CHEMOTHERAPY REGIMENS:
FOR NON-HODGKIN'S LYMPHOMA, HODGKIN'S LYMPHOMA, ANAL CARCINOMA, & PROSTATE CANCER

	INSTIs		NNRTIs		PIs	RTI	
	• BICTEGRAVIR *(Biktarvy)* • DOLUTEGRAVIR *(Tivicay, Triumeq, Juluca)* • RALTEGRAVIR *(Isentress)*	• ELVITEGRAVIR/ COBICISTAT *(Stribild, Genvoya)*	• DORAVIRINE *(Pifeltro, Delstrigo)* • RILPIVIRINE *(Edurant, Complera, Odefsey, Juluca)*	• EFAVIRENZ *(Sustiva, Atripla)* • ETRAVIRINE *(Intelence)* • NEVIRAPINE *(Viramune)*	• ATAZANAVIR *(Reyataz/Norvir, Evotaz)* • DARUNAVIR *(Prezista/Norvir, Prezcobix, Symtuza)* • LOPINAVIR *(Kaletra)*	• TENOFOVIR ALAFENAMIDE, TAF *(Descovy, Biktarvy, Genvoya, Odefsey, Symtuza)*	• TENOFOVIR DISOPROXIL, TDF *(Viread,Truvada, Atripla, Complera, Delstrigo, Stribild)* •ABACAVIR *(Kivexa, Ziagen, Triumeq)*
FOR NON-HODGKIN'S LYMPHOMA							
• **CHOP, CHOP-R** (doxorubicin, vincristine, cyclophosphamide, prednisone ± rituximab)		↑ cyclophosphamide, doxorubicin, vincristine, prednisone and risk of toxicity		potential ↓ doxorubicin, vincristine, prednisone ; potential ↑ toxicity of cyclophosphamide	↑ cyclophosphamide, doxorubicin, vincristine, prednisone and risk of toxicity		
HODGKIN'S LYMPHOMA							
• **ABVD** (doxorubicin, vinblastine, bleomycin, dacarbazine)		↑ doxorubicin & vinblastine and risk of toxicity		potential ↓ doxorubicin & vinblastine	↑ doxorubicin & vinblastine and risk of toxicity		

	INSTIs		NNRTIs		PIs	RTI	
	• BICTEGRAVIR *(Biktarvy)* • DOLUTEGRAVIR *(Tivicay, Triumeq, Juluca)* • RALTEGRAVIR *(Isentress)*	• ELVITEGRAVIR/ COBICISTAT *(Stribild, Genvoya)*	• DORAVIRINE *(Pifeltro, Delstrigo)* • RILPIVIRINE *(Edurant, Complera, Odefsey, Juluca)*	• EFAVIRENZ *(Sustiva, Atripla)* • ETRAVIRINE *(Intelence)* • NEVIRAPINE *(Viramune)*	• ATAZANAVIR *(Reyataz/Norvir, Evotaz)* • DARUNAVIR *(Prezista/Norvir, Prezcobix, Symtuza)* • LOPINAVIR *(Kaletra)*	• TENOFOVIR ALAFENAMIDE, TAF *(Descovy, Biktarvy, Genvoya, Odefsey, Symtuza)*	• TENOFOVIR DISOPROXIL, TDF *(Viread,Truvada, Atripla, Complera, Delstrigo, Stribild)* •ABACAVIR *(Kivexa, Ziagen, Triumeq)*
ANAL CARCINOMA							
• 5-FU, mitomycin							Potential additive nephrotoxicity with TDF & mitomycin
• **FOLFOX** (oxaliplatin, leucovorin, 5-FU)							
PROSTATE CANCER							
• Abiraterone *(Zytiga)* • Denosumab *(Prolia)* • Lenalidomide *(Revlimid)*		Potential for ↑ abiraterone but likely not clinically significant			Potential for ↑ abiraterone but likely not clinically significant		
• Aplutamide *(Erleada)* • Enzalutamide *(Xtandi)*	↓ INSTI	↓ INSTI	↓ NNRTI	↓ NNRTI	↓ PI	↓ TAF	

Mechanism of Drug Interactions, Management and Monitoring

Class	Mechanism of Interaction	Main Interacting ARVs	Management	Monitoring
Cyclophosphamide	Transformation to inactive and possibly toxic metabolites CYP 3A4 Inhibition of CYP3A4 may increase drug availability for hydroxylation route thereby leading to increased efficacy and toxicity of cyclophosphamide. Cyp2B6 and CYP2C19 induction by ritonavir may possibly increased the active metabolite.	Ritonavir and cobicistat-boosted protease inhibitors and cobicistat-boosted elvitegravir	Adjust dose or consider replacing antiretrovirals with alternate agents	Close monitoring of side effects
	Induction of CYP 3A4 may increase toxic metabolite	Efavirenz, etravirine, nevirapine	Adjust dose or consider replacing antiretrovirals with alternate agents	Close monitoring of side effects (neurotoxicity)
Doxorubicin	Enzyme inhibitors may decrease reduction to free radicals via inhibition of cytochrome P450 which may decrease both antineoplastic and cytotoxic properties; however, they may also increase intracellular accumulation of doxorubicin via inhibition of PgP, which may enhance cytotoxic effects and/or systemic toxicity.	Ritonavir and cobicistat-boosted protease inhibitors and cobicistat-boosted elvitegravir	Adjust dose or consider replacing antiretrovirals with alternate agents	Close monitoring efficacy and side effects

Class	Mechanism of Interaction	Main Interacting ARVs	Management	Monitoring
Doxorubicin	Enzyme inductors may increased reduction to free radicals via induction of cytochrome P450 which may increased both antineoplastic and cytotoxic properties	Efavirenz, etravirine, nevirapine	Adjust dose or consider replacing antiretrovirals with alternate agents	Close monitoring efficacy and side effects
Enzalutamide, apalutamide	Strong inducers of CYP3A4, 2C19, UGT, Pgp, BCRP, OATP1B1.	May decrease concentrations of INSTIs, PIs, NNRTI, and TAF.	If possible, consider non-inducing antiandrogen agent. May consider using increased antiretroviral doses with therapeutic drug monitoring	Antiretroviral efficacy (viral load, CD4, antiretroviral concentrations if available)
Prednisone	Possible increased level with CYP3A4 inhibitors	Ritonavir and cobicistat-boosted protease inhibitors and cobicistat-boosted elvitegravir	Not well studied. Dose modification could be suggested	Close monitoring of corticosteroids side effects
Prednisone	Possible decreased level with CYP3A4 inducers	Efavirenz, etravirine, nevirapine	Not well studied. Dose modification could be suggested	None. Steroid efficacy?
Vinblastine, vincristine	Possible increased level with CYP3A4 inhibitors	Ritonavir and cobicistat-boosted protease inhibitors and cobicistat-boosted elvitegravir	Adjust dose or consider replacing antiretrovirals with alternate agents	Close monitoring of side effects (peripheral and autonomic neuropathy, myelosuppression)
Vinblastine, vincristine	Possible decreased level with CYP3A4 inducers	Efavirenz, etravirine, nevirapine	Adjust dose or consider replacing antiretrovirals with alternate agents	Close monitoring of efficacy

Legend:

- No dose adjustment required.
- Use combination with caution. Adjustment in drug dose or frequency or additional/more frequent monitoring may be required. May wish to consult with a pharmacist knowledgeable in HIV drug interactions.
- Contraindicated/avoid combination.

A MANAGEMENT TOOL FOR HIV DRUG-DRUG INTERACTIONS

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