Acute Leukemia Antibacterial and Antifungal Prophylaxis Guidelines

Disease	Treatment Phase	Prophylaxis	Recommended Agent	Start	Stop	Notes	References
AML	All phases	Antibacterial	Levofloxacin	ANC <500 and falling	ANC 200 and rising or APC 500 and rising		Levo decreases bacteremia in AML[1, 2]
		Antifungal	Voriconazole[+]	Same	Same	Azoles are **contraindicated** with etoposide or anthracyclines	Caspo decreases IFD in AML[3] Administer a mold-active antifungal in AML[4, 5]
Relapsed/ refractory ALL	Reinduction, other phases with anticipated neutropenia >7 days	Antibacterial	Levofloxacin	ANC <500 and falling	ANC 200 and rising or APC 500 and rising		Levo decreases bacteremia in relapsed ALL[1, 2]
		Antifungal	Voriconazole[+]	Same	Same		Administer a mold-active antifungal in relapsed ALL[4, 5]
Infant ALL	Induction Reinduction	Antibacterial	Cefepime	ANC <500 and falling	ANC >500	Cefepime dosing is 50 mg/kg q12 (max dose 2 gm)	Infants are at high risk of infection.
		Antifungal	Caspofungin	Same	APC >300 or ANC >500	Azoles are **contraindicated** with bortezomib	Infants are at high risk of infection.
Down Syndrome ALL	Induction High risk consolidation Delayed intensification	Antibacterial	Levofloxacin	ANC <500 and falling	ANC 200 and rising or APC 500 and rising		No data on prophylaxis specific to DS, but children with DS are at high risk for infection.[6]
		Antifungal	Voriconazole[+]	Same	Same		Same
Ph+ ALL	Induction High risk consolidation blocks Delayed intensification	Antibacterial	Levofloxacin	ANC <500 and falling	ANC 200 and rising or APC 500 and rising		No data specific to Ph+ ALL but this therapy is unusually intense.
		Antifungal	Caspofungin	Same	Same	Azoles are **contraindicated** with dasatinib and imatinib	Administer a mold-active antifungal in ALL at high risk for IFD[4, 5]
NCI HR B ALL/Lly*; T ALL/Lly	Induction High risk consolidation Delayed intensification	Antibacterial	Levofloxacin	ANC <500 and falling	ANC 200 and rising or APC 500 and rising		Levo decreases bacteremia in induction[7, 8]
		Antifungal	Voriconazole[+]	Same	Same	Azoles are **contraindicated** with bortezomib	Administer a mold-active antifungal in ALL at high risk for IFD[4, 5]

*In general, antifungal and antibacterial prophylaxis are not warranted in children with NCI SR B ALL/Lly do to the relatively low risk of bacteremia and invasive fungal infections in this population. IFD = invasive fungal disease. References: [1]Alexander, JAMA, 2018; [2]Lehrnbecher, CID, 2020; [3]Fisher, JAMA, 2019; [4]Lehrnbecher, JCO, 2020; [5]Groll, Lancet Oncol, 2021; [6]Rabin, JCO, 2023; [7]Sulis, PBC, 2018; [8]Wolf, CID, 2017

These guidelines are not intended for patients with a history of quinolone-resistant bacterial infection or a history of invasive fungal infection. For these patients, recommend ID consult to discuss prophylaxis options.
[+]Please see Azole Antifungal Therapeutic Drug Monitoring Guidance. Data does not support holding voriconazole around days of vincristine. For patients who require posaconazole and vincristine, please discuss with pharmacy given high risk of neurotoxicity when combined. Dose adjustment is required when azoles are administered with venetoclax.
Owner: Catherine Aftandilian, MD. Last updated: February 2024

CCT Antibacterial and Antifungal Prophylaxis Guidelines

Disease	Treatment Phase	Prophylaxis	Recommended Agent	Start	Stop	Notes	References
Leukemia CART	During periods of prolonged (≥7 days) neutropenia	Antibacterial	Levofloxacin	ANC <500 and falling	ANC 200 and rising or APC 500 and rising		Levo decreases bacteremia in relapsed ALL[1, 2] Consider prophylaxis post CART[3]
		Antifungal	Voriconazole[+]	Same	Same		Administer a mold-active antifungal in relapsed ALL[4, 5] Administer a mold-active antifungal for pts who receive toci or >3 days of steroids[3]
DIPG/DMG CART	Prolonged neutropenia (≥7 days)	Antibacterial	Levofloxacin	ANC <500 for ≥7 days	ANC 200 and rising or APC 500 and rising	Most GD2 patients will not experience prolonged neutropenia so should not require prophylaxis	Consider in patients with prolonged neutropenia[6]
	High dose steroids *or* prolonged neutropenia (≥7 days)	Antifungal	Voriconazole[+]	Steroids ≥3 days *or* ANC <500 for ≥7 days	Off steroids *and* ANC 200 and rising or APC 500 and rising	Due to prolonged taper, most GD2 patients can stop prophylaxis when steroids stop	Consider in patients with prolonged neutropenia or on high dose steroids[6]

There is minimal data specific to prophylaxis for patients after CART therapy. Much of these recommendations are extrapolated from patients with relapsed leukemia or patients receiving high dose steroids for other reasons.

IFD = invasive fungal disease

References: [1]Alexander, JAMA, 2018; [2]Lehrnbecher, CID, 2020; [3]Hill, Blood, 2020; [4]Lehrnbecher, JCO, 2020; [5]Groll, Lancet Oncol, 2021; [6]Hayden, Annals Oncol, 2022

These guidelines are not intended for patients with a history of quinolone-resistant bacterial infection or a history of invasive fungal infection. For these patients, recommend ID consult to discuss prophylaxis options.

[+]Please see Azole Antifungal Therapeutic Drug Monitoring Guidance. Data does not support holding voriconazole around days of vincristine. For patients who require posaconazole and vincristine, please discuss with pharmacy given high risk of neurotoxicity when combined. Dose adjustment is required when azoles are administered with venetoclax.

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