BIKTARVY® combines the INSTI bictegravir with DESCovy® (FTC/TAF), a guideline-preferred NRTI backbone\(^1\)-3

Helping people living with HIV achieve durable* treatment success regardless of baseline CD4 count or viral load:†,4-6

**HIGH EFFICACY**\(^4\)
with 0 resistance\(^6\)
through 144 weeks in treatment-naive PLHIV\(^4\)

**WELL TOLERATED**\(^3\)
with significantly fewer all grade treatment-related AEs vs ABC/3TC/DTG (secondary endpoint) through 144 weeks, with similar low rates of treatment discontinuation and serious AEs in both arms\(^4\)

**SMALL STR**\(^**\)
with flexible daily dosing\(^1\)

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\(^*\) Durability in HIV is defined as maintained efficacy, which is dependent on patient adherence. Adherence is impacted by tolerability and simplicity of treatment.\(^3\),\(^*\)

\(^†\) Median CD4 cell count (IQR) and HIV-1 RNA (IQR) at baseline for patients receiving BIKTARVY® in pooled data from Study 1489 and Study 1490 (n=634) were 442 (293–550) cells/μl and 13% had CD4 count <200 cells/μl and 4 424 (4 00–4 88) copies/mL (10% had HIV-1 RNA <100 000 copies/mL), respectively.\(^4\) At Week 96, subgroup analyses for Study 1489 and 1490 showed that baseline CD4 count and baseline HIV-1 RNA did not significantly influence treatment outcomes.\(^*\)

\(^\dagger\) At Week 144, in Study 1489 (BIKTARVY® [n=314] vs ABC/3TC/DTG [n=315]) efficacy was 82% vs 84% (95% CI: –2.6 [–8.5–3.4]) and in Study 1490 (BIKTARVY® [n=320] vs DTG + FTC/TAF [n=325]) efficacy was 82% vs 84% (95% CI: –1.9 [–7.8–3.9]), with BIKTARVY® demonstrating non-inferior efficacy vs comparator in both trials.\(^4\)

\(^\ddagger\) At Week 144, in pooled data from Study 1489 and Study 1490 in treatment-naive patients, there were 0 cases of treatment-emergent resistance in the BIKTARVY® (n=634), ABC/3TC/DTG (n=315) and DTG + FTC/TAF (n=325) groups.\(^4\)

\(^\S\) At Week 144, in pooled data from Study 1489 and Study 1490 in treatment-naive patients receiving BIKTARVY®, the most frequently reported adverse reactions (≥25%) were nausea (4), headache (5) and diarrhoea (5).\(^4\)

\(^\S\) At Week 144, in pooled data from Study 1489 and Study 1490 in treatment-naive patients receiving BIKTARVY®, any drug-related AE was reported in 20% for BIKTARVY®, 42% for ABC/3TC/DTG and 20% for DTG + FTC/TAF. BIKTARVY® had significantly lower rates of study drug-related AEs, nausea and study-drug related nausea than DTG/ABC/3TC (p<0.001).\(^4\)

\(^\S\) At Week 144, in pooled data from Study 1489 and Study 1490 in treatment-naive patients, AEs leading to discontinuation were reported in 1% (n=634) for BIKTARVY®, 2% (n=315) for ABC/3TC/DTG and 2% (n=325) for DTG + FTC/TAF groups.\(^4\)

\(^\S\) Each BIKTARVY® tablet is approximately 15 mm x 8 mm.\(^1\)

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3TC, lamivudine; ABC, abacavir; AE, adverse event; BIC, bictegravir; CI, confidence interval; DTG, dolutegravir; FTC, emtricitabine; INSTI, integrase strand transfer inhibitor; IQR, interquartile range; NRTI, nucleoside reverse transcriptase inhibitor; PLHIV, people living with HIV; STR, single-tablet regimen; TAF, tenofovir alafenamide.

Click HERE for prescribing information, adverse event reporting and references.

