Selecting an Initial ART Regimen

August 2022

Table 9: Recommended Dose Adjustments for Use of Selected Fixed-Dose Combination Antiretroviral Medications in Patients With Hepatic or Renal Impairment

Fixed-Dose Combination	Hepatic Impairment Dose Adjustment [a]	Renal Impairment Dose Adjustment		
		Recommended Dose Adjustment [a]	Individual FDC Components and Recommended Dose Adjustment [a]	Clinical Comments
Integrase Strand Transfer Inhibitors				
Abacavir/dolutegravir/ lamivudine (ABC/DTG/3TC; Triumeq) See package insert	**Child-Pugh A, B, C:** Do not use.	**CrCl <30 mL/min:** Use of FDC is not recommended.	**ABC:** No renal dose adjustment is needed. **DTG:** No renal dose adjustment is needed. **3TC:** • **CrCl 30 to 49 mL/min:** 150 mg once daily. • **CrCl 15 to 29 mL/min:** 150 mg first dose then 100 mg once daily. • **CrCl 5 to 14 mL/min:** 150 mg first dose then 50 mg once daily. • **CrCl <5 mL/min:** 50 mg first dose then 25 mg once daily.	**CrCl >30 mL/min:** Limited data to support use of FDC; 21 patients with CrCl >30 mL/min received full dose 3TC with minimal increases in AUC. No elevations in lactate or other ADRs reported [Fischetti, et al. 2018]. **CrCl <30 mL/min, without HD:** Renal adjustment should be based on individual components; 13 patients with CrCl <30 mL/min not on HD received 100 to 150 mg of 3TC with minimal increases in AUC. No elevations in lactate or other ADRs reported [Fischetti, et al. 2018]. **CrCl <30 mL/min, with HD:** Limited data to support use of FDC. Case series evaluating safety and efficacy of FDC in 9 patients with end-stage renal disease on HD reported viral suppression achieved in all 9 patients. No change in immune function. FDC generally well tolerated; one patient complained of nausea, which resolved without drug discontinuation [Michienzi, et al. 2019]. **Note:** DTG serum concentrations appear to be reduced in uninfected healthy controls with eGFR <30 mL/min/m^2 compared to those with normal kidney function. This may increase the risk of therapeutic failure among patients with HIV drug resistance to INSTIs [Tivicay package insert].
Bictegravir/emtricitabine/ tenofovir alafenamide [b] (BIC/FTC/TAF; Biktarvy) See package insert	**Child-Pugh A, B:** No dose adjustment is needed. **Child-Pugh C:** Do not use.	**CrCl <30 mL/min:** Use of FDC is not recommended.	**BIC:** No renal adjustment is needed. **FTC:** • **CrCl 30 to 49 mL/min:** 200 mg every 48 hours. • **CrCl 15 to 29 mL/min:** 200 mg every 72 hours. • **CrCl <15 mL/min:** 200 mg every 96 hours. **TAF:** • **CrCl <15 mL/min, without HD:** Use is not recommended. • **CrCl <15 mL/min, with HD:** No renal dose adjustment is needed.	**CrCl <30 mL/min:** No data to support use of FDC. Renal dose adjustment should be based on individual components. **CrCl 15 to 29 mL/min:** No BIC dose adjustment is needed. In a study of 10 patients with CrCl 15 to 29 mL/min compared to 8 patients with normal renal function who received a single dose of BIC 75 mg, severe renal impairment did not produce clinically relevant changes in BIC exposure [Zhang, et al. 2017].

