

Evidence Discussion (ONC 18)

Initial Staging of non-muscle invasive bladder cancer (NMIBC)

A clinician should perform upper tract imaging as a component of the initial evaluation of a patient with bladder cancer, NCCN guidelines recommend CT urography CTU (CT of the abdomen and pelvis without and with IV contrast with excretory imaging), which is an imaging study that is tailored to improve visualization of both the upper and lower urinary tracts. CT scan can require a significant dose of ionizing radiation but the speed of image acquisition reduces the potential for motion artifact.

MR urography (MRU) may be appropriate, especially in patient with poor renal function or iodinated contrast allergy but with GFR >30 and no acute renal failure. MRU can be degraded due to motion artifact, but there is no ionizing radiation with this imaging modality.

CTU and MRU allow for comprehensive evaluation of the genitourinary tract, as well as assessment of retroperitoneal and pelvic lymph nodes.

Renal ultrasound (US) or CT without contrast may be utilized in conjunction with retrograde ureteropyelography in patients who cannot receive either iodinated or gadolinium-based contrast material. Ultrasound requires no ionizing radiation, but is not sufficient for evaluation alone, and must be combined with either retrograde ureteropyelography or ureteroscopy to completely evaluate the upper urinary tract (1).

NCCN guidelines states that chest imaging may not be necessary in the initial staging of non-invasive disease, as the risk of chest metastasis in patient with TA or T1 NMBIC is low (5)

Restaging/Recurrence

Patients presenting with findings suggesting a new primary or local recurrence of malignancy, should undergo metastatic evaluation including abdominal and pelvic imaging (1,2).

Surveillance of non-muscle invasive bladder cancer

In an asymptomatic patient with a history of low-risk NMIBC a clinician should not perform routine surveillance upper tract imaging, after the initial baseline (3).

For an intermediate or high-risk, patient, a clinician should consider performing surveillance upper tract imaging at one to two year intervals. Initially obtaining imaging at 12 months, then every 1-2 years up to 10 years (1,3). CT urography (CTU), MRU, or retrograde ureteropyelography with non-contrast CT or US or ureteroscopy with a non-contrast CT or US.

Routine chest imaging is not appropriate for patients with NMBIC unless an abnormality is identified with chest radiography (1).

Initial staging of non-metastatic muscle-invasive bladder cancer (MIBC)

Prior to muscle-invasive bladder cancer management, clinicians should perform a complete staging evaluation, including imaging of the chest and cross sectional imaging of the abdomen and pelvis with intravenous contrast if not contraindicated. Laboratory evaluation should include a comprehensive metabolic panel (complete blood count, liver function tests, alkaline phosphatase, and renal function) (2).

All patient with MIBC require imaging of the thorax. Chest radiography is an effective screening exam. Any abnormality should be followed up with a CT exam (7,8).

Surveillance of non-metastatic muscle-invasive bladder cancer

Clinicians should obtain chest imaging and cross-sectional imaging of the abdomen and pelvis with CT or magnetic resonance imaging (MRI) at 6-12 month intervals for 2-3 years and then may continue annually.

Initial staging of Urothelial Carcinoma of the prostate/primary carcinoma of the urethra

Initial work up is similar to non-metastatic muscle invasive bladder cancer and should include Chest CT, CTU or MRU (1).

Restaging/Recurrence

Patients presenting with findings suggesting a new primary or local recurrence of malignancy, should undergo metastatic evaluation including abdominal and pelvic imaging (1,2). The most common sites for metastasis include lymph nodes, bone, lung. Liver, and peritoneum (6).

Surveillance of urothelial carcinoma of the prostate/primary carcinoma of the urethra

Chest imaging with x-ray and/or CT

Imaging of abdomen with CT or MRI in high-risk T1 disease or patients with $\geq T2$ disease as well and MRI of the pelvis without and with IV contrast for local staging.

Follow up of low-risk T1 of $<T1$ disease

MRI or CT of pelvis with and without IV contrast

Follow up of high-risk T1 or $\geq T2$ disease

Chest imaging with x-ray and/or CT and imaging of abdomen and pelvis with MRI or CT with and without contrast.

1. Flaig, TW, Spiess PE, et al. National Comprehensive Cancer Network (NCCN) Guidelines Version 4.2024 – May 9, 2024. Bladder Cancer, available at: https://www.nccn.org/professionals/physician_gls/pdf/bladder.pdf Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines™) for Bladder Cancer 4.2024 – May 9, 2024. ©2024 National Comprehensive Cancer Network, Inc. All rights reserved.

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2. Holzbeierlein J, Bixler BR, Buckley DI, et al. Treatment of non-metastatic muscle-invasive bladder cancer: AUA/ASCO/SUO guideline (2017; amended 2020, 2024). J Urol. Published online April 25, 2024.
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3. Holzbeierlein J, Bixler BR, Buckley DI, et al. Diagnosis and treatment of non-muscle invasive bladder cancer: AUA/SUO guideline: 2024 amendment. J Urol.
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5. Juri H, Koyama M, Azuma H, Narumi Y. Are there any metastases to the chest in non-muscle-invasive bladder cancer patients on follow-up computed tomography? Int Urol Nephrol 2018;50:1771-78.
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8. Powles T, Bellmunt J, Comperat E, et al. Bladder cancer: ESMO Clinical Practice Guideline for diagnosis, treatment and follow-up. Ann Oncol 2022;33:244-58.