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Note: Consider Clinical Trials as treatment options for eligible patients. Referral to a center with both pediatric oncology and orthopedic surgery is essential.



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Approved by Executive Committee of the Medical Staff on 10/15/2024

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ADJUVANT TREATMENT



TKI = tyrosine kinase inhibitor

¹Not on MD Anderson formulary

² Surgery is the primary modality of local therapy

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¹With dexrazoxane for cardioprotection

² GCC should be initiated by the Primary Oncologist. If Primary Oncologist is unavailable, Primary Team/Attending Physician to initiate GCC discussion and notify Primary Oncologist. The Patient Representative and if indicated, the patient, should be informed of therapeutic and/or palliative options. GCC discussion should be consistent, timely, and re-evaluated as clinically indicated. The Advance Care Planning (ACP) note should be used to document GCC discussion. Refer to GCC home page (for internal use only).

³Not on MD Anderson formulary

⁴ Surgery is the primary modality of local therapy

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Total Years for Surveillance				Yr 1				Yr 2			Yr 3		Yr 4	Yr 5	Yr 10
Frequency of Surveillance by month	3	6	9	12	15	18	21	24	28	32	36	42	48	60	120
History and physical	х	х	х	х	X	x	x	х	х	X	x	x	x	х	x
Monitor and discuss with patient late effects of primary treatment	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CBC with differential	х	х	х	х		х		х		x			x	х	
Total protein, albumin, calcium, phosphorous, magnesium, glucose, AST, creatinine, total bilirubin, alkaline phosphatase, LDH	x	x	x	x		x		x		x			x	x	
X-ray of primary tumor	х	х	х	х	х	х	х	x	х	х	x	х	х	х	x
Pelvic primaries: MRI with and without contrast	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Whole body PET/CT <u>or</u> bone scan ¹		х		х		х		x			x				
CT chest with contrast ²	х	х	x	х	х	х	х	x	х	х	х	x	х	x	
ЕСНО				х				х			х		х	х	x
Audiogram ⁴				х				x			х			х	х
X-ray leg-length scanogram ⁵	x	х	х	х	х	x	х	x	х	x	x	x	x	x	x

Pediatric Osteosarcoma Surveillance

Note: Functional assessments post-limb salvage and cardiac surveillance should continue for life

¹PET/CT is strongly preferred in patients with metastatic disease, those who underwent surgery for resection of lung nodules, or at relapse

 2 May omit if concurrent with PET/CT. Can obtain a chest x-ray in Year 5 if no evidence of lung metastasis.

³Once at entry into long-term follow-up. If problems are detected, repeat yearly until stable. If there is evidence of progressive hearing loss, test more frequently as needed, until stable.

⁴Leg length x-ray scanogram evaluation of bilateral lower extremities for skeletally immature patients who received limb-salvage surgery with expandable prosthesis or underwent rotation plasty to monitor and manage limb length discrepancies. Followed by physical exam - may not need scanogram with every visit.

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SUGGESTED READINGS

- Bielack, S. S., Kempf-Bielack, B., Delling, G., Exner, G. U., Flege, S., Helmke, K., . . . Winkler, K. (2002). Prognostic factors in high-grade osteosarcoma of the extremities or trunk: An analysis of 1,702 patients treated on neoadjuvant cooperative osteosarcoma study group protocols. *Journal of Clinical Oncology*, *20*(3), 776-790. https://doi.org/10.1200/JCO.2002.20.3.776
- Children's Oncology Group. (2018). Long-term follow-up guidelines for survivors of childhood, adolescent and young adult cancers (Version 5). Retrieved from www.survivorshipguidelines.org
- Children's Oncology Group Protocols: CCG7921 and COG AOST 0331
- Daw, N. C., Billups, C. A., Rodriguez-Galindo, C., McCarville, M. B., Rao, B. N., Cain, A. M., . . . Meyer, W. H. (2006). Metastatic osteosarcoma: Results of two consecutive therapeutic trials at St. Jude Children's Research Hospital. *Cancer*, 106(2), 403-412. https://doi.org/10.1002/cncr.21626
- Goorin, A. M., Harris, M. B., Bernstein, M., Ferguson, W., Devidas, M., Siegal, G. P., . . . Grier, H. E. (2002). Phase II/III trial of etoposide and high-dose ifosfamide in newly diagnosed metastatic osteosarcoma: A pediatric oncology group trial. *Journal of Clinical Oncology*, 20(2), 426-433. https://doi.org/10.1200/JCO.2002.20.2.426
- Harris, M. B., Gieser, P., Goorin, A. M., Ayala, A., Shochat, S. J., Ferguson, W. S., . . . Link, M. P. (1998). Treatment of metastatic osteosarcoma at diagnosis: A pediatric oncology group study. *Journal of Clinical Oncology*, *16*(11), 3641-3648. https://doi.org/10.1200/JCO.1998.16.11.3641
- Italiano, A., Mir, O., Mathoulin-Pelissier, S., Penel, N., Piperno-Neumann, S., Bompas, E., . . . Blay, J. Y. (2020). Cabozantinib in patients with advanced Ewing sarcoma or osteosarcoma (CABONE): A multicentre, single-arm, phase 2 trial. *The Lancet Oncology*, 21(3), 446-455. https://doi.org/10.1016/S1470-2045(19)30825-3
- Kager, L., Zoubek, A., Pötschger, U., Kastner, U., Flege, S., Kempf-Bielack, B., . . . Bielack, S. S. (2003). Primary metastatic osteosarcoma: Presentation and outcome of patients treated on neoadjuvant cooperative osteosarcoma study group protocols. *Journal of Clinical Oncology, 21*(10), 2011-2018. https://doi.org/10.1200/JCO.2003.08.132
- Lewis, V. O. (2005). Limb salvage in the skeletally immature patient. Current Oncology Reports, 7(4), 285-292. https://doi.org/10.1007/s11912-005-0052-7
- Marina, N. M., Smeland, S., Bielack, S. S., Bernstein, M., Jovic, G., Krailo, M. D., . . . Whelan, J. S. (2016). Comparison of MAPIE versus MAP in patients with a poor response to preoperative chemotherapy for newly diagnosed high-grade osteosarcoma (EURAMOS-1): An open-label, international, randomised controlled trial. *The Lancet Oncology*, *17*(10), 1396-1408. https://doi.org/10.1016/S1470-2045(16)30214-5
- MD Anderson Institutional Policy #CLN1202 Advance Care Planning Policy Advance Care Planning (ACP) Conversation Workflow (ATT1925)
- Meyers, P. A., Schwartz, C. L., Krailo, M., Kleinerman, E. S., Betcher, D., Bernstein, M. L., ... Grier, H. (2005). Osteosarcoma: A randomized, prospective trial of the addition of ifosfamide and/or muramyl tripeptide to cisplatin, doxorubicin, and high-dose methotrexate. *Journal of Clinical Oncology*, 23(9), 2004-2011. https://doi.org/10.1200/JCO.2005.06.031

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SUGGESTED READINGS - continued

Meyers, P. A., Schwartz, C. L., Krailo, M. D., Healey, J. H., Bernstein, M. L., Betcher, D., . . . Grier, H. E. (2008). Osteosarcoma: The addition of muramyl tripeptide to chemotherapy improves overall survival-A report from the children's oncology group. *Journal of Clinical Oncology*, *26*(4), 633-638. https://doi.org/10.1200/JCO.2008.14.0095

National Comprehensive Cancer Network. (2024). Bone Cancer (NCCN Guideline Version 2.2024). Retrieved from https://www.nccn.org/professionals/physician_gls/pdf/bone.pdf

- Navid, F., Willert, J. R., McCarville, M. B., Furman, W., Watkins, A., Roberts, W., & Daw, N. C. (2008). Combination of gemcitabine and docetaxel in the treatment of children and young adults with refractory bone sarcoma. *Cancer*, 113(2), 419-425. https://doi.org/10.1002/cncr.23586
- Schwartz, C. L., Wexler, L. H., Devidas, M., Goorin, A., Grier, H., Meyers, P., & Bernstein, M. (2004). P9754 therapeutic intensification in non-metastatic osteosarcoma: A COG trial. *Journal of Clinical Oncology, 22*(Suppl 14), 8514. https://doi.org/10.1200/jco.2004.22.90140.8514
- Takeuchi, A., Lewis, V. O., Satcher, R. L., Moon, B. S., & Lin, P. P. (2014). What are the factors that affect survival and relapse after local recurrence of osteosarcoma? *Clinical Orthopaedics and Related Research*, 472(10), 3188-3195. https://doi.org/10.1007/s11999-014-3759-7

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DEVELOPMENT CREDITS

This practice algorithm is based on majority expert opinion of the Pediatric Osteosarcoma workgroup at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

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