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Fixed-Dose Combination	Hepatic Impairment Dose Adjustment [a]	Renal Impairment Dose Adjustment		
		Recommended Dose Adjustment [a]	Individual FDC Components and Recommended Dose Adjustment [a]	Clinical Comments
Elvitegravir/cobicistat/ emtricitabine/tenofovir disoproxil fumarate (EVG/COBI/FTC/TDF; Stribild) See package insert	**Child-Pugh A, B:** No dose adjustment is needed. **Child-Pugh C:** No data; do not use.	**CrCl <70 mL/min:** Do not initiate therapy. **Drop in CrCl to <50 mL/min during treatment:** Discontinue therapy.	**EVG:** No renal dose adjustment is needed. **EVG/COBI:** No renal dose adjustment is needed. **FTC:** • **CrCl 30 to 49 mL/min:** 200 mg every 48 hours. • **CrCl 15 to 29 mL/min:** 200 mg every 72 hours. • **CrCl <15 mL/min:** 200 mg every 96 hours. **TDF:** • **CrCl 30 to 49 mL/min:** 300 mg every 48 hours. • **CrCl 10 to 29 mL/min:** 300 mg every 72 to 96 hours. • **CrCl <10 mL/min, without HD:** No data available. • **CrCl <10 mL/min, with HD:** 300 mg every 7 days.	**CrCl <30 mL/min:** No data to support use of FDC. Renal dose adjustment should be based on individual components. **EVG/COBI:** Dose adjustment not warranted. In 12 patients with eGFR <30 mL/min/m^2 (not on HD) and 12 controls with normal renal function given 7 days of EVG/COBI, lower EVG AUC, C_{max}, and C_{min} values and higher COBI AUC, C_{max}, and C_{min} values were observed in severe renal impairment, but values were not considered clinically relevant [German, et al. 2012].
Elvitegravir/cobicistat/ emtricitabine/tenofovir alafenamide [b] (EVG/COBI/FTC/TAF; Genvoya) See package insert	**Child-Pugh A, B:** No dose adjustment is needed. **Child-Pugh C:** Do not use.	**CrCl <30mL/min:** Use of FDC is not recommended.	**EVG:** No renal dose adjustment is needed. **EVG/COBI:** No renal dose adjustment is needed. **FTC:** • **CrCl 30 to 49 mL/min:** 200 mg every 48 hours. • **CrCl 15 to 29 mL/min:** 200 mg every 72 hours. • **CrCl <15 mL/min:** 200 mg every 96 hours. **TAF:** • **CrCl <15 mL/min, without HD:** Use is not recommended. • **CrCl <15 mL/min, with HD:** No renal dose adjustment is needed. • **ESRD, with HD:** One tablet once daily; administer after HD on HD days.	**CrCl <30 mL/min, without HD:** No data to support use of FDC. Renal adjustment should be based on individual components. **CrCl <15 mL/min, with HD:** In a study of 55 patients on FDC for up to 96 weeks, 18 (33%) had grade 3 or higher ADR during treatment, and 3 patients discontinued treatment due to adverse effects. The authors concluded that, at 48 weeks, the FDC regimen was well tolerated in patients on HD [Eron, et al. 2018].
Dolutegravir/lamivudine (DTG/3TC; Dovato) See package insert	**Child-Pugh A, B:** No dose adjustment is needed. **Child-Pugh C:** Do not use.	**CrCl <30 mL/min:** Use of FDC is not recommended.	**DTG:** No renal dose adjustment is needed. **3TC:** • **CrCl 30 to 49 mL/min:** 150 mg once daily. • **CrCl 15 to 29 mL/min:** 150 mg first dose, then 100 mg once daily. • **CrCl 5 to 14 mL/min:** 150 mg first dose, then 50 mg once daily. • **CrCl <5 mL/min:** 50 mg first dose, then 25 mg once daily.	**CrCl <50mL/min:** No data to support use of FDC. Renal dose adjustment should be based on individual components.
Dolutegravir/rilpivirine (DTG/RPV; Juluca) See package insert	**Child-Pugh A, B:** No dose adjustment is needed. **Child-Pugh C:** No data; do not use.	**CrCl <30 mL/min or ESRD:** No dose adjustment is needed; increased monitoring is recommended.	—	—

