Interpretation and Discussion of the Royal Australian College of General Practitioners' "Guidelines for Preventive Activities in General Practice" : Prevention of Bladder Cancer (Postprint)

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Date: 2026-04-20T14:21:42+00:00

Abstract

As the tenth most common cancer globally, bladder cancer in China is characterized by a high absolute number of incident cases, significant growth potential, and a heavy burden associated with an aging population, with smoking and occupational exposure serving as its core risk factors. Regarding the prevention of bladder cancer, the "Guidelines for Preventive Activities in General Practice" by the Royal Australian College of General Practitioners states that screening for bladder cancer in asymptomatic adults is not recommended due to insufficient evidence suggesting that the benefits of screening outweigh the harms. In light of China' s national conditions, emphasis can be placed on case-finding strategies. General practitioners should leverage the advantages of primary care by prioritizing primary prevention, strengthening tobacco control, occupational protection, and lifestyle interventions, and implementing diagnostic examinations for high-risk populations. In summary, constructing a comprehensive system characterized by prevention priority, targeted screening, and whole-process management is key to achieving efficient utilization of medical resources and alleviating the disease burden.

Full Text

Preamble

Interpretation and Discussion of the Royal Australian College of General Practitioners'"Guidelines for Preventive Activities in General Practice": Prevention of Bladder Cancer

Bladder cancer is a significant global health concern, characterized by high morbidity and a substantial burden on healthcare systems. To provide evidence-

based clinical guidance for primary care physicians, the Royal Australian College of General Practitioners (RACGP) has detailed specific recommendations for bladder cancer prevention within its "Guidelines for Preventive Activities in General Practice" (commonly known as the Red Book). This article interprets and discusses these guidelines, focusing on risk factors, screening strategies, and the role of general practitioners in early detection and prevention.

1. Epidemiology and Risk Factors

Bladder cancer is the most common malignancy of the urinary tract. Its development is closely linked to environmental exposures and lifestyle choices. According to the RACGP guidelines, the primary risk factors include:

- **Tobacco Smoking:** Smoking remains the single most significant risk factor for bladder cancer. Carcinogens in tobacco smoke are filtered by the kidneys and concentrated in the urine, leading to prolonged contact with the bladder urothelium.
- **Occupational Exposure:** Individuals working in industries involving aromatic amines, dyes, paints, leather, and rubber are at an increased risk.
- **Age and Gender:** The incidence of bladder cancer increases with age, and it is significantly more common in men than in women.
- **Chronic Irritation:** Long-term bladder stones, chronic urinary tract infections, and prolonged use of indwelling catheters are associated with an increased risk of squamous cell carcinoma of the bladder.

2. Screening Recommendations

The RACGP guidelines emphasize that there is currently no high-quality evidence to support routine population-based screening for bladder cancer in asymptomatic individuals.

2.1 Asymptomatic General Population For the general population without specific risk factors, the guidelines do not recommend screening using urinalysis (for microscopic hematuria) or urine cytology. Studies have shown that mass screening does not significantly reduce mortality rates and may lead to unnecessary invasive procedures, such as cystoscopy, and associated psychological distress.

2.2 High-Risk Groups While routine screening is not recommended for the general public, the guidelines suggest that clinicians should maintain a high index of suspicion for individuals in high-risk categories, particularly those with significant occupational exposure or heavy smoking histories. However, even for these groups, the evidence for a structured screening program remains insufficient to warrant a universal recommendation.

3. Clinical Presentation

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Interpretation and Discussion of Guidelines for Preventive Activities in General Practice: Bladder Cancer

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Abstract

Bladder cancer is the tenth most common cancer globally. In China, it is characterized by a high absolute number of cases, significant growth potential, and a heavy burden associated with an aging population. Smoking and occupational exposure are its core risk factors. Regarding the prevention of bladder cancer, the Royal Australian College of General Practitioners (RACGP) "Guidelines for Preventive Activities in General Practice" state that screening for bladder cancer in asymptomatic adults is not recommended because there is insufficient evidence to suggest that the benefits of screening outweigh the harms.

