MHT [6,30,33] • Perform follow-up assessment after 2–3 [6,31,32,34] or six months [33] following MHT initiation. Subsequent assessments should be based on individual needs [6] or conducted annually [30,32,34] • Individualise and adapt MHT according to changing symptoms [6,32] • If no improvements, consider referring to a menopause specialist [32] • Offer guidance and information on the long-term benefits and risks of MHT in relation to issues such as cancer, bone health, dementia, cardiovascular disease, etc. [6,30–34]	The general guidelines are more comprehensive, considering many aspects of women's midlife health The HIV guidelines offer very little or no information about long-term benefits and risks of MHT on issues such as cancer, bone health, dementia, cardiovascular disease, etc.

Note: Menopausal Hormone Treatment (MHT), vasomotor symptoms (VMS), Stages of Reproductive Ageing Workshop +10 criteria (STRAW +10) [40], National Institute of Clinical Excellence (NICE).

than women without HIV remains uncertain. Some studies have reported an association between HIV and more severe symptoms [46,47] while others have found no such association [48,49]. Furthermore, severe menopausal symptoms have been linked to sub-optimal HIV treatment adherence [12,13], although a recent study demonstrated a steady decrease in non-adherence throughout the menopausal transition [50].

4.2.1. HIV guidelines

Three HIV guidelines [25,27,28] provide recommendations for menopausal symptom screening. While two guidelines [27,28] advocate initiating screening after the age of 45 years, one guideline [25] suggests commencing screening after the age of 40. This same guideline also recommends the use of a validated menopausal symptom screening tool.

4.2.2. General guidelines

None of the general menopausal guidelines include recommendations on screening for menopausal symptoms, although four guidelines [6,31–33] specifically state that women should be offered information on menopause including its typical symptoms.

4.2.3. Menopausal symptom scales

The included scales varied in multiple ways, such as the number of items, domains and language availability (a detailed description is included in Supplementary Table 2). While all the included scales in this review have been used in menopause-related studies among women

with HIV [24], none have been specifically validated for this population, and none have assessed their ability to differentiate between menopause and HIV or antiretroviral therapy-related symptoms. Furthermore, the majority of the menopausal screening tools have been validated in cohorts primarily consisting of white women, even though most women living with HIV are non-white. This represents a limitation in terms of applicability and generalisability to clinical practice. On this basis, this review recommends future projects that prioritise the validation of a menopausal screening scale with a specific emphasis on including a diverse study population of women with HIV.

4.2.4. Consolidation and scope for practice

In contrast to the general guidelines, the HIV guidelines recommend assessing menopausal symptoms. This difference could be explained by the fact that the HIV guidelines are generally developed for infectious disease specialists, who tend to see their patients regularly, whereas the general guidelines are developed for general practitioners and gynaecologists, who might not have regular scheduled visits with their patients. Nevertheless, menopausal symptoms screening tools are valuable in an HIV context, as women with HIV and their healthcare providers have reported challenges in distinguishing between HIV- or antiretroviral therapy-related symptoms and menopausal symptoms [13,21]. Furthermore, in light of the possible association between menopausal symptom severity and treatment adherence [12,13], it seems warranted to include the recommendation of regular menopausal symptom screening in the HIV guidelines.

4.3. Menopausal symptoms - treatment

There is a clear consensus among HIV experts that MHT is not contraindicated when living with HIV [26–28]. However, MHT is prescribed to women with HIV at a much lower rate than among women without HIV [20–22], primarily due to reasons such as healthcare professionals' lack of knowledge about menopause management in women with HIV and a reluctance to prescribe MHT due to fears of drug-to-drug interactions [21,23]. Alternative non-hormonal treatment choices, such as changes to lifestyle-related factors, stress reduction strategies, cognitive therapy and herbal medications are also available and relevant to discuss with women seeking relief from menopausal symptoms. To our knowledge, none of these have been studied in women with HIV. Although the discussion of these options extends beyond the scope of this review, we recognise that they might be a relevant part of menopausal management.

4.3.1. HIV guidelines

As the existing HIV guidelines vary greatly in length, the extent of detail offered on the management of menopausal symptoms also varies. Three guidelines [25,26,29] recommend that MHT be considered for all women with HIV experiencing menopausal symptoms, with four guidelines [25,27–29] specifying transdermal delivery as the preferred route of administration due to its lower risk of specific adverse events. For urogenital symptoms, three guidelines recommend the use of vaginal topical oestrogen [25,26,29]. All three UK guidelines [26–28] recommend that management of MHT should be informed by the National Institute of Clinical Excellence (NICE) guideline [32]. However, two of these guidelines recognise the limited data regarding the safety and efficacy of MHT as a treatment option for women with HIV [26,27]. One guideline suggests restricting MHT to women who have entered menopause, advising against its use during the perimenopausal period due to a lack of supporting evidence during ongoing menstrual periods [29]. Four guidelines [25,26,28,29] address the potential for drug-to-drug interactions, with two [25,29] providing tables that offer overviews of the common interactions between MHT and antiretroviral therapies. Additionally, one guideline [29] includes a clinical algorithm for prescribing MHT in women with HIV along with a detailed guide on monitoring and managing the treatment process.

4.3.2. General guidelines

Given the extensive nature of the general guidelines, this review cannot incorporate all the information offered. However, the guidelines agree on certain aspects of menopausal symptom management, suggesting topical vaginal oestrogen for urogenital symptoms and testosterone as a potential treatment for libido-related problems. One guideline [6] suggests that MHT should be the first line of treatment for menopausal symptoms during the perimenopause as well as after the menopausal transition. Two guidelines [31,32] advise against the routine use of selective serotonin reuptake inhibitors for vasomotor symptoms, while NICE [32] recommends that MHT should be considered as the first line of treatment for mood-related symptoms, where depression is not the underlying cause. Three guidelines [6,30,33] state that there is no evidence to support placing a mandatory limit on the duration of MHT.

4.3.3. Consolidation and scope for practice

When consolidating the recommendations for hormonal treatment of menopausal symptoms, many similarities become apparent between the HIV and general guidelines. Overall, the general guidelines are more comprehensive, offering information on various aspects of female midlife health including recommendations on lifestyle factors, breast cancer screening and assessments for cardiovascular and bone health. However, it is worth noting that all these aspects of health are already included as standard-of-care in the general HIV management guidelines, which may explain their omission from the menopause specific guidelines. One small difference observed in this review relates to the timing of MHT treatment. While one HIV guideline [29] advises against initiating MHT before menopause, a general guideline [6] suggests MHT as first-line of treatment either during perimenopause or after the menopausal transition.

MHT, an already recognised treatment option for alleviating vasomotor symptoms [14], has also been speculated as a potentially beneficial treatment for preventing cardiovascular and bone disease in postmenopausal women with HIV [17,18]. Recent findings from a longitudinal study involving women with and without HIV demonstrated that the use of MHT was associated with lower prevalences of various cardiovascular disease markers [19]. Given these results, there is a compelling need to advocate for future clinical studies that specifically examine the effects of MHT within the context of HIV. In addition to the current lack of evidence regarding the short- and long-term safety, i.e., risk of cancers, and venous thromboembolisms, effect on cognitive function, and risk of drug-to-drug interactions, there is a need to assess the potential benefits on cardiovascular and bone health for women with HIV.

5. Conclusion and future recommendations

This review has examined menopausal management recommendations from five HIV-specific guidelines and compared them to six general guidelines. The focus has been on three key aspects of menopause: the diagnosis of menopause, and the assessment and treatment of menopausal symptoms. Overall, we found that the recommendations did not differ greatly; the primary difference lying in the level of detail provided. Most of the HIV-specific menopausal guidelines are concise, often integrated within broader sections on reproductive health, and tend to be less comprehensive in covering menopause-related aspects of health, possibly due to differences in the intended targeted healthcare providers. Considering the challenges encountered by women with HIV regarding their menopausal health and the reported difficulties faced by healthcare providers in caring for this population, we strongly advocate for the development of an HIV-specific comprehensive guideline for menopausal management and for the validation of menopausal symptoms assessment scales in women with HIV (Table 4). Addressing these gaps will contribute to improving the standard of clinical care, helping women with HIV understand their health, and ultimately fostering a

Table 4
Summary of key recommendations for the development of a comprehensive HIV guideline on menopausal management and other future research recommendations.

Consideration for the development of a comprehensive HIV menopausal guideline
Diagnosing menopause
• Annual assessment of menstrual cycles from age 40 • Recognising early or premature menopause and ensuring appropriate management • Differentiating between irregular menstrual periods/amenorrhoea and menopause, and ensuring appropriate investigations if needed
Menopausal symptoms assessment
• Using a menopausal symptom screening tool may be helpful for women and healthcare providers • Differentiating between symptoms related to HIV or antiretroviral therapy and menopause, and managing accordingly • Differentiating between mood-related menopausal symptoms and other mental health problems that warrant specialised treatment
Menopausal symptoms treatment
• MHT is not contraindicated in women with HIV • Address the risk of potential drug-to-drug interactions between antiretroviral therapy (or other medications) and MHT, such as including an overview of known interactions or links to other resources of information

Future research recommendations
• Menopausal symptoms assessment scale validation studies including a diverse study population of women with HIV of various ethnicities, age and symptom severity • Clinical trials assessing the safety effect and possible drug-to-drug interactions of MHT in HIV populations • Prospective observational cohort studies on MHT in HIV populations to assess and identify the long-term health benefits and potential risks • Qualitative research to explore various aspects of experiences related to MHT in women with HIV, such as acceptability and barriers

good quality of life during the menopausal transition.

Supplementary data to this article can be found online at https://doi.org/10.1016/j.maturitas.2024.107937.

Contributors

Ditte Scofield contributed to the study concept and design, collecting and interpreting the data, and wrote and revised the manuscript.

Ellen Moseholm contributed to the study concept and design, interpreting the data and critical revision of the manuscript.

Karoline Aebi-Popp contributed to interpreting the data and critical revision of the manuscript.

Anna Hachfeld contributed to the study concept and design, interpreting the data and critical revision of the manuscript.

All authors saw and approved the final version, and no other person made a substantial contribution to the paper.

Funding

The project is funded by unrestricted grants from ViiV Healthcare, Gilead Sciences Europe and Merck Sharp & Dohme. All grants are managed by WAVE. The funders had no role in the study design, data collection, data analysis, data interpretation or manuscript writing.

Provenance and peer review

This article was not commissioned and was externally peer reviewed.

Declaration of competing interest

Ditte Scofield has received a grant paid to her institution from Gilead Sciences, outside of the submitted work. Ellen Moseholm reports unrestricted grants from the Novo Nordisk Foundation and Gilead Sciences, outside of the submitted work, and personal fees from Gilead, Bristol Myers Squibb, and GlaxoSmithKline, outside of the submitted work: honorarium paid to her institution.

Karoline Aebi-Popp's institution has received travel grants and advisory fees from MSD, Gilead and ViiV Healthcare, unrelated to this work.

Anna Hachfeld's institution has received travel grants, congress and advisory fees from MSD, ViiV Healthcare and Gilead, unrelated to this work.

Acknowledgements

The authors would like to acknowledge the support of the WAVE menopause working group.

References

[1] Consolidated Guideline on Sexual and Reproductive Health and Rights of Women Living With HIV, World Health Organization, Geneva, 2017. http://www.ncbi.nlm.nih.gov/books/NBK442189/. (Accessed 28 March 2023).
[2] V. Kontis, J.E. Bennett, C.D. Mathers, G. Li, K. Foreman, M. Ezzati, Future life expectancy in 35 industrialised countries: projections with a Bayesian model ensemble, Lancet 389 (2017) 1323–1335, https://doi.org/10.1016/S0140-6736(16)32381-9.
[3] The Joint United Nations Program on HIV/AIDS: UNAIDS, HIV and Aging. https://www.unaids.org/en/resources/documents/2013/20131101_JC2563_hiv-and-aging. (Accessed 17 October 2023) (n.d.).
[4] World Health Organization, Research on the Menopause, World Health Organization, Geneva, Switzerland, 1981. http://apps.who.int/iris/bitstream/handle/10665/41526/WHO_TRS_670.pdf. (Accessed 31 October 2022).
[5] D.M. Conde, A.M. Pinto-Neto, D. Santos-Sá, L. Costa-Paiva, E.Z. Martinez, Factors associated with quality of life in a cohort of postmenopausal women, Gynecol. Endocrinol. 22 (2006) 441–446, https://doi.org/10.1080/09513590600890306.
[6] I. Lambrinoudaki, E. Armeni, D. Goulis, S. Bretz, I. Ceausu, F. Durmusoglu, R. Erkkola, I. Fistonic, M. Gambacciani, M. Geukes, H. Hamoda, C. Hartley, A. L. Hirschberg, B. Meczekalski, N. Mendoza, A. Mueck, A. Smetnik, P. Stute, M. van Trotsenburg, M. Rees, Menopause, wellbeing and health: a care pathway from the European Menopause and Andropause Society, Maturitas 163 (2022) 1–14, https://doi.org/10.1016/j.maturitas.2022.04.008.
[7] E.M. King, A.Y. Albert, M.C.M. Murray, HIV and amenorrhea: a meta-analysis, AIDS 33 (2019) 483–491, https://doi.org/10.1097/QAD.0000000000002084.
[8] L. Bull, V. Tittle, T. Rashid, N. Nwokolo, HIV and the menopause: a review, Post, Reprod. Health 24 (2018) 19–25, https://doi.org/10.1177/2053369117748794.
[9] S.M. McKinlay, D.J. Brambilla, J.G. Posner, The normal menopause transition, Maturitas 14 (1992) 103–115, https://doi.org/10.1016/0378-5122(92)90003-m.
[10] S.E. Looby, Clinical considerations for menopause and associated symptoms in women with HIV, Menopause 30 (2023) 329, https://doi.org/10.1097/GME.0000000000002146.
[11] L. Sherr, A. Molloy, A. Macedo, N. Croome, M.A. Johnson, Ageing and menopause considerations for women with HIV in the UK, J. Virus Erad. 2 (2016) 215–218, https://doi.org/10.1016/S2055-6640(20)30874-8.
[12] P.K. Duff, D.M. Money, G.S. Ogilvie, F. Ranville, M. Kestler, M.C. Braschel, N. Pick, K. Shannon, SHAWNA Project, Severe menopausal symptoms associated with reduced adherence to antiretroviral therapy among perimenopausal and menopausal women living with HIV in Metro Vancouver, Menopause 25 (2018) 531–537, https://doi.org/10.1097/GME.0000000000001040.
[13] D. Solomon, C.A. Sabin, F. Burns, R. Gilson, S. Allan, A. de Ruiter, R. Dhairyawan, J. Fox, Y. Gilleece, R. Jones, F. Post, I. Reeves, J. Ross, A. Ustianowski, J. Shepherd, S. Tariq, The association between severe menopausal symptoms and engagement with HIV care and treatment in women living with HIV, AIDS Care 33 (2021) 101–108, https://doi.org/10.1080/09540121.2020.1748559.

[14] E.M. King, J.C. Prior, N. Pick, J. van Schalkwyk, M. Kestler, S. Tkachuk, M. Loutfy, M.C.M. Murray, Menopausal hormone therapy for women living with HIV, Lancet HIV 8 (2021) e591–e598, https://doi.org/10.1016/S2352-3018(21)00148-X.
[15] H. Hamoda, N. Panay, H. Pedder, R. Arya, M. Savvas, The British Menopause Society & Women's Health Concern 2020 recommendations on hormone replacement therapy in menopausal women, Post Reprod Health 26 (2020) 181–209, https://doi.org/10.1177/2053369120957514.
[16] "The 2022 Hormone Therapy Position Statement of The North American Menopause Society" Advisory Panel, The 2022 hormone therapy position statement of The North American Menopause Society, Menopause 29 (2022) 767–794, https://doi.org/10.1097/GME.0000000000002028.
[17] F. Finnerty, K. Walker-Bone, S. Tariq, Osteoporosis in postmenopausal women living with HIV, Maturitas 95 (2017) 50–54, https://doi.org/10.1016/j.maturitas.2016.10.015.
[18] D. Solomon, C.A. Sabin, P.W.G. Mallon, A. Winston, S. Tariq, Cardiovascular disease in women living with HIV: a narrative review, Maturitas 108 (2018) 58–70, https://doi.org/10.1016/j.maturitas.2017.11.012.
[19] B.A. Peters, D.B. Hanna, A. Sharma, K. Anastos, D.R. Hoover, Q. Shi, C.A. Moran, E. A. Jackson, M.L. Alcaide, I. Ofotokun, A.A. Adimora, S.A. Haberlen, M. Cohen, P. C. Tien, K.G. Michel, S.R. Levine, H.N. Hodis, R.C. Kaplan, M.T. Yin, Menopausal hormone therapy and subclinical cardiovascular disease in women with and without human immunodeficiency virus, Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America 76 (2023) e661, https://doi.org/10.1093/cid/ciac620.
[20] P. Howells, M. Modarres, M. Samuel, C. Taylor, H. Hamoda, Experience of hormone replacement therapy in postmenopausal women living with HIV, Post, Reprod. Health 25 (2019) 80–85, https://doi.org/10.1177/2053369119838737.
[21] M. Chirwa, R. Ma, C. Guallar, S. Tariq, Managing menopause in women living with HIV: a survey of primary care practitioners, Post, Reprod. Health 23 (2017) 111–115, https://doi.org/10.1177/2053369117712181.
[22] H. Okhai, C.A. Sabin, K. Haag, L. Sherr, R. Dhairyawan, F. Burns, R. Gilson, F. Post, J. Ross, N. Mackie, A. Sullivan, J. Shepherd, A. Tariq, R. Jones, J. Fox, M. Rosenvinge, S. Tariq, Menopausal status, age and management among women living with HIV in the UK, HIV Med. 22 (2021) 834–842, https://doi.org/10.1111/hiv.13138.
[23] U. Caixas, S. Tariq, J. Morello, G. Dragovic, G. Lourida, A. Hachfeld, N. Nwokolo, Women Against Viruses in Europe (and WAVE) Working Group, Comorbidities and menopause assessment in women living with HIV: a survey of healthcare providers across the WHO European region, AIDS Care (2023) 1–8, https://doi.org/10.1080/09540121.2023.2216008.
[24] E.E. Graham, L. Michala, A. Hachfeld, E. Moseholm, Women Against Viruses in Europe (WAVE), European AIDS Clinical Society, Collection of menopause data in studies of women living with HIV: a systematic literature review, HIV Med. (2023), https://doi.org/10.1111/hiv.13552.
[25] J. Ambrosioni, L. Levi, J. Alagaratnam, K. Van Bremen, A. Mastrangelo, H. Waalewijn, J.-M. Molina, G. Guaraldi, A. Winston, C. Boesecke, P. Cinque, A. Bamford, A. Calmy, C. Marzolini, E. Martínez, C. Oprea, S. Welch, A. Koval, L. Mendao, J.K. Rockstroh, EACS Governing Board, Major revision version 12.0 of the European AIDS Clinical Society guidelines 2023, HIV Med (2023). doi:https://doi.org/10.1111/hiv.13542.
[26] BHIVA British HIV Association, Standards of Care for People Living With HIV. https://www.bhiva.org/file/KrfaFqLZRlBhg/BHIVA-Standards-of-Care-2018.pdf, 2018 (London).
[27] BHIVA, BASHH, FSRH, BHIVA/BASHH/FSRH guidelines for the management of sexual and reproductive health of people living with HIV infection. https://www.bhiva.org/file/zryuNVwnXcxMC/SRH-guidelines-for-consultation-2017.pdf, 2017. (Accessed 28 March 2023).
[28] British Menopause Society (BMS), HIV and the menopause. https://thebms.org.uk/wp-content/uploads/2023/01/05-BMS-TfC-HIV-and-the-menopause-JAN2023-A.pdf, 2021.
[29] A. Cvetkovic, E. King, L. Skerritt, M. Loutfy, A. Tseng, M. Murray, J. van Schalkwyk, I. Boucoiran, S. Marcotte, C. Hankins, É. Savoie, A. de Pokomandy, N. Pick, S. Tkachuk, T. Rowe, F. Smaill, S. Walmsley, A practical clinical guide to counselling on and managing contraception, pre-conception planning, and menopause for women living with HIV, J Assoc Med Microbiol Infect Dis Can 6 (2021) 278–295, https://doi.org/10.3138/jammi-2021-0014.
[30] R.J. Baber, N. Panay, A. Fenton, IMS Writing Group, IMS recommendations on women's midlife health and menopause hormone therapy, Climacteric 19 (2016) (2016) 109–150, https://doi.org/10.3109/13697137.2015.1129166.
[31] Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften, S3-Leitlinie Peri- und Postmenopause - Diagnostik und Interventionen. https://register.awmf.org/assets/guidelines/015-062l_S3_HT_Peri-Postmenopause-Diagnostik-Interventionen_2021-01.pdf, 2020.
[32] National Institute for Health and Care Excellence (NICE), Menopause: diagnosis and management NG23. https://www.nice.org.uk/guidance/ng23, 2015 (Last updated 2019).
[33] The Royal Australian and New Zealand College of Obstetricians and Gynaecologists, Managing menopausal symptoms. https://ranzcog.edu.au/wp-content/uploads/2022/05/Managing-menopausal-symptoms.pdf, 2020. (Accessed 24 May 2023).
[34] C.A. Stuenkel, S.R. Davis, A. Gompel, M.A. Lumsden, M.H. Murad, J.V. Pinkerton, R.J. Santen, Treatment of symptoms of the menopause: an Endocrine Society clinical practice guideline, J. Clin. Endocrinol. Metab. 100 (2015) 3975–4011, https://doi.org/10.1210/jc.2015-2236.
[35] J.R. Hilditch, J. Lewis, A. Peter, B. van Maris, A. Ross, E. Franssen, G.H. Guyatt, P. G. Norton, E. Dunn, A menopause-specific quality of life questionnaire: development and psychometric properties, Maturitas 24 (1996) 161–175, https://doi.org/10.1016/s0378-5122(96)82006-8.
[36] K. Heinemann, A. Ruebig, P. Potthoff, H.P.G. Schneider, F. Strelow, L.A. J. Heinemann, M.T. Do, The Menopause Rating Scale (MRS) scale: a methodological review, Health Qual. Life Outcomes 2 (2004) 45, https://doi.org/10.1186/1477-7525-2-45.
[37] J.S. Carpenter, The Hot Flash Related Daily Interference Scale: a tool for assessing the impact of hot flashes on quality of life following breast cancer, J. Pain Symptom Manag. 22 (2001) 979–989, https://doi.org/10.1016/S0885-3924(01)00353-0.
[38] M. Hunter, The Women's Health Questionnaire: a measure of mid-aged women's perceptions of their emotional and physical health, Psychol. Health (1992) 45–54, https://doi.org/10.1080/13697130500487372.
[39] J.G. Greene, Constructing a standard climacteric scale, Maturitas 61 (2008) 78–84, https://doi.org/10.1016/j.maturitas.2008.09.011.
[40] S.D. Harlow, M. Gass, J.E. Hall, R. Lobo, P. Maki, R.W. Rebar, S. Sherman, P. M. Sluss, T.J. de Villiers, STRAW+10 Collaborative Group, Executive summary of the Stages of Reproductive Aging Workshop +10: addressing the unfinished agenda of staging reproductive aging, Climacteric 15 (2012) 105–114, https://doi.org/10.3109/13697137.2011.650656.
[41] S.A. Swann, E.M. King, S. Tognazzini, A.R. Campbell, S.L.A. Levy, N. Pick, J. C. Prior, C. Elwood, M. Loutfy, V. Nicholson, A. Kaida, H.C.F. Côté, M.C.M. Murray, Age at natural menopause in women living with HIV: a cross-sectional study comparing self-reported and biochemical data, Viruses 15 (2023) 1058, https://doi.org/10.3390/v15051058.
[42] G. Guaraldi, G. Orlando, S. Zona, M. Menozzi, F. Carli, E. Garlassi, A. Berti, E. Rossi, A. Roverato, F. Palella, Premature age-related comorbidities among HIV-infected persons compared with the general population, Clin. Infect. Dis. 53 (2011) 1120–1126, https://doi.org/10.1093/cid/cir627.
[43] S. Tariq, H. Okhai, A. Severn, C.A. Sabin, F. Burns, R. Gilson, J. Fox, Y. Gilleece, N. E. Mackie, F.A. Post, I. Reeves, M. Rosenvinge, A. Sullivan, A. Ustianowski, R. F. Miller, Follicle-stimulating hormone in postmenopausal women living with HIV: a prevalence study, HIV Med. 23 (2022) 434–440, https://doi.org/10.1111/hiv.13205.
[44] G. Mishra, D. Kuh, Perceived change in quality of life during the menopause, Soc. Sci. Med. 62 (2006) 93–102, https://doi.org/10.1016/j.socscimed.2005.05.015.
[45] H. Okhai, L. Dragomir, E.R. Pool, C.A. Sabin, A. Miners, L. Sherr, K. Haag, R. Dhairyawan, N. Vora, B. Sultan, R. Gilson, F. Burns, Y. Gilleece, R. Jones, F. Post, J. Ross, A. Ustianowski, S. Tariq, Association between health-related quality of life and menopausal status and symptoms in women living with HIV aged 45-60 years in England: an analysis of the PRIME study, Womens Health (Lond) 18 (2022) 17455065211068722, https://doi.org/10.1177/17455065211068722.
[46] C.E. Ferreira, A.M. Pinto-Neto, D.M. Conde, L. Costa-Paiva, S.S. Morais, J. Magalhães, Menopause symptoms in women infected with HIV: prevalence and associated factors, Gynecol. Endocrinol. 23 (2007) 198–205, https://doi.org/10.1080/09513590701253743.
[47] S.E. Looby, C. Psaros, G. Raggio, C. Rivard, L. Smeaton, J. Shifren, S. Grinspoon, H. Joffe, Association between HIV status and psychological symptoms in perimenopausal women, Menopause 25 (2018) 648–656, https://doi.org/10.1097/GME.0000000000001058.
[48] J.F. Lui-Filho, A.L.R. Valadares, D. de C. Gomes, E. Amaral, A.M. Pinto-Neto, L. Costa-Paiva, Menopausal symptoms and associated factors in HIV-positive women, Maturitas 76 (2013) 172–178, https://doi.org/10.1016/j.maturitas.2013.07.012.
[49] P.M. Maki, L.H. Rubin, M. Cohen, E.T. Golub, R.M. Greenblatt, M. Young, R. M. Schwartz, K. Anastos, J.A. Cook, Depressive symptoms are increased in the early perimenopausal stage in ethnically diverse human immunodeficiency virus-infected and human immunodeficiency virus-uninfected women, Menopause 19 (2012) 1215–1223, https://doi.org/10.1097/gme.0b013e318255434d.
[50] A. Hachfeld, A. Atkinson, P. Stute, A. Calmy, P.E. Tarr, K.E.A. Darling, B. Babouee Flury, C. Polli, L. Sultan-Beyer, I.A. Abela, K. Aebi-Popp, Swiss HIV Cohort Study (SHCS), Brief report: does menopause transition influence viral suppression and adherence in women living with HIV? J. Acquir. Immune Defic. Syndr. 92 (2023) 399–404, https://doi.org/10.1097/QAI.0000000000003158.