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		Renal Impairment Dose Adjustment		
Fixed-Dose Combination	**Hepatic Impairment Dose Adjustment [a]**	**Recommended Dose Adjustment [a]**	**Individual FDC Components and Recommended Dose Adjustment [a]**	**Clinical Comments**
Non-Nucleoside Reverse Transcriptase Inhibitor				
Emtricitabine/rilpivirine/ tenofovir alafenamide (FTC/RPV/TAF; Odefsey) [b] See package insert	**Child-Pugh A, B:** No dose adjustment is needed. **Child-Pugh C:** No data.	**CrCl <30 mL/min:** Use of FDC is not recommended.	**FTC:** • **CrCl 30 to 49 mL/min:** 200 mg every 48 hours. • **CrCl 15 to 29 mL/min:** 200 mg every 72 hours. • **CrCl <15 mL/min:** 200 mg every 96 hours. **RPV:** No renal dose adjustment needed. **TAF:** • **CrCl <15 mL/min, without HD:** Use is not recommended. • **CrCl <15 mL/min, with HD:** No renal dose adjustment is needed.	**CrCl <30 mL/min, without HD:** No data to support use of FDC. Renal dose adjustment should be based on individual components. **CrCl <30 mL/min, with HD:** One FDC tablet once daily. On HD days, administer after dialysis [DHHS 2021]. **Note:** Dose recommended based on data using FTC/TAF as part of FDC with EVG/COBI in patients on HD: In a study of 55 patients on EVG/COBI/FTC/TAF for up to 96 weeks, 18 (33%) had grade 3 or higher ADRs during treatment, and 3 patients discontinued treatment due to adverse effects. The authors concluded that at 48 weeks, the FDC regimen was well tolerated in patients on HD [Eron, et al. 2018].
Doravirine/lamivudine/ tenofovir disoproxil fumarate (DOR/3TC/TDF; Delstrigo) See package insert	**Child-Pugh A, B:** No dose adjustment is needed. **Child-Pugh C:** No data.	**CrCl <50 mL/min:** Use of FDC is not recommended.	**DOR:** No renal dose adjustment is needed. **3TC:** • **CrCl 30 to 49 mL/min:** 150 mg once daily. • **CrCl 15 to 29 mL/min:** 150 mg first dose, then 100 mg once daily. • **CrCl 5 to 14 mL/min:** 150 mg first dose, then 50 mg once daily. • **CrCl <5 mL/min:** 50 mg first dose, then 25 mg once daily. **TDF:** • **CrCl 30 to 49 mL/min:** 300 mg every 48 hours. • **CrCl 10 to 29 mL/min:** 300 mg every 72 to 96 hours. • **CrCl <10 mL/min, without HD:** No data available. • **CrCl <10 mL/min, with HD:** 300 mg every 7 days.	**CrCl <50 mL/min:** No data to support use of FDC. Renal dose adjustment should be based on individual components.
Efavirenz/lamivudine/ tenofovir disoproxil fumarate (EFV/3TC/TDF; Symfi Lo) See package insert	**Child-Pugh A:** No dose adjustment is needed. **Child-Pugh B, C:** No data; do not use.	**CrCl <50 mL/min:** Use of FDC is not recommended.	**EFV:** No renal dose adjustment is needed. **3TC:** • **CrCl 30 to 49 mL/min:** 150 mg once daily. • **CrCl 15 to 29 mL/min:** 150 mg first dose, then 100 mg once daily. • **CrCl 5 to 14 mL/min:** 150 mg first dose, then 50 mg once daily.	**CrCl <50 mL/min:** No data to support use of FDC. Renal dose adjustment should be based on individual components.

Table 9: Recommended Dose Adjustments for Use of Selected Fixed-Dose Combination Antiretroviral Medications in Patients With Hepatic or Renal Impairment				
		Renal Impairment Dose Adjustment		
Fixed-Dose Combination	**Hepatic Impairment Dose Adjustment [a]**	**Recommended Dose Adjustment [a]**	**Individual FDC Components and Recommended Dose Adjustment [a]**	**Clinical Comments**
			TDF: • **CrCl 30 to 49 mL/min:** 300 mg every 48 hours. • **CrCl 10 to 29 mL/min:** 300 mg every 72 to 96 hours. • **CrCl <10 mL/min, without HD:** No data available. • **CrCl <10 mL/min, with HD:** 300 mg every 7 days.	
Efavirenz/emtricitabine/ tenofovir disoproxil fumarate (EFV/FTC/TDF; Atripla) See package insert	**Child-Pugh A:** No adjustment is needed. **Child-Pugh B, C:** No data; do not use.	**CrCl <50 mL/min:** Use of FDC is not recommended.	**EFV:** No renal dose adjustment is needed. **FTC:** • **CrCl 30 to 49 mL/min:** 200 mg every 48 hours. • **CrCl 15 to 29 mL/min:** 200 mg every 72 hours. • **CrCl <15 mL/min:** 200 mg every 96 hours. **TDF:** • **CrCl 30 to 49 mL/min:** 300 mg every 48 hours. • **CrCl 10 to 29 mL/min:** 300 mg every 72 to 96 hours. • **CrCl <10 mL/min, without HD:** No data available. • **CrCl <10 mL/min, with HD:** 300 mg every 7 days.	**CrCl <50 mL/min:** No data to support use of FDC. Renal dose adjustment should be based on individual components.
Protease Inhibitor				
Darunavir/cobicistat/ emtricitabine/tenofovir alafenamide (DRV/COBI/FTC/TAF; Symtuza) [b] See package insert	**Child-Pugh A, B:** No adjustment is needed. **Child-Pugh C:** Do not use.	**CrCl <30 mL/min:** Use of FDC is not recommended.	**DRV; DRV/COBI:** No renal dose adjustment required unless being combined with TDF. Renal dose adjustment for CrCl <70 mL/min is recommended when combined with TDF. **FTC:** • **CrCl 30 to 49 mL/min:** 200 mg every 48 hours. • **CrCl 15 to 29 mL/min:** 200 mg every 72 hours. • **CrCl <15 mL/min:** 200 mg every 96 hours. **TAF:** • CrCl <15 mL/min, without HD: Use is not recommended. • CrCl <15 mL/min, with HD: No renal dose adjustment is needed.	**CrCl <30 mL/min, without HD:** No data to support use of FDC. Renal adjustment should be based on individual components. **CrCl <30mL/min, with HD:** One FDC tablet once daily. On HD days, administer after dialysis [DHHS 2021]. **Note:** Dose recommended based on data using FTC/TAF as part of FDC with EVG/COBI in patients on HD: In a study of 55 patients on EVG/COBI/FTC/TAF for up to 96 weeks, 18 (33%) had grade 3 or higher ADRs during treatment, and 3 patients discontinued treatment due to adverse effects. The authors concluded that at 48 weeks, the FDC regimen was well tolerated in patients on HD [Eron, et al. 2018].