September 2020 UK-HIV-2020-03-0044
2019 update of the European AIDS Clinical Society Guidelines for treatment of people living with HIV version 10.0

L Ryom, A Cotter, R De Miguel, C Béguelin, D Podlekareva, JR Arribas, C Marzolini, PGM Mallon, A Rauch, O Kirk, JM Molina, G Guaraldi, A Winston, S Bhagani, P Cinque, JD Kowalska, S Collins and M Battegay on behalf of the EACS Governing Board*

Background
The European AIDS Clinical Society (EACS) Guidelines cover key aspects of HIV management with major updates every two years.

Guideline highlights
The 2019 Guidelines were extended with a new section focusing on drug–drug interactions and other prescribing issues in people living with HIV (PLWH). The recommendations for treatment-naïve PLWH were updated with four preferred regimens favouring unboosted integrase inhibitors. A two-drug regimen with dolutegravir and lamivudine, and a three-drug regimen including doravirine were also added to the recommended initial regimens. Lower thresholds for hypertension were expanded to all PLWH and for cardiovascular disease prevention, the 10-year predicted risk threshold for consideration of antiretroviral therapy (ART) modification was lowered from 20% to 10%. Frailty and obesity were added as new topics. It was specified to use urine albumin to creatinine ratio to screen for glomerular disease and urine protein to creatinine ratio for tubular diseases, and thresholds were streamlined with the Kidney Disease: Improving Global Outcomes (KDIGO) recommendations. Hepatitis C virus (HCV) treatment recommendations were split into preferred and alternative treatment options. The algorithm for management of recently acquired HCV infection was updated and includes recommendations for early chronic infection management. Treatment of resistant tuberculosis (TB) was streamlined with the World Health Organization guidance.

*Members of the EACS Panels and Governing Board are listed in the Acknowledgements.
Organization (WHO) recommendations, and new tables on immune reconstitution inflammatory syndrome, on when to start ART in the presence of opportunistic infections and on TB drug dosing were included.

Conclusions
The EACS Guidelines underwent major revisions of all sections in 2019. They are available in four different formats including a new interactive web-based version and are translated into Chinese, French, German, Japanese, Portuguese, Russian and Spanish.

Keywords: antiretroviral treatment, comorbidities, drug–drug interactions, European AIDS Clinical Society (EACS) Guidelines, hepatitis B virus, hepatitis C virus, HIV, opportunistic infections, prescribing in elderly patients

Accepted 27 April 2020

The European AIDS Clinical Society (EACS) Guidelines

As several countries are lacking or infrequently update national HIV guidelines, the EACS Guidelines have since 2005 provided recommendations that are independent of geographical region and levels of care. Acknowledging that HIV care extends far beyond antiretroviral treatment (ART), the EACS Guidelines also provide guidance on several other key aspects related to HIV management.

In 2019, the EACS Guidelines underwent major revisions of all sections [1]. One of the most essential changes includes a new panel focusing on drug–drug interactions (DDIs) and other prescribing issues in people living with HIV (PLWH) in acknowledgement of the increased ageing of PLWH and increasing risks of polypharmacy.

Bictegravir (BIC) and doravirine (DOR) were released since the last major revision and have been included in all sections. In addition, older drugs that are now rarely used, including several older boosted protease inhibitors (PI/bs), didanosine and stavudine, were removed from most sections.

To ensure easy access to the Guidelines, a new format in the form of an interactive web-based version was introduced (https://eacs.sanfordguide.com) in 2019. The Guidelines remain available in print as a booklet, online as a pdf (https://www.eacsociety.org/files/2019_guidelines-10.0_final.pdf) and as a free App for IOS and Android devices produced with the Sanford Group. The EACS Guidelines are translated into Chinese, French, German, Japanese, Portuguese, Russian and Spanish.

The Guideline review process

The Guidelines undergo major revisions every second year, and minor revisions in the years in between, as previously described [2]. Interim updates may be performed in the case of new key data emerging between scheduled updates. Meetings are held at regular intervals but can also be set up at short notice when necessary.