Given the specific national conditions of China, strategies should focus on case-finding. General practitioners (GPs) should leverage their strengths at the primary care level, prioritizing primary prevention by strengthening tobacco control, occupational protection, and lifestyle interventions, while implementing diagnostic examinations for high-risk groups. In summary, constructing a comprehensive system that prioritizes prevention, utilizes targeted screening, and ensures whole-process management is key to achieving efficient use of medical resources and alleviating the disease burden.

Keywords: Bladder cancer; Preventive health services; Guidelines for preventive activities in general practice; Interpretation and discussion; Screening; Diagnosis; Treatment

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Introduction

Bladder cancer represents a significant global health challenge, ranking as the tenth most frequently diagnosed cancer worldwide. Within the Chinese context, the epidemiological profile of bladder cancer is particularly concerning due to the high absolute volume of patients and the increasing incidence rates driven by a rapidly aging demographic. Understanding the primary risk factors—most notably tobacco use and prolonged occupational exposure to carcinogens—is essential for developing effective public health strategies.

Guidelines for Prevention and Screening

The Royal Australian College of General Practitioners (RACGP) provides critical insights into the management of bladder cancer within primary care through its "Guidelines for Preventive Activities in General Practice." A central tenet of these guidelines is the recommendation against routine bladder cancer screening for asymptomatic adults. This stance is rooted in the current lack of high-quality clinical evidence demonstrating that the benefits of early detection through mass screening (such as urinalysis for microhematuria) outweigh the potential harms, which include invasive follow-up procedures, overdiagnosis, and psychological distress.

Strategies for the Chinese Context

In light of China' s specific healthcare landscape and disease burden, the role of the general practitioner (GP) is paramount. Rather than pursuing universal screening, the focus should shift toward a "case-finding" strategy. GPs are uniquely positioned at the grassroots level to implement primary prevention measures. These include:

- **Tobacco Control:** Intensifying smoking cessation interventions, as tobacco use remains the single most significant modifiable risk factor for bladder cancer.
- **Occupational Protection:** Raising awareness and implementing protective measures for workers exposed to aromatic amines and other industrial chemicals.
- **Lifestyle Interventions:** Encouraging healthy dietary habits and adequate fluid intake to mitigate risk.
- **Targeted Diagnostic Evaluation:** Implementing rigorous diagnostic protocols for high-risk individuals, particularly those presenting with symptomatic triggers such as gross hematuria.

Conclusion

Addressing the challenge of bladder cancer in China requires a transition toward a comprehensive management model. By prioritizing primary prevention, utilizing targeted screening for high-risk populations, and ensuring continuity of care through whole-process management, the healthcare system can optimize resource allocation. Such an integrated approach is vital for reducing the overall disease burden and improving long-term patient outcomes in the community.

Abstract

As the world' s tenth most prevalent cancer, bladder cancer imposes a substantial burden in China, exacerbated by rapid demographic aging and high rates of smoking and occupational exposure. The 10th edition of the Australian Guidelines for Preventive Activities in General Practice does not recommend

bladder cancer screening for asymptomatic adults, citing insufficient evidence to determine the balance of benefits and harms. China should adopt a "case detection" approach rather than universal screening. Primary care practitioners are uniquely positioned to spearhead this transition by prioritizing primary prevention and lifestyle counseling. By focusing on high-risk cohorts and integrating early detection with standardized management, China can more effectively utilize healthcare resources and mitigate the long-term impact of the disease.

Keywords: Bladder cancer; Preventive health services; Guidelines for Preventive Activities in General Practice; Interpretation and discussion; Screening; Diagnosis; Therapy

Bladder cancer is the tenth most common cancer worldwide, with a prevalence in men that is three to four times higher than in women. The risk of developing the disease increases significantly with age, and the majority of cases occur in individuals aged 60 and older. Smoking remains one of the primary risk factors, with smokers exhibiting a prevalence rate three times higher than that of non-smokers. Due to the aging population, the incidence and prevalence of bladder cancer are expected to rise continuously. In addition to age, exposure to dyes and chemicals also increases the risk of the disease.

FAN Meixiang, YAN Yunyun, HUANG Yanyan. Interpretation and discussion of the Royal Australian College of General Practitioners' *Guidelines for Preventive Activities in General Practice*: Prevention of bladder cancer [J]. Chinese General Practice.