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Fixed-Dose Combination	Hepatic Impairment Dose Adjustment [a]	Renal Impairment Dose Adjustment		
		Recommended Dose Adjustment [a]	Individual FDC Components and Recommended Dose Adjustment [a]	Clinical Comments
Nucleoside/Nucleotide Reverse Transcriptase Inhibitors				
Emtricitabine/tenofovir alafenamide (FTC/TAF; Descovy) See package insert	**Child-Pugh A, B:** No dose adjustment is needed. **Child-Pugh C:** No data.	**CrCl <30 mL/min:** Use of FDC is not recommended.	**FTC:** • **CrCl 30 to 49 mL/min:** 200 mg every 48 hours. • **CrCl 15 to 29 mL/min:** 200 mg every 72 hours. • **CrCl <15 mL/min:** 200 mg every 96 hours. **TAF:** • **CrCl <15 mL/min, without HD:** Use is not recommended. • **CrCl <15 mL/min, with HD:** No renal dose adjustment is needed.	**CrCl <30 mL/min, without HD:** No data to support use of FDC. Renal adjustment should be based on individual components. **CrCl <30mL/min, with HD:** One FDC once daily. On HD days, administer after HD [DHHS 2021]. **Note:** Dose recommended based on data using FTC/TAF as part of FDC with EVG/COBI in patients on HD: In a study of 55 patients on EVG/COBI/FTC/TAF for up to 96 weeks, 18 (33%) had grade 3 or higher ADRs during treatment, and 3 patients discontinued treatment due to adverse effects. The authors concluded that at 48 weeks, the FDC regimen was well tolerated in patients on HD [Eron, et al. 2018].
Emtricitabine/tenofovir disoproxil fumarate (FTC/TDF; Truvada) See package insert	**Child-Pugh A, B, C:** No dose adjustment is needed.	**CrCl 30 to 49 mL/min:** FTC 200 mg/TDF 300 mg every 48 hours. **CrCl <30 mL/min:** Use of FDC is not recommended.	**FTC:** • **CrCl 30 to 49 mL/min:** 200 mg every 48 hours. • **CrCl 15 to 29 mL/min:** 200 mg every 72 hours. • **CrCl <15 mL/min:** 200 mg every 96 hours. **TDF:** • **CrCl 30 to 49 mL/min:** 300 mg every 48 hours. • **CrCl 10 to 29 mL/min:** 300 mg every 72 to 96 hours. • **CrCl <10 mL/min, without HD:** No data available. • **CrCl <10 mL/min, with HD:** 300 mg every 7 days.	**CrCl <30 mL/min:** No data to support use of FDC. Renal dose adjustment should be based on individual components.
Abacavir/lamivudine (ABC/3TC; Epzicom) See package insert	**Child-Pugh A, B, C:** Do not use.	**CrCl <50 mL/min:** Use of FDC is not recommended.	**ABC:** No renal dose adjustment is needed. **3TC:** • **CrCl 30 to 49 mL/min:** 150 mg once daily. • **CrCl 15 to 29 mL/min:** 150 mg first dose, then 100 mg once daily. • **CrCl 5 to 14 mL/min:** 150 mg first dose, then 50 mg once daily. • **CrCl <5 mL/min:** 50 mg first dose, then 25 mg once daily.	**CrCl >30 mL/min:** Limited data to support use of FDC. No elevations in lactate or other ADRs reported in a study of 21 patients with CrCl >30 mL/min who received full dose of 3TC; minimal increases in AUC. [Fischetti, et al. 2018]. **CrCl <30 mL/min, without HD:** Renal dose adjustment should be based on individual components. 13 patients with CrCl <30 mL/min received 100-150 mg of 3TC with minimal increases in AUC. No elevations in lactate or other ADRs reported [Fischetti, et al. 2018]. **CrCl <30 mL/min, with HD:** Limited data to support use of FDC. A case series evaluating safety and

