



# Screening for testicular cancer

**Author:** [Kenneth W Lin, MD, MPH](#)

**Section Editor:** [Joann G Elmore, MD, MPH](#)

**Deputy Editor:** [Jane Givens, MD, MSCE](#)

All topics are updated as new evidence becomes available and our [peer review process](#) is complete.

**Literature review current through:** Aug 2022. | **This topic last updated:** Oct 06, 2021.

---

## INTRODUCTION

Testicular cancer accounts for only about 1 percent of cancers in men overall but is the most common malignancy in males between the ages of 15 and 35 years. Most testicular cancers are germ cell tumors. The prognosis with treatment is generally excellent.

This topic will review issues related to screening for testicular cancer, including the lack of evidence and low likelihood that routine screening improves favorable outcomes for this disease.

The epidemiology, clinical manifestations, and treatment for testicular cancer are discussed separately.

- (See "[Epidemiology of and risk factors for testicular germ cell tumors](#)".)
- (See "[Clinical manifestations, diagnosis, and staging of testicular germ cell tumors](#)".)
- (See "[Overview of the treatment of testicular germ cell tumors](#)".)

---

## EPIDEMIOLOGY

Both the incidence and mortality rate of testicular cancer are low, with a lifetime risk of diagnosis of 0.4 percent and an age-adjusted yearly incidence of 6 cases per 100,000 [1,2]. Worldwide, there are approximately 72,000 new testicular cancer cases and 9000 deaths each year [3]. In the United States, there are an estimated 9470 new diagnoses and approximately 440 deaths each year [1]. The incidence of testicular cancer has been increasing over recent

decades for unknown reasons [1,2,4-6]. (See ["Epidemiology of and risk factors for testicular germ cell tumors"](#), section on 'Epidemiology' and ["Overview of the treatment of testicular germ cell tumors"](#).)

Testicular cancer is one of the most curable solid neoplasms, even when diagnosed at an advanced stage, with a low mortality rate of <0.3 deaths per 100,000 per year [7]. Localized tumors have a five-year survival rate above 99 percent, and even tumors with the poorest prognosis have five-year survival exceeding 72 percent [8]. More than 95 percent of men diagnosed with testicular cancer from 2011 to 2016 in the United States were alive five years later, and there are more than 277,000 testicular cancer survivors in the United States [1,2]. (See ["Epidemiology of and risk factors for testicular germ cell tumors"](#), section on 'Epidemiology' and ["Overview of the treatment of testicular germ cell tumors"](#).)

---

## RISK FACTORS

Certain risk factors are well recognized, and other factors are thought to potentially increase the risk for testicular cancer. These are presented here briefly and discussed in detail elsewhere. (See ["Epidemiology of and risk factors for testicular germ cell tumors"](#), section on 'Risk factors'.)

- **Known risk factors** – Factors known to increase the risk for testicular cancer include cryptorchidism (history of undescended testis), history of contralateral testicular cancer, family history of testicular cancer (which may also be related to environmental factors), testicular atrophy, and hypospadias. Testicular cancer occurs more frequently among White men than among men of other races.
- **Possible risk factors** – Other factors not conclusively shown to increase the risk for testicular cancer include environmental exposures, infertility, and testicular microlithiasis (microcalcification).
- **Not a risk factor** – Vasectomy has **not** been shown to be a risk factor for developing testicular cancer.

---

## RATIONALE FOR NOT SCREENING ROUTINELY

We suggest NOT screening asymptomatic male adolescents or adults who do not have known risk factors for testicular cancer on the basis of uncertain, but likely limited benefits of screening and some likelihood of harms [9,10].

**Limited benefits** — In general, for screening to be beneficial, detection of an asymptomatic cancer at a preclinical stage needs to increase the potential for cure, minimize harms including treatment-related morbidity, and be reasonably cost-effective. The low incidence and high cure rate of testicular cancer make it unlikely that screening for testicular cancer would appreciably decrease the cancer mortality rate.

As detailed elsewhere, testicular cancer occurs relatively infrequently (see '[Epidemiology](#)' above). A primary care clinician doing routine examinations could expect to diagnose one patient with testicular cancer every 20 to 25 years [11].

Another factor in the decision whether to screen is the comparative morbidity and mortality between treatments initiated at early and later stages of disease. For testicular cancer, the cure rate is high even when diagnosed at an advanced stage of disease and two-thirds of tumors are Stage I at diagnosis, so the potential that screening would spare treatment-related morbidity or mortality associated with more advanced disease is low [1,7,12].

Furthermore, to screen effectively, there must be useful methods, and for testicular cancer, there are no screening tests proven to be useful, as discussed below.

**Limitations and potential harms of testicular examination** — Periodic palpation of the testes by the patient (self-examination) or clinician could lead to detection of testicular cancers before they cause noticeable symptoms. However, there are no studies of the sensitivity or specificity of clinician or self-examination for testicular cancer [10], so the utility of testicular examination for screening is unknown.

Harms of screening for testicular cancer with clinician or self-examination are likely minimal but could include false-positive results, anxiety, over-diagnosis, and adverse effects of subsequent diagnostic tests or procedures [13]. Opportunity costs (time and effort required by patients and the health system) of screening are also a consideration. A microsimulation model based on Dutch testicular cancer statistics projected that in a best-case scenario, annual self-examination from age 20 to 30 years would prevent fewer than five deaths from testicular cancer at the cost of 14,000 additional primary care and 2080 additional urology visits [14]. Systematic reviews have found no studies evaluating harms of screening with testicular examination [9,10].

**No role for screening with biomarkers** — There are no blood tests considered to be useful for screening asymptomatic men for testicular cancer. (See "[Serum tumor markers in testicular germ cell tumors](#)", section on '[Clinical applications](#)'.)

Serum tumor markers include alpha fetoprotein (AFP) and the beta subunit of human chorionic gonadotropin (beta-hCG), one or both of which are elevated in approximately 90 percent of men

with nonseminomatous testicular cancer, and lactate dehydrogenase (LDH) [2]. However, despite being useful in diagnosis, treatment, and surveillance of testicular cancer, these markers have insufficient sensitivity or specificity for screening [2,15]. (See "[Clinical manifestations, diagnosis, and staging of testicular germ cell tumors](#)", section on 'Serum tumor markers'.)

---

## SELECT INDICATIONS FOR TESTICULAR EXAMINATION

In selected clinical situations, including men with symptoms or signs suggestive of testicular cancer and men in a surveillance program subsequent to cancer treatment, clinician examination or patient self-examination may be warranted. (See "[Clinical manifestations, diagnosis, and staging of testicular germ cell tumors](#)", section on 'Testicular examination'.)

**Symptomatic men** — Clinicians and patients should be aware of common presenting symptoms of testicular cancer so that any suggestive symptoms can be evaluated.

Common presentations of localized testicular cancer include a mass (with or without pain) in the testicle or scrotum (with or without tenderness), testicular firmness, and scrotal heaviness. Metastatic disease may cause symptoms including gynecomastia, abdominal or neck mass, or gastrointestinal or respiratory complaints [16]. Detection of testicular cancer provides an opportunity for the patient to receive treatment that has a very high likelihood of being effective. (See "[Clinical manifestations, diagnosis, and staging of testicular germ cell tumors](#)", section on 'Clinical manifestations'.)

**Surveillance after germ cell tumors** — Testicular examination should be performed at each visit following treatment of germ cell tumors because of the higher incidence of contralateral testis cancer in men with unilateral germ cell tumors and of testis cancers in men with primary extragonadal germ cell tumors. Clinical follow-up for men treated for testicular cancer is described elsewhere. (See "[Posttreatment follow-up for men with testicular germ cell tumors](#)".)

**History of cryptorchidism** — Men with a history of cryptorchidism have a higher risk of testicular cancer than the general population, with the highest risk being among those who underwent orchiopexy after puberty or who have not had orchiopexy. Monthly testicular self-examination may be warranted for these men [17,18]. (See "[Undescended testes \(cryptorchidism\) in children: Management](#)", section on 'Testicular cancer'.)

The risk of testicular cancer in patients who have undergone orchiopexy prior to puberty may be incompletely defined because of the lack of longer-term data; the practice has only been recommended for the past two decades. However, for men who had surgical correction of

cryptorchidism prior to puberty, we do not suggest monthly self-examination, because the benefits and harms have not been well studied. Some other experts, including other UpToDate contributors, do suggest monthly self-examination [19]. (See '[Recommendations of others](#)' below and "[Undescended testes \(cryptorchidism\) in children: Management](#)", section on '[Long-term follow-up](#)'.)

---

## RECOMMENDATIONS OF OTHERS

Based on the low incidence of testicular cancer, the highly favorable treatment outcomes even in advanced disease, and potential harms associated with screening, many organizations recommend not screening asymptomatic males for testicular cancer; some organizations recommend that men with certain risk factors be screened with self-examination.

- The US Preventive Services Task Force (USPSTF) does not recommend screening for testicular cancer in asymptomatic adolescent or adult males [13].
- The American Academy of Family Physicians recommends against screening for testicular cancer in asymptomatic males [20].
- The American Academy of Pediatrics does not recommend screening for testicular cancer in asymptomatic males [21].
- The American Cancer Society (ACS) does not have a recommendation on regular self-examination by all men because there are no studies showing these exams reduce the death rate from testicular cancer. However, the ACS recommends that men with certain risk factors (eg, cryptorchidism, previous testicular cancer, or family history of testicular cancer) consider monthly self-examination [22].
- The European Association of Urology recommends that males do testicular self-examination if they have clinical risk factors (eg, family history of testicular cancer) [23].
- The American Urologic Association advises that patients who were previously cryptorchid should perform monthly testicular self-examination after puberty to potentially help find cancer early [19].

---

## SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "[Society guideline links: Testicular cancer](#)".)

## INFORMATION FOR PATIENTS

UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5<sup>th</sup> to 6<sup>th</sup> grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10<sup>th</sup> to 12<sup>th</sup> grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

- Basics topic (see "[Patient education: Varicocele \(The Basics\)](#)")

---

## SUMMARY AND RECOMMENDATIONS

- The incidence of testicular cancer is low and, although increasing over recent decades, accounts for only about 1 percent of cancers in men. Testicular germ cell tumors are one of the most curable solid neoplasms, with an overall cure rate greater than 90 percent. Even advanced tumors with the poorest prognosis have a five-year survival rate exceeding 72 percent. (See '[Introduction](#)' above and '[Epidemiology](#)' above and "[Epidemiology of and risk factors for testicular germ cell tumors](#)", section on '[Epidemiology](#)' and "[Overview of the treatment of testicular germ cell tumors](#)".)
- We suggest **not** routinely screening asymptomatic males (adolescents or adults) for testicular cancer with either self-examination or periodic clinical examination (**Grade 2C**). The low incidence and high cure rate of testicular cancer make it unlikely that screening for testicular cancer would appreciably decrease the cancer mortality rate. (See '[Rationale for not screening routinely](#)' above.)

Although periodic palpation of the testes may detect a testicular cancer before noticeable symptoms occur, there are no studies of the sensitivity or specificity of either the clinical or self-examination for testicular cancer, and no evidence has shown that routine screening for testicular cancer through periodic clinical examinations or self-examinations would improve health outcomes. (See '[Rationale for not screening routinely](#)' above.)

- Patients with a history of contralateral testicular cancer should do patient self-examination monthly and have clinician examination at periodic health-maintenance visits. It is reasonable also to advise men who have a history of cryptorchidism that is either uncorrected or was surgically corrected after puberty to perform monthly testicular self-examination. Some also advise this for men who had surgical correction prior to puberty. (See '[Select indications for testicular examination](#)' above and '[History of cryptorchidism](#)' above.)
- Clinicians and patients should be aware of common presenting symptoms of testicular cancer so they can be evaluated. (See '[Symptomatic men](#)' above and "[Clinical manifestations, diagnosis, and staging of testicular germ cell tumors](#)", section on '[Testicular examination](#)'.)

Use of UpToDate is subject to the [Terms of Use](#).

## REFERENCES

1. Surveillance, Epidemiology, and End Results Program. Cancer stat facts: Testicular cancer. National Cancer Institute. Available at: <https://seer.cancer.gov/statfacts/html/testis.html> (Accessed on October 04, 2021).
2. Stevenson SM, Lowrance WT. Epidemiology and Diagnosis of Testis Cancer. *Urol Clin North Am* 2015; 42:269.
3. Global Burden of Disease Cancer Collaboration, Fitzmaurice C, Allen C, et al. Global, Regional, and National Cancer Incidence, Mortality, Years of Life Lost, Years Lived With Disability, and Disability-Adjusted Life-years for 32 Cancer Groups, 1990 to 2015: A Systematic Analysis for the Global Burden of Disease Study. *JAMA Oncol* 2017; 3:524.
4. McGlynn KA, Devesa SS, Sigurdson AJ, et al. Trends in the incidence of testicular germ cell tumors in the United States. *Cancer* 2003; 97:63.
5. Townsend JS, Richardson LC, German RR. Incidence of testicular cancer in the United States, 1999-2004. *Am J Mens Health* 2010; 4:353.
6. Huyghe E, Matsuda T, Thonneau P. Increasing incidence of testicular cancer worldwide: a review. *J Urol* 2003; 170:5.
7. National Cancer Institute. Testicular cancer treatment (PDQ) summary: Health professional version. National Cancer Institute, Bethesda, MD, 2019. <https://www.cancer.gov/types/testicular/hp/testicular-treatment-pdq> (Accessed on December 05, 2019).

8. van Dijk MR, Steyerberg EW, Habbema JD. Survival of non-seminomatous germ cell cancer patients according to the IGCC classification: An update based on meta-analysis. *Eur J Cancer* 2006; 42:820.
9. Ilic D, Misso ML. Screening for testicular cancer. *Cochrane Database Syst Rev* 2011; :CD007853.
10. Lin K, Sharangpani R. Screening for testicular cancer: an evidence review for the U.S. Preventive Services Task Force. *Ann Intern Med* 2010; 153:396.
11. US Preventive Services Task Force. U.S. Preventive Services Task Force. In: *Guide to Clinical Preventive Services*, 2nd ed, US Department of Health and Human Services, Washington, DC 1996. p.153.
12. National Cancer Institute: PDQ® Testicular Cancer Screening. Bethesda, MD: National Cancer Institute. Date last modified 03/04/2016. Available at: . <http://www.cancer.gov/types/testicular/hp/testicular-screening-pdq> (Accessed on April 06, 2016).
13. U.S. Preventive Services Task Force. Screening for testicular cancer: U.S. Preventive Services Task Force reaffirmation recommendation statement. *Ann Intern Med* 2011; 154:483.
14. Heijnsdijk EAM, Supit SJ, Looijenga LHJ, de Koning HJ. Screening for cancers with a good prognosis: The case of testicular germ cell cancer. *Cancer Med* 2021; 10:2897.
15. Mir MC, Pavan N, Gonzalgo ML. Current Clinical Applications of Testicular Cancer Biomarkers. *Urol Clin North Am* 2016; 43:119.
16. Shaw J. Diagnosis and treatment of testicular cancer. *Am Fam Physician* 2008; 77:469.
17. Lip SZ, Murchison LE, Cullis PS, et al. A meta-analysis of the risk of boys with isolated cryptorchidism developing testicular cancer in later life. *Arch Dis Child* 2013; 98:20.
18. Chan E, Wayne C, Nasr A, FRCSC for Canadian Association of Pediatric Surgeon Evidence-Based Resource. Ideal timing of orchiopexy: a systematic review. *Pediatr Surg Int* 2014; 30:87.
19. Kolon TF, Herndon CD, Baker LA, et al. Evaluation and treatment of cryptorchidism: AUA guideline. *J Urol* 2014; 192:337.
20. American Academy of Family Physicians. Screening for testicular cancer. Available at: <http://www.aafp.org/family-physician/patient-care/clinical-recommendations/all-clinical-recommendations/cw-testicular-cancer.html> (Accessed on October 04, 2021).
21. Bright Futures/American Academy of Pediatrics. Recommendations for Preventive Pediatric Health Care - Periodicity Schedule. [www.aap.org/en-us/professional-resources/practice-support/Pages/PeriodicitySchedule.aspx](http://www.aap.org/en-us/professional-resources/practice-support/Pages/PeriodicitySchedule.aspx) (Accessed on February 25, 2020).



22. American Cancer Society: Can Testicular Cancer Be Found Early? <https://www.cancer.org/cancer/testicular-cancer/detection-diagnosis-staging/detection.html> (Accessed on June 13, 2017).

23. <http://uroweb.org/guideline/testicular-cancer/> (Accessed on June 08, 2017).

Topic 16286 Version 35.0

## Contributor Disclosures

**Kenneth W Lin, MD, MPH** No relevant financial relationship(s) with ineligible companies to disclose. **Joann G Elmore, MD, MPH** No relevant financial relationship(s) with ineligible companies to disclose. **Jane Givens, MD, MSCE** No relevant financial relationship(s) with ineligible companies to disclose.

Contributor disclosures are reviewed for conflicts of interest by the editorial group. When found, these are addressed by vetting through a multi-level review process, and through requirements for references to be provided to support the content. Appropriately referenced content is required of all authors and must conform to UpToDate standards of evidence.

[Conflict of interest policy](#)

→