Antiretroviral Therapy (ART) Formulations and Ability to Manipulate for Enteral Tube Administration

Background:

- ART is highly efficacious; however, interruptions in therapy may lead to drug resistance, viral rebound, and disease progression
    - Adherence to ART for people living with HIV (PLWH) is key to long-term success of treatment and reduction of disease-associated morbidity and mortality
- PLWH may have chronic comorbid and/or acute conditions which affect their ability to swallow medications
    - Adherence to ART can be severely hindered by dysphagia due to their inability to swallow tablets, capsules, or other oral formulations of medications
- There are limited options for ART when treating patients with swallowing disorders; thus, it is beneficial to know the ability to manipulate ART for enteral tube administration
    - If a patient's ART cannot be safely manipulated for enteral tube administration, it may be necessary to adjust ART regimen while unable to swallow

General Recommendations for Adjusting ART in Setting of Inability to Take PO Medications

- ART should be continued in PLWH who must take their ART via enteral tube
- Continue patient's ART if it can safely be manipulated for enteral tube administration (see Table 1)
- If a patient's ART cannot be safely manipulated for enteral tube administration:
    - Consult Infectious Diseases or HIV specialist
    - May consider utilizing a patient's ART regimen as a reference to substitute antiretrovirals (ARV) that can be manipulated for enteral tube administration
        - ARVs should be substituted within the same classes
        - Must consider if patient is virally suppressed on their current ART regimen, resistance, potential drug-drug interactions, and other patient specific factors
- If a patient is unable to take any medications enterally:
    - Consult Infectious Diseases or HIV specialist
- Once patient can take PO medications, place patient back on original ART regimen unless otherwise advised by ID or HIV specialist

Table 1: Antiretroviral Therapy Formulations and Ability to Manipulate for Enteral Tube Administration

Antiretroviral Therapy	Formulation(s)	Crush/Open?	Comments
Fixed-dose Combinations			
Atripla (EFV/FTC/TDF)	Tablet	No	• Can administer as separate components, efavirenz (EFV) and emtricitabine/tenofovir fumarate (FTC/TDF) • EFV is NOT water soluble • Bioequivalence of tablet and compounded oral liquid formulation was NOT demonstrated
Biktarvy (B/FTC/TAF)	Tablet	Yes	• Crush/dissolve tablet in water (30-60 mL)

Antiretroviral Therapy	Formulation(s)	Crush/Open?	Comments
Complera (FTC/RPV/TDF)[NF]	Tablet	No	• Can administer as separate components, rilpivirine (RPV) and emtricitabine/tenofovir fumarate (FTC/TDF) • RPV is NOT soluble in water
Delstrigo (DOR/3TC/TDF)[NF]	Tablet	No	• Can administer as separate components, dorivirine (DOR) and emtricitabine/tenofovir fumarate (FTC/TDF)
Dovato (DTG/3TC)[NF]	Tablet	Yes	• Crush immediately before ingestion
Genvoya (EVG/c/FTC/TAF)	Tablet	Yes	• Dissolve or crush/mix in water (30-120 mL)
Juluca (DTG/RPV)[NF]	Tablet	Yes	• Crush immediately before ingestion
Odefsey (FTC/RPV/TAF)[NF]	Tablet	No	• Can administer as separate components, rilpivirine (RPV) and emtricitabine/ tenofovir alafenamide (FTC/TAF) • TAF is soluble in water • RPV is NOT soluble in water
Stribild (EVG/c/FTC/TDF)[NF]	Tablet	Yes	• Bioequivalence of whole and crushed tablet was demonstrated
Symfi (EFV/3TC/TDF)[NF]	Tablet	No	• Can administer as separate efavirenz (EFV) and emtricitabine/tenofovir fumarate (FTC/TDF) components • EFV is NOT water soluble
Symtuza (DRV/c/FTC/TAF)[NF]	Tablet	Yes	• Relative similar bioavailability of whole tablet compared to split or crushed tablet
Triumeq (ABC/DTG/3TC)	Tablet Tablet for oral suspension	Yes	• Crush immediately before ingestion
Cimduo (3TC/TDF)[NF]	Tablet	No	• No data to support manipulating for enteral tube administration
Combivir (3TC/ZDV)[NF]	Tablet	Yes	• Crush immediately before ingestion, may have bitter taste
Descovy (FTC/TAF)	Tablet	Yes	• FTC and TAF are soluble in water • Crushing has a bitter/burnt aromatic taste
Epzicom (ABC/3TC)	Tablet	Yes	
Evotaz (ATV/c)[NF]	Tablet	No	
Kaletra (LPV/RTV)[NF]	Tablet Solution	Yes	• Limited data to support manipulating for enteral tube administration
Prezcobix (DRV/c)	Tablet	Yes	
Temixys (3TC/TDF)[NF]	Tablet	No	• No data to support manipulating for enteral tube administration
Trizivir (ABC/3TC/AZT)[NF]	Tablet	Yes	
Truvada (FTC/TDF)	Tablet	Yes	
Nucleoside Reverse Transcriptase Inhibitors (NRTIs)			
Abacavir (ABC)	Tablet Solution	Yes	
Emtricitabine (FTC)	Capsule Solution	Yes	• Capsules may be opened and mixed with water
Lamivudine (3TC)	Tablet Solution	Yes	

Antiretroviral Therapy	Formulation(s)	Crush/Open?	Comments
Tenofovir alafenamide (TAF)[NF]	Tablet	Yes	• Limited data to support manipulating for enteral tube administration
Tenofovir disoproxil fumarate (TDF)	Tablet Powder	Yes	• Crushed tablets may have disagreeable taste
Zidovudine (AZT)	Capsule Tablet Syrup IV	Yes	• May open capsule and administer with water (5-10 mL)
Non-nucleoside Reverse Transcriptase Inhibitors (NNRTIs)			
Doravirine (DOR)[NF]	Tablet	Yes	• Crush/mix in water (60 mL) • Limited data to support manipulating for enteral tube administration
Efavirenz (EFV)	Capsule Tablet	Yes	• Tablet should NOT be broken • Capsules may be opened and mixed in Ora-Sweet/any aqueous vehicle (15 mL), may result in peppery taste
Etravirine (ETR)[NF]	Tablet	Yes	• Tablet may be dispersed in water (60 mL)
Nevirapine (NVP)[NF]	Tablet ER tablet Suspension	Yes	• Only ER tablet should NOT be crushed
Rilpivirine (RPV)[NF]	Tablet	Yes	• Crush immediately before ingestion
Protease Inhibitors (PIs)			
Atazanavir (ATV)	Capsule Powder packet	Yes	• Capsules may be opened and mixed with applesauce
Darunavir (DRV)[NF]	Tablet Suspension	Yes	• Crush/mix in water (20 mL)
Fosamprenavir (FPV)[NF]	Tablet Suspension	No	
Ritonavir (RTV)	Tablet Solution Powder packet	No	• Crushing tablets has resulted in decreased bioavailability of drug
Tipranavir (TPV)[NF]	Capsule Solution	No	
Integrase Strand Transfer Inhibitors (INSTIs)			
Cabotegravir (CAB)	Tablet IM	No	• If on Cabenuva (CAB/RPV IM), consult ID or HIV specialist
Dolutegravir (DTG)	Tablet Soluble tablet	Yes	• Crush/mix in water (20 mL)
Raltegravir (RAL)	Tablet Chewable tablet Powder packet	Yes	• Crush/mix in water (10-60 mL) • Limited data to support manipulating for enteral tube administration
CCR5 Antagonists			
Maraviroc (Selzentry) [NF]	Tablet Solution	Yes	• Crush/mix in water (60 mL) • Limited data to support manipulating for enteral tube administration

NF = non-formulary, ER = extended release, IV = intravenous, IM = intramuscular, SQ = subcutaneous, PK = pharmacokinetics

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