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Fixed-Dose Combination	Hepatic Impairment Dose Adjustment [a]	Renal Impairment Dose Adjustment		
		Recommended Dose Adjustment [a]	Individual FDC Components and Recommended Dose Adjustment [a]	Clinical Comments
				efficacy of Triumeq (ABC/3TC/DTG) as an FDC in 9 patients with ESRD on HD showed viral suppression was achieved in all 9 patients. No change in immune function. FDC was generally well tolerated; one patient complained of nausea, which resolved without drug discontinuation [Michienzi, et al. 2019]. **Note:** DTG serum concentrations appear to be reduced in uninfected healthy controls with eGFR <30 mL/min/m^2 compared to those with normal kidney function. This may increase the risk of therapeutic failure among patients with HIV drug resistance to INSTIs [Tivicay package insert].

Abbreviations: ADR, adverse drug reaction; AUC, area under the curve; C_{max}, maximum plasma concentration; C_{min}, minimum plasma concentration; CrCl, creatinine clearance; FDC, fixed-dose combination; eGFR, estimated glomerular filtration rate; ESRD, end-stage renal disease; HD, hemodialysis; INSTI, integrase strand transfer inhibitor.

Notes:

a. Per package inserts; see links.
b. Per package inserts, FTC can be used at standard dose in FDCs that contain FTC/TAF when CrCl is >30 mL/min. FTC as an individual component requires renal dose adjustment when CrCl is <50 mL/min.

Other ARVs, not included above:

TDF/FTC/RPV (Complera): See package insert

- Renal dose adjustment: CrCl <50 mL/min: do not use.
- Hepatic dose adjustment: Child-Pugh A, B—no adjustment; Child-Pugh C—no data.

Atazanavir (ATV; Reyataz): See package insert

- Renal dose adjustment: No adjustment, but use only 300 mg dose with 100 mg RTV; do not use in treatment-experienced patients on HD.
- Hepatic dose adjustment: Child-Pugh A, B—no adjustment; Child-Pugh C—no data.

ATV/COBI (Evotaz): See package insert

- Renal dose adjustment: Do not use in patients with CrCl <70 mL/min taking a TDF-containing regimen; do not use in treatment-experienced patients on HD.
- Hepatic dose adjustment: No data; not recommended.

Raltegravir (RAL; Isentress): See package insert

- Renal dose adjustment: None.
- Hepatic dose adjustment: 400 mg twice daily: Child-Pugh A, B—no adjustment; Child-Pugh C—no data. 600 mg once daily: No data; use with caution.

DRUG MANUFACTURER PACKAGE INSERTS

Atripla: FDA. Atripla (efavirenz/emtricitabine/tenofovir disoproxil fumarate) tablets for oral use. 2006. https://www.accessdata.fda.gov/drugsatfda_docs/label/2015/021937s037lbl.pdf [accessed 2020 Mar 5].

Biktarvy: FDA. Biktarvy (bictegravir, emtricitabine, and tenofovir alafenamide) tablets, for oral use. 2018 Feb. https://www.accessdata.fda.gov/drugsatfda_docs/label/2018/210251s000lbl.pdf [accessed 2020 Mar 5].

Complera: FDA. Complera (emtricitabine/rilpivirine/tenofovir disoproxil fumarate) tablets, for oral use. 2013 Jan. https://www.accessdata.fda.gov/drugsatfda_docs/label/2013/202123s003lbl.pdf [accessed 2020 May 14].

Descovy: FDA. Descovy (emtricitabine and tenofovir alafenamide) tablets, for oral use. 2016 Apr. https://www.accessdata.fda.gov/drugsatfda_docs/label/2016/208215s000lbl.pdf [accessed 2020 Mar 5].