Chinese General Practice, 2026. [Epub ahead of print].

Beyond general practice and gender considerations, avoiding smoking and preventing occupational and environmental hazards remain critical prevention strategies that require sustained attention.

A central theme in primary care and general practice is the scientific and rational implementation of bladder cancer prevention activities. By interpreting and discussing the bladder cancer prevention guidelines from the Royal Australian College of General Practitioners' *Guidelines for Preventive Activities in General Practice* (commonly referred to as the "Red Book"), this article proposes research and practical recommendations for conducting bladder cancer prevention activities within China's primary healthcare and general practice services.

1 红皮书提出的膀胱癌预防活动建议

The Red Book's screening recommendations for bladder cancer state that screening asymptomatic adults is strongly discouraged. This is due to a lack of sufficient evidence to adequately weigh the potential benefits of bladder cancer screening against its associated harms.

This recommendation is based on the 2011 guidelines from the U.S. Preventive Services Task Force (USPSTF), which indicate that current evidence is insufficient to support the effectiveness of universal screening. Specifically, there is a lack of randomized controlled trials (RCTs) demonstrating that screening reduces bladder cancer incidence or mortality. Furthermore, there is inadequate evidence to prove that patients diagnosed through screening experience improved outcomes following treatment. Regarding potential harms, while direct evidence is limited, considerations must include the risk of overdiagnosis—such as the overtreatment of low-risk tumors—and the risks associated with invasive diagnostic procedures. Economic factors are also significant; the management of bladder cancer is costly, with disease recurrence and treatment complications serving as major expenditures. Consequently, the economic justification for screening must be carefully balanced against these costs.

2 膀胱癌预防活动建议的解读

Recommendations for bladder cancer prevention activities represent a new addition to this edition of the Red Book. In 2021, the age-standardized incidence rate of bladder cancer in Australia was 12 per 100,000, with rates of 21 per 100,000 for men and 5.3 per 100,000 for women. Australia is considered a country with a high incidence of bladder cancer, and the five-year survival rate for patients is 57%. During the 1980s, the incidence rate in Australia reached as high as 23.2 per 100,000 (with male incidence peaking at 40.9 per 100,000) before declining annually thereafter.

However, due to overall population growth, the absolute number of incident cases has shown an upward trend. Risk factors for bladder cancer include genetic factors, smoking, occupational exposure (aluminum production, rubber manufacturing, painting, dyes, firefighting, etc.), environmental exposure (X-rays, gamma rays, arsenic), persistent chronic infections, medications (such as cyclophosphamide), schistosomiasis infection, and opium use. Australia' s primary strategy for preventing bladder cancer focuses on reducing these risk factors: (1) Smoking cessation, as smoking is the leading cause of bladder cancer and quitting significantly reduces risk; (2) Maintaining occupational health, particularly for painters, firefighters, and hairdressers, by avoiding workplace exposure to hazardous chemicals such as dyes, paints, and rubber; (3) Maintaining a healthy lifestyle, including weight control and increased physical exercise; and (4) Controlling infections as a tertiary prevention measure, specifically treating chronic bladder infections and schistosomiasis. Furthermore, clinicians must remain vigilant regarding risk factors such as age, sex, family history, and medication history (e.g., pioglitazone, cyclophosphamide). From both clinical and public health perspectives, public awareness of prevention should be enhanced through individual patient education and community-wide health initiatives.

Australia does not implement a national bladder cancer screening program. Research evidence suggests that universal screening of asymptomatic individuals does not yield benefits that clearly outweigh the harms; specifically, it does not

reduce mortality rates. Bladder cancer screening methods (particularly hematuria testing) exhibit high false-positive and false-negative rates, resulting in poor diagnostic accuracy. Moreover, invasive procedures such as cystoscopy carry risks associated with subsequent surgical interventions. Bladder cancer screening may lead to overdiagnosis and overtreatment, as many diagnosed cases are low-grade and slow-growing tumors that are not life-threatening; unnecessary treatment leads to a waste of resources and adverse outcomes. The recommendation against universal screening does not, however, negate the importance of case-finding. Distinct from screening, case-finding involves clinical diagnostic examinations targeted at symptomatic high-risk groups. The presence of hematuria in high-risk individuals (such as heavy smokers or those with occupational exposure to hazardous chemicals) is an indication to initiate diagnostic testing. Additionally, diagnostic examinations should be conducted as appropriate for patients with specific syndromes (e.g., Lynch syndrome), certain congenital defects, or those requiring long-term urinary catheterization.