Each of the Guideline sections is created by a panel of experts governed by a three-person leadership group. The Guidelines are managed by a Guidelines Chair and Coordinator; details have previously been described [2]. As also previously reported, the recommendations provided in the EACS Guidelines are based on evidence whenever possible, and, in the rare instances where adequate evidence is unavailable, based on expert opinions [2].

The Guidelines are extensively cross-reviewed by the panellists, and by representatives from the community and from Women Against Viruses in Europe (WAVE). Conflict of interest statements are required for all members and can be provided upon request.

In the following, the most important changes made in version 10.0 for each section of the Guidelines are described.

ART section

In the 2019 version, the layout for initial ART regimens, treatment in pregnancy/women wishing to conceive and in persons coinfected with tuberculosis (TB) were made uniform to ensure consistency.

Before initiating ART, it is recommended to consider if a woman is pregnant or wishes to conceive, and if the person has an opportunistic infection or any potential treatment-limiting comorbidities. In addition, it is recommended to consider if the person is at risk of DDIs or if the person has swallowing difficulties. In all these instances, the Guidelines provide management recommendations.

Among the recommended first-line regimens for ART-naive PLWH, EACS recommends four preferred options consisting of two nucleoside reverse transcriptase inhibitors [NRTIs; abacavir (ABC)/lamivudine (3TC), tenofovir alafenamide (TAF)/emtricitabine (FTC), tenofovir disoproxil fumarate (TDF)/TFC or TDF/3TC] in combination with an unboosted integrase strand transfer inhibitor [INSTI; dolutegravir (DTG), BIC or raltegravir (RAL)] (Table 1). Among these preferred regiments, EACS favour
those with a high genetic barrier (DTG or BIC) as a third agent.

Other recommended first-line regimens include one two-drug combination with an NRTI (3TC) plus an INSTI (DTG), and three three-drug combinations with two NRTIs (TAF/FTC, TDF/FTC or TDF/3TC) plus a nonnucleoside reverse transcriptase inhibitor [NNRTI; DOR or rilpivirine (RPV)] or plus a boosted protease inhibitor [PI/b; cobicistat (COBI)- or ritonavir (RTV)-boosted darunavir (DRV/c or DRV/rt)] (Table 1).

The alternative regimen recommendations to be used when none of the preferred regimens are available are shown in Table 1.

The following two-drug combinations are recommended as possible switch strategies; 3TC with DTG, DRV/b or boosted atazanavir (ATV/b) or DTG plus RPV.

Table 1 Combination antiretroviral therapy (ART) regimens for treatment-naive adult people living with HIV (PLWH)

| Regimen | Main requirements | Additional guidance (footnotes) |
|---------|-------------------|---------------------------------|
| **Recommended regimens** | | |
| 2 NRTIs + INSTI (preferred) | | |
| ABC/3TC + DTG | HLA-B*57:01 negative | I (ABC: HLA-B*57:01, cardiovascular risk) |
| ABC/3TC/DTG | HBsAg negative | |
| TAF/FTC or TDF/FTC or TDF/3TC + DTG | | |
| TAF/FTC/BIC | CD4 count > 200 cells/µL | |
| TAF/FTC or TDF/FTC or TDF/3TC + RAL qd or bid | HIV VL < 500 000 copies/mL | |
| DTG + 3TC | HIV VL < 500 000 copies/mL | |
| **2 NRTIs + NNRTI** | | |
| TAF/FTC or TDF/FTC or TDF/3TC + DOR | HLA-B*57:01 negative | II (TDF: prodrug types. Renal and bone toxicity. TAF dosing) |
| TDF/3TC/DOR | HBsAg negative | III (Weight increase) |
| TAF/FTC or TDF/FTC or TDF/3TC + RPV | CD4 count > 200 cells/µL, HIV VL < 100 000 copies/mL | II (TDF: prodrug types. Renal and bone toxicity. TAF dosing) |
| TAF/FTC/RPV | Not on proton pump inhibitor | IV (RAL: dosing) |
| **1 NRTI + INSTI** | | |
| DTG + 3TC | HLA-B*57:01 negative | I (ABC: HLA-B*57:01, cardiovascular risk) |
| **2 NRTIs + PI/r or PI/c** | | |
| TAF/FTC or TDF/FTC or TDF/3TC + DRV/c or DRV/r | HIV VL < 100 000 copies/mL | |
| TAF/FTC/DRV/c | With food | |
| **Alternative regimens** | | |
| 2 NRTIs + INSTI | | |
| ABC/3TC + RAL qd or bid | HLA-B*57:01 negative | I (ABC: HLA-B*57:01, cardiovascular risk) |
| TDF/FTC/EVG/c | HBsAg negative | IV (RAL: dosing) |
| TAF/FTC/EVG/c | With food | II (TDF: prodrug types. Renal and bone toxicity) |
| **2 NRTIs + NNRTI** | | |
| ABC/3TC + EFV | HLA-B*57:01 negative | I (ABC: HLA-B*57:01, cardiovascular risk) |
| TAF/FTC or TDF/FTC or TDF/3TC + EFV | HBsAg negative | II (TDF: prodrug types. Renal and bone toxicity) |
| TAF/FTC/EFV | HIV VL < 100 000 copies/mL | VIII (EVG/c: use in renal impairment) |
| TAF/FTC or TDF/FTC or TDF/3TC + RTV | At bedtime or 2 h before dinner | | |
| TAF/FTC/RTV | At bedtime or 2 h before dinner | II (TDF: prodrug types. Renal and bone toxicity. TAF dosing) |
| TAF/FTC or TDF/FTC or TDF/3TC + ATV/c or ATV/r | At bedtime or 2 h before dinner | IX (EFV: suicidality. HIV-2 or HIV-1 group 0) |
| TAF/FTC/ATV/c or ATV/r | At bedtime or 2 h before dinner | | |
| TAF/FTC or TDF/FTC or TDF/3TC + ATV/c or ATV/r | At bedtime or 2 h before dinner | II (TDF: prodrug types. Renal and bone toxicity. TAF dosing) |
| TAF/FTC or TDF/FTC or TDF/3TC + ATV/c or ATV/r | At bedtime or 2 h before dinner | IX (EFV: suicidality. HIV-2 or HIV-1 group 0) |
| **2 NRTIs + PI/r or PI/c** | | |
| ABC/3TC + ATV/c or ATV/r | HLA-B*57:01 negative | I (ABC: HLA-B*57:01, cardiovascular risk) |
| TDF/FTC/EVG/c | HBsAg negative | X (ATV/b and renal toxicity) |
| TDF/FTC/EFV | HIV VL < 100 000 copies/mL | |
| TAF/FTC or TDF/FTC or TDF/3TC + ATV/c or ATV/r | Not on proton pump inhibitor | I (ABC: HLA-B*57:01, cardiovascular risk) |
| TAF/FTC or TDF/FTC or TDF/3TC + ATV/c or ATV/r | With food | VII (ATV/b: renal toxicity) |
| TAF/FTC or TDF/FTC or TDF/3TC + ATV/c or ATV/r | With food | |
Three new tables were included for pregnant women living with HIV or women wishing to conceive to specify which drugs are considered safe and which to avoid. EACS currently recommends not using DTG in women who wish to conceive because of the reported higher risk of neural tube defect if used preconception [3]. As a consequence of insufficient data on safety and efficacy in pregnancy, TAF, RAL once a day (qd), BIC and DOR are currently not recommended in women who become pregnant while on ART. In addition, COBI boosting has proved less robust than RTV boosting during pregnancy, and therefore COBI-boosted elvitegravir (EVG/c) is not recommended and ATV or DRV should be boosted only with RTV in women who become pregnant while on ART. The preferred initial options for ART-naïve pregnant women include combinations of two NRTIs (ABC/3TC, TDF/FTC or TDF/3TC) plus an INSTI [DTG, which can be used after pregnancy week 8, or RAL twice a day (bid)]. The recommended regimens include two NRTIs (TDF/FTC or TDF/3TC) plus a PI/r (DRV/r). Alternative regimens to be considered consist of two NRTIs (ABC/3TC, TDF/FTC or TDF/3TC) plus an NNRTI [efavirenz (EFV) or RPV] or plus a PI/r (ATV/r or DRV/r). A section on labour and breastfeeding was further added.

For PLWH coinfected with susceptible TB, the recommended ART regimens to be used with rifampicin include the combination of two NRTIs (TDF/FTC, TDF/3TC or ABC/3TC) plus an NNRTI (EFV), or for alternative regimens plus an INSTI (DTG bid or RAL bid). An updated table further describes the most relevant DDI s when ART is co-administered with rifampicin or rifabutin.

For post-exposure prophylaxis (PEP), additional regimen combinations with TAF/FTC, RAL qd and BIC were included. For pre-exposure prophylaxis (PrEP), use of daily TAF/FTC was included as a possible alternative in men who have sex with men and transgender women.

### Section on DDIs and other prescribing issues

All DDI tables have been organized in a separate section devoted to issues related to prescribing ART and other co-medication in PLWH. The DDI tables each provide an overview of the interaction potential between individual antiretroviral drugs and the most commonly used co-medications within a therapeutic area.

Two new tables have been added on dose adjustment in renal impairment for commonly co-administered drugs.
Table 2 Preferred DAA HCV treatment options (except for persons pretreated with protease or NS5A inhibitors)

| HCV GT | Treatment regimen | Noncirrhotic | Compensated cirrhotic | Decompensated cirrhotic CTP class B/C |
|--------|-------------------|-------------|-----------------------|-------------------------------------|
| 1 and 4 | EBR/GZR           | 12 weeks   | 12 weeks              | Not recommended                     |
|        | GLE/PIB          | 8 weeks    | 12 weeks              | Not recommended                     |
|        | SOF/VEL           | 12 weeks   | 12 weeks with RBV     |                                     |
|        | SOF/LDV ± RBV     | 8–12 weeks without RBV | 12 weeks with RBV       |                                     |
| 2      | GLE/PIB          | 8 weeks    | 12 weeks              | Not recommended                     |
|        | SOF/VEL           | 12 weeks   | 12 weeks with RBV     |                                     |
| 3      | GLE/PIB          | 8 weeks    | 12 weeks 8           | Not recommended                     |
|        | SOF/VEL ± RBV     | 12 weeks   | 12 weeks with RBV or 24 weeks without RBV |                                     |
| 5 and 6 | GLE/PIB          | 8 weeks    | 12 weeks              | Not recommended                     |
|        | SOF/LDV ± RBV     | 12 weeks ± RBV | 12 weeks with RBV     |                                     |
|        | SOF/VEL           | 12 weeks   | 12 weeks with RBV     |                                     |

CTP, child-Turcotte-Pugh; DAA, direct-acting antiviral; DCV, daclatasvir; DSV, dasabuvir; EBR, elbasvir; GLE, glecaprevir; GT, genotype; GZR, grazoprevir; LDV, ledipasvir; NSSA, Nonstructural protein 5A; OBV, ombitasvir; PIB, pibrentasvir; PTV/r, paritaprevir/RV/R; RAS, resistance-associated substitution; RBV, ribavirin; SOF, sofosbuvir; VEL, velpatasvir; VOX, voxilaprevir.

The comorbidity section continues to be the largest section of the EACS Guidelines and provides screening and management recommendations for the most common comorbid conditions among PLWH and for conditions that require specific guidance.

Given the increased prevalence of frailty in PLWH, a new table was developed on the recommended drug dosages for hormone therapy when used at high doses for gender transitioning. Detailed information on DDIs can be found in the University of Liverpool website www.hiv-druginteractions.org.

Comorbidity section

The comorbidity section continues to be the largest section of the EACS Guidelines and provides screening and management recommendations for the most common comorbid conditions among PLWH and for conditions that require specific guidance.

In the liver section, a fourth step was added to the work-up of persons with increased transaminases to include risk stratification using aspartate aminotransferase to platelet ratio (APRI), fibrosis-4 (FIB4), NAFLD fibrosis score and transient elastography. Similarly, the screening recommendation for hepatocellular carcinoma in noncirrhotic persons with chronic HBV coinfection was amended in collaboration with the viral hepatitis panel to include an age threshold acknowledging the higher risk in those older than 45 years [4]. The algorithm for surveillance for
varices and primary prophylaxis was updated to incorporate transient elastography (where available) with platelet counts to determine indications for upper gastrointestinal endoscopy. Finally, the diagnostics flow-chart for NAFLD was revised to include the use of fibrosis scores.

Finally, in the renal subsection, it was specified to use urine albumin to creatinine ratio to screen for glomerular disease (such as diabetes and HIV-related disease), and urine protein to creatinine ratio to screen for tubular diseases (i.e. ART drug toxicity). The cut-off values for albuminuria and proteinuria have further been streamlined with the Kidney Disease: Improving Global Outcomes (KDIGO) recommendations [5].

**Viral hepatitis coinfection section**

This section was renamed *Clinical management and treatment of viral hepatitis co-infections in PLWH*. The overall structure of the section was also revised to improve readability.

The first subsection contains general recommendations on viral hepatitis coinfections in PLWH and focuses on screening recommendations, measures of prevention and complications related to viral hepatitis. A new table on noninvasive liver fibrosis markers was introduced.

Another subsection focuses on treatment and monitoring of PLWH coinfected with HBV and includes a part on HBV reactivation related to immunosuppressive treatment with monitoring and treatment recommendations stratified by type of immunosuppressive drugs. Awareness of the risk for HBV reactivation is particularly important in the era of ART simplification with regimens not containing NRTIs active against HBV.

There were no new direct-acting antivirals (DAAs) licensed for the treatment of HCV since the last Guideline revision. The HCV treatment recommendations table was split into two parts, with one table listing the preferred treatment options, and a second table listing the alternative options (Table 2, 3). The recommendations for the management of DAA treatment failures were updated.

Acute HCV infection was renamed “recently acquired HCV infection” in accordance with the recent European AIDS Treatment Network consensus conference (NEAT) statement [6]. Lack of spontaneous clearance and progression to chronic infection can be predicted reliably by four weeks after diagnosis in those with less than a $2 \times 10^{10}$ reduction in HCV RNA [7]. Accordingly, this situation is considered as early chronic HCV infection and immediate DAA therapy is recommended. DAA treatment is recommended as in treatment-naïve noncirrhotic individuals (except for those with pre-existing liver cirrhosis), as several trials failed to demonstrate noninferiority of shortened treatment courses [6].

Finally, the recommendations on the management of viral hepatitis D and E in PLWH were expanded.

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**Table 3** DAA HCV treatment options (except for persons pretreated with protease or NS5A inhibitors) to be used if preferred option is not available

| HCV GT | Treatment regimen | Noncirrhotic | Compensated cirrhotic | Decompensated cirrhotic CTP class B/C |
|--------|------------------|-------------|-----------------------|--------------------------------------|
| 1 and 4 | OBV/PTV/r + DSV | 8–12 weeks in GT 1b | 12 weeks in GT 1b | Not recommended |
|        | OBV/PTV/r + DSV + RBV | 12 weeks in GT 1a | 24 weeks in GT 1a | Not recommended |
|        | OBV/PTV/r + RBV | 12 weeks in GT 4 | 12 weeks with RBV | Not recommended |
|        | SOF + DCV ± RBV | 12 weeks ± RBV | 12 weeks with RBV | Not recommended |
|        | SOF/VEL/VOX | 8 weeks | 12 weeks | Not recommended |
| 2      | SOF + DCV | 12 weeks | 12 weeks with RBV | Not recommended |
|        | SOF/VEL/VOX | 8 weeks | 12 weeks | Not recommended |
| 3      | SOF + DCV ± RBV | 12 weeks ± RBV or 24 weeks without RBV | 24 weeks with RBV | Not recommended |
|        | SOF/VEL/VOX | 8 weeks | 12 weeks | Not recommended |
| 5 and 6 | SOF + DCV ± RBV | 12 weeks ± RBV or 24 weeks without RBV | 12 weeks with RBV | Not recommended |
|        | SOF/VEL/VOX | 8 weeks | 12 weeks | Not recommended |

CTP, child-Turcotte-Pugh; DAA, direct-acting antiviral; DCV, daclatasvir; DSV, daxabuvir; EBR, elbasvir; GLE, glecaprevir; GT, genotype; GZR, grazoprevir; LDV, ledipasvir; NS5A, Nonstructural protein 5A; OBV, ombitasvir; PIB, pibrentasvir; PTV/r, paritaprevir/RTV; RAS, resistance-associated substitution; RBV, ribavirin; SOF, sofosbuvir; VEL, velpatasvir; VOX, voxilaprevir.

*Addition of RBV in GT1a treatment-experienced PLWH, but not in PLWH without NS5A RASs, if RAS testing is available.
In PLWH intolerant to RBV, treatment may be prolonged to 24 weeks. RBV can be omitted in treatment-naïve or -experienced PLWH with compensated cirrhosis without baseline NS5A RASs.

*Extension of treatment to 12 weeks in DAA treatment-experienced PLWH.

*Addition of RBV only in treatment-experienced persons with baseline NS5A RASs, if RAS testing available; if these PLWH are intolerant to RBV, treatment may be prolonged to 24 weeks without RBV.
In treatment-experienced (exposure to IFN/RBV/SOF) PLWH, treat with RBV for 12 weeks or prolong treatment to 24 weeks without RBV.
Opportunistic infection (OI) section

A new table is included at the start of the revised OI section, providing guidance on when to start ART in the presence of OIs and in particular TB, cryptococcal meningitis and cytomegalovirus (CMV) end-organ disease.

Also added is a new table on immune reconstitution inflammatory syndrome (IRIS), including definitions of paradoxical and unmasking IRIS, along with recommendations on prevention and management.

For the 2019 update, extensive revisions on how to manage drug-resistant TB in PLWH were made. The recommendations are in line with the most recent World Health Organization (WHO) recommendations to use four, preferably oral and presumed effective TB drugs for the first six months of intensive treatment, followed by treatment with three active drugs for 12–14 months depending on response [8]. In addition, a new table on recommended TB drug doses and key adverse effects has been added.

Also new is the addition of talaromycosis, which is relevant in PLWH who have lived in Asia. The table contains recommendations on diagnosis, treatment and secondary prophylaxis.

Minor edits have been made to the other individual OIs, most importantly for Pneumocystis jiroveci pneumonia (PCP) and Toxoplasma gondii infection, where primary prophylaxis can now be stopped already at CD4 counts > 100 cells/μL and if viral load has been undetectable for > 3 months. For nontuberculous mycobacteria, primary prophylaxis in the case of a CD4 count < 50 cells/μL is no longer recommended if ART is started.

Conclusions

The 2019 version of the EACS Guidelines has undergone substantial updates in all sections and has been expanded with new sections on DDIs and other prescribing issues in PLWH. The Guidelines are available in four different formats and translated into Chinese, French, German, Japanese, Portuguese, Russian and Spanish.

Appendix 1:

Guidelines Panel Members 2019

Medical secretariat: the EACS Medical Secretariat is responsible for the coordination and update of the EACS guidelines based on the recommendations from the five EACS panels.

Guidelines Chair: Manuel Battegay (Basel, Switzerland);

Guidelines Coordinator: Lene Ryom (Copenhagen, Denmark).

Panel members:

HIV treatment:

Chair: José Arribas (Madrid, Spain); Vice-Chair: Jean-Michel Molina (Paris, France); Young Scientist: Rosa De Miguel Buckley (Madrid, Spain); Antonella d’Arminio Monforte (Milan, Italy), Manuel Battegay (Basel, Switzerland), Margherita Braechi (London, UK), Nikos Dedes (Athens, Greece), Andrzej Horban (Warsaw, Poland), Christine Katlama (Paris, France), Inga Latysheva (Saint Petersburg, Russia), Jens D. Lundgren (Copenhagen, Denmark), Sheena McCormack (London, UK), Cristina Mussini (Modena, Italy), Anton Pozniak (London, UK), Federico Pulido (Madrid, Spain), François Raffi (Nantes, France), Peter Reiss (Amsterdam, The Netherlands), Hans-Jürgen Stellbrink (Hamburg, Germany), Marta Vasylyev (Lviv, Ukraine).

Drug–drug interactions:

Chair: Catia Marzolini (Basel, Switzerland); Vice-Chair: Giovanni Guaraldi (Modena, Italy); Sara Gibbons (Liverpool, UK), Françoise Livio (Lausanne, Switzerland).

Comorbidities:

Chair: Patrick Mallon (Dublin, Ireland); Vice-Chair: Alan Winston (London, UK); Young Scientist: Aoife Cotter (Dublin, Ireland), Manuel Battegay (Basel, Switzerland), Georg Behrens (Hannover, Germany), Mark Bower (London, UK), Paola Cinque (Milan, Italy), Simon Collins (London, UK), Juliet Compston (Cambridge, UK), Stéphane De Wit (Brussels, Belgium), Leonardo M. Fabbri (Modena, Italy), Christoph A. Fux (Aarau, Switzerland), Stéphane Deguine (Nantes, France), Paolo Cinque (Milan, Italy), Justyna D. Kowalska (Warsaw, Poland), Jens D. Lundgren (Copenhagen, Denmark), Esteban Martínez (Barcelona, Spain), Catia Marzolini (Basel, Switzerland), José M. Miro (Barcelona, Spain), Eugenia Negredo (Barcelona, Spain), Neil Poulter (London, UK), Peter Reiss (Amsterdam, The Netherlands), Lene Ryom (Copenhagen, Denmark), Giada Sebastiani (Montreal, Canada).

Viral hepatitis co-infections:

Chair: Andri Rauch (Bern, Switzerland); Vice-Chair: Sanjay Bhagani (London, UK); Young Scientist: Charles Béguelin (Bern, Switzerland); Juan Berenguer (Madrid, Spain), Christoph Boesecke (Bonn, Germany), Raffaele Bruno (Pavia, Italy), Svilen Konov (London, UK), Karine Lacombe (Paris, France), Stefan Mauss (Düsseldorf, Germany), Luís Mendão (Lisbon, Portugal), Lars Peters (Copenhagen, Denmark), Massimo Puoti (Milan, Italy), Jürgen K. Rockstroh (Bonn, Germany).

Opportunistic infections:

Chair: Ole Kirk (Copenhagen, Denmark); Vice-Chair: Paola Cinque (Milan, Italy); Young Scientist: Daria
Podlekareva (Copenhagen, Denmark); Juan Ambrosioni (Barcelona, Spain), Nathalie De Castro (Paris, France), Gerd Fätkenheuer (Cologne, Germany), Hansjakob Furrer (Bern, Switzerland), José M. Miro (Barcelona, Spain), Cristiana Oprea (Bucharest, Romania), Anton Pozniak (London, UK), Alain Volny-Anne (Paris, France). WAVE representative: Justyna D. Kowalska (Warsaw, Poland).

**Governing board members:**

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