Delstrigo: FDA. Delstrigo (doravirine, lamivudine, and tenofovir disoproxil fumarate) tablets, for oral use. 2018 Aug. https://www.accessdata.fda.gov/drugsatfda_docs/label/2018/210807s000lbl.pdf [accessed 2020 Mar 5].

Dovato: FDA. Dovato (dolutegravir and lamivudine) tablets, for oral use. 2019 Apr. https://www.accessdata.fda.gov/drugsatfda_docs/label/2019/211994s000lbl.pdf [accessed 2020 Mar 5].

Epzicom: FDA. Epzicom (abacavir sulfate and lamivudine) tablets for oral use. 2012 Mar. https://www.accessdata.fda.gov/drugsatfda_docs/label/2012/021652s015lbl.pdf [accessed 2020 Mar 5].

Evotaz: FDA. Evotaz (atazanavir and cobicistat) tablets, for oral use. 2015 Jan. https://www.accessdata.fda.gov/drugsatfda_docs/label/2015/206353s000lbl.pdf [accessed 2020 May 14].

Genvoya: FDA. Genvoya (elvitegravir, cobicistat, emtricitabine, and tenofovir alafenamide) tablets, for oral use. 2015 Nov. https://www.accessdata.fda.gov/drugsatfda_docs/label/2015/207561s000lbl.pdf [accessed 2020 Mar 5].

Isentress: FDA. Isentress (raltegravir) tablets for oral use. 2013 June. https://www.accessdata.fda.gov/drugsatfda_docs/label/2013/022145s029lbl.pdf [accessed 2020 May 14].

Juluca: FDA. Juluca (dolutegravir and rilpivirine) tablets, for oral use. 2017 Nov. https://www.accessdata.fda.gov/drugsatfda_docs/label/2017/210192s000lbl.pdf [accessed 2020 Mar 5].

Odefsey: FDA. Odefsey (emtricitabine, rilpivirine, and tenofovir alafenamide) tablets, for oral use. 2016 Mar. https://www.accessdata.fda.gov/drugsatfda_docs/label/2016/208351s000lbl.pdf [accessed 2020 Mar 5].

Reyataz: FDA. Reyataz (atazanavir) capsules, for oral use. 2016 Sept. https://www.accessdata.fda.gov/drugsatfda_docs/label/2016/021567s039,206352s004lbl.pdf [accessed 2020 May 14].

Stribild: FDA. Stribild (elvitegravir, cobicistat, emtricitabine, tenofovir disoproxil fumarate) tablets, for oral use. 2016 Sep. https://www.accessdata.fda.gov/drugsatfda_docs/label/2016/203100s024lbl.pdf [accessed 2020 Mar 5].

Symfi Lo: FDA. Symfi lo (efavirenz, lamivudine, and tenofovir disoproxil fumarate) tablets, for oral use. 2018 Feb. https://www.accessdata.fda.gov/drugsatfda_docs/label/2018/208255s000lbl.pdf [accessed 2020 Mar 5].

Symtuza: FDA. Symtuza (darunavir, cobicistat, emtricitabine, and tenofovir alafenamide) tablets, for oral use. 2018 Jul. https://www.accessdata.fda.gov/drugsatfda_docs/label/2018/210455s000lbl.pdf [accessed 2020 Mar 5].

Triumeq: FDA. Triumeq (abacavir, dolutegravir, and lamivudine) tablets, for oral use. 2017 Nov. https://www.accessdata.fda.gov/drugsatfda_docs/label/2017/205551s011lbl.pdf [accessed 2020 Mar 5].

Truvada: FDA. Truvada (emtricitabine/tenofovir disoproxil fumarate) tablets, for oral use. 2004. https://www.accessdata.fda.gov/drugsatfda_docs/label/2016/021752s047lbl.pdf [accessed 2020 Mar 5].

Tivicay: FDA. Tivicay (dolutegravir) tablets, for oral use. 2013. https://www.accessdata.fda.gov/drugsatfda_docs/label/2013/204790lbl.pdf [accessed 2020 Apr 13].

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Zhang H, Shao Y, Garner W, et al. The effect of hepatic or renal impairment on bictegravir pharmokinetics. 18th International Workshop on Clinical Pharmacology of Antiviral Therapy; 2017 Jun 14-17; Chicago, IL. https://www.natap.org/2017/Pharm/Pharm_31.htm