3 全科医学膀胱癌预防活动的讨论

[6, 7]. In 2022, the age-standardized incidence rate of bladder cancer in China was 3.44 per 100,000, with rates of 5.67 per 100,000 for men and 1.39 per 100,000 for women. During the same period, the age-standardized incidence rate in Australia was 12.4 per 100,000, including 20.7 per 100,000 for men and 5.4 per 100,000 for women. While the incidence rate in China is significantly lower than in Australia, China ranks first globally in the absolute number of bladder cancer cases due to its large population base. According to the latest data, there were approximately 92,900 new cases of bladder cancer in China in 2022, including 73,200 cases in men, with an estimated 41,400 deaths. The incidence rate ranks among the highest for all malignant tumors in men. Age-specific incidence and mortality rates rise rapidly starting at the 45-year and 55-year age groups, respectively, peaking in the 80–84 and 85+ age groups. The incidence of bladder cancer in men is 3.8 times that in women, and the mortality rate is 4.0 times higher. The incidence rate in urban areas is 1.4 times that of rural areas. Geographically, the incidence in the western region is similar to that in the central region, both of which are lower than in the eastern region; the regional distribution of mortality mirrors these incidence patterns. Furthermore, inter-regional differences exist globally, with incidence rates in Asia (excluding Japan) being lower than those in Europe, North America, and Oceania. The management cost of bladder cancer is high, with disease recurrence and treatment complications being the primary expenditures. Studies have shown that early diagnosis and treatment can significantly increase the detection rate of early-stage lesions, improve patient prognosis and quality of life, and effectively reduce disease-related costs. The prognosis of bladder cancer is closely related to the stage at diagnosis, with a vast disparity in survival rates between early and late-stage patients. Non-muscle-invasive bladder cancer (NMIBC) accounts for approximately 75% of cases, while the remainder are muscle-invasive bladder cancer (MIBC). The 5-year survival rate for NMIBC can reach 90%, whereas it is

approximately 50% for MIBC and only 5% for patients with distant metastasis.

Despite the favorable prognosis for early-stage patients, the 5-year recurrence rate for NMIBC after surgery is as high as 24%, and some cases may progress to muscle-invasive disease. Even after radical surgery, 50% of patients with MIBC still develop metastases, which carry an even poorer prognosis.

Research in *Chinese General Practice* indicates that early diagnosis can effectively reduce the incidence of muscle-invasive and metastatic bladder cancer. Bladder cancer is one of the major malignant tumors threatening the lives and health of the Chinese people. Implementing early diagnosis and treatment can significantly improve the detection rate of early lesions, enhance prognosis and quality of life, and effectively lower disease costs. Determining how to effectively reduce the burden of bladder cancer is a major public health issue that requires urgent resolution.

As one of the malignant tumors with the highest management costs globally, the economic benefits of bladder cancer screening strategies must be comprehensively evaluated in the context of national economic levels and disease burden. Even with a high incidence rate, Australia does not recommend universal screening—a decision based on a prudent balance between medical resource efficiency and patient benefit. Although China's incidence rate is lower, the absolute number of cases is high, the disease burden is heavy, and there is significant growth potential. Therefore, China needs to make differentiated strategic choices based on its own national conditions. Implementing universal screening in the general population may lead to inefficient use or even waste of medical resources. Studies suggest that universal screening in low-incidence areas not only fails to yield significant health benefits but may also increase medical expenditures due to overdiagnosis, repeated examinations, and complications from subsequent treatments. Among those who test positive for hematuria, only a small fraction are ultimately diagnosed with bladder cancer; these individuals may suffer unnecessary anxiety, the pain of invasive procedures (such as cystoscopic biopsy), and potential complications (infection, bleeding, or bladder perforation). Since bladder cancer is often a superficial tumor, some cases may never progress during a patient' s lifetime. Detecting these tumors through screening may lead to unnecessary treatments (such as transurethral resection or total cystectomy), subjecting patients to surgical risks and a decreased quality of life. Once a "suspected" result is found, even if the final diagnosis is negative, the individual may remain in a state of long-term worry, affecting their normal life. The high management cost of bladder cancer stems primarily from recurrence and complications. Reducing the intensity of unnecessary follow-up examinations and diagnostic interventions is key to cost control. This suggests that China should avoid a "one-size-fits-all"screening model and instead explore case-finding strategies. The distribution of risk factors for bladder cancer in China shows clear clustering characteristics. Smoking is the most significant risk factor, with an attributable risk of approximately 50% [18-20]. There is ample evidence that the duration and intensity of smoking are positively correlated with the risk

of bladder cancer. Meta-analyses show that the relative risk (RR) for current smokers compared to never-smokers is 3.47, while for former smokers, it is 2.04. The lower incidence among former smokers suggests that smoking cessation can reduce the occurrence of bladder cancer. Following the implementation of targeted interventions, tobacco control measures have shown the most significant effect on reducing the burden of urinary system cancers, primarily affecting male bladder cancer (with a decrease of 45.8%). Occupational exposure is another critical risk factor, accounting for 5%–6% of the total attributable risk. Additionally, factors such as chronic cystitis, bladder stones, long-term urinary retention, and insufficient water intake also cluster in specific populations. Based on these characteristics, China can construct a comprehensive prevention and control system centered on primary prevention and supplemented by secondary prevention.

Strengthening tobacco control is the top priority. The long-term high smoking rate among Chinese men aligns closely with the fact that the incidence of bladder cancer in men is 3 to 4 times that in women. Through comprehensive measures such as increasing tobacco taxes, expanding anti-smoking publicity, providing cessation support, and advocating for smoke-free environments, it is expected that the risk of bladder cancer can be significantly reduced over the next 10 to 20 years. General practitioners (GPs) should incorporate smoking history inquiries into routine clinical workflows, leveraging their high level of patient trust and close contact to provide systematic smoking cessation interventions. Diverse channels—such as community lectures, family doctor contract services, and WeChat official account posts—should be used to popularize knowledge about the link between smoking and bladder cancer risk, with targeted outreach for middle-aged and elderly men. Protection against occupational hazards needs targeted strengthening. For industries such as dyes, chemicals, and rubber, occupational protection standards must be strictly enforced, and regular occupational health check-ups should be conducted. As a bridge between patients and the occupational health system, GPs can identify risks during occupational history taking and educate patients on protection. Establishing referral channels between GPs and occupational disease prevention institutions allows GPs to provide initial education and refer high-risk individuals for professional health assessments. Special files should be established for patients with a history of occupational exposure, with regular basic examinations such as urinalysis and urinary system ultrasound to facilitate early case detection.

Simultaneously, environmental governance should be strengthened to reduce the emission of carcinogens in industrial wastewater and exhaust gases. Lifestyle interventions should focus on increasing water intake and avoiding urinary retention. Targeted health guidance and personalized hydration plans should be provided to individuals with insufficient water intake or chronic urinary retention. Relying on family doctor contract services, specific interventions for "developing healthy urination habits" can be carried out through follow-ups and community health corners to help high-risk groups establish habits of regular hydration and timely urination.

For asymptomatic populations, there is currently a lack of strong clinical evidence to support universal bladder cancer screening. Based on the epidemiological characteristics of bladder cancer in China, the focus should be on case-finding strategies. Diagnostic investigations should be conducted for individuals with the following risk factors: (1) a long-term history of smoking; (2) occupational exposure to paints, dyes, chemicals, metals, or petroleum products; (3) a history of bladder cancer in first-degree relatives; (4) low water intake, frequent hair dyeing, or a habit of retaining urine; (5) a history of pelvic radiation therapy; (6) prior use of antineoplastic drugs such as cyclophosphamide or ifosfamide; (7) prior consumption of Chinese herbal medicines containing aristolochic acid, such as *Radix Aristolochiae Fangchi*, *Radix Aristolochiae*, *Caulis Aristolochiae Manshuriensis*, *Fructus Aristolochiae*, *Herba Aristolochiae Mollissimae*, and *Radix Aristolochiae Tuberosae*; (8) consumption of water with high arsenic content, such as groundwater in certain areas; and (9) a history of recurrent acute or chronic bladder infections, including those caused by schistosomiasis. The choice of technology is crucial for the economic feasibility and accessibility of case finding. Promoting non-invasive and efficient detection technologies is core to lowering the threshold for case identification. Given the reality of medical costs in China, urinalysis combined with ultrasound can be used as a primary screening tool. This low-cost approach identifies high-risk individuals, with cystoscopy reserved for positive cases to assist in diagnosis, thereby reducing unnecessary invasive procedures and optimizing resource allocation. Ultrasound is a commonly used method for diagnosing bladder cancer due to its non-invasive, inexpensive, and simple nature. For bladder tumors that protrude from the mucosa and have a diameter >0.5 cm, the detection rate of ultrasound exceeds 90%. The sensitivity of transabdominal ultrasound for diagnosing bladder cancer ranges from 63% to 98%, with a specificity of 99%. There is still significant room for improvement in the early diagnosis rate of bladder cancer in China. Increasing public awareness of hematuria symptoms is vital; painless gross hematuria is the most common and typical symptom, serving as the initial symptom in 80%–90% of patients. Through media publicity and community education, reinforcing health concepts related to bladder cancer

in *Chinese General Practice* is expected to significantly improve early diagnosis rates and patient outcomes.

Population aging is likely to remain a major social characteristic of China for a long time to come. China is one of the countries with the fastest-growing aging populations in the world. Even if the population size remains stable or declines, the trend of an increasing cancer burden in China will likely persist as aging intensifies. Therefore, cancer prevention activities must be integrated into healthy aging strategies, and multi-sectoral cooperation should be strengthened in policy-making. Given the massive population size, the potential benefits and harms of screening, and the capacity of medical services, it is difficult for China to provide a "one-size-fits-all" cancer screening service across every province and county. Prevention and control strategies must be based on local epidemiological characteristics and medical resource constraints, utilizing cost-benefit

analyses rather than simply copying the experiences of other countries. It is recommended that bladder cancer prevention and control adhere to the principles of "prevention first, targeted screening, standardized diagnosis and treatment, and whole-process management." In resource-limited settings, priority should be given to primary prevention measures with the highest returns, such as tobacco control, occupational protection, and health education. For secondary prevention, the focus should be on high-risk groups through precision case finding. Regarding clinical care, standardized treatment should be promoted to improve the capacity of primary medical institutions. In summary, the economic benefit of diagnostic examinations for bladder cancer depends on accurately targeting the population and optimizing technical pathways. The core value of learning from the Australian bladder cancer screening guidelines lies in providing a systematic reference for China to formulate scientific, efficient, and sustainable case-finding strategies. This includes comprehensive lessons in scientific decision-making, resource allocation, and patient education, helping China build a more targeted, effective, and sustainable bladder cancer prevention and control system.

Author Contributions: Fan Meixiang was responsible for drafting the initial manuscript and final formatting; Yan Yunyun was responsible for organizing the references; Huang Yanyan was responsible for overall guidance, final version approval, and takes responsibility for the paper.

The authors declare no conflicts of interest.

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Analysis of the Current Status and Trends of Bladder Cancer Incidence and Mortality in China

Abstract

Objective: To analyze the incidence and mortality of bladder cancer in China in 2015 and the trends from 2000 to 2015, providing a scientific basis for the prevention and control of bladder cancer.

Methods: Data on bladder cancer incidence and mortality were collected from the National Cancer Registry of China. The incidence and mortality rates for bladder cancer in 2015 were estimated based on data from 368 cancer registries that met the quality control standards. The standardized rates were calculated using the 2000 Chinese census population and the Segi' s world standard population. Joinpoint regression analysis was used to calculate the annual percentage change (APC) to analyze the trends in incidence and mortality from 2000 to 2015.

Results: In 2015, the estimated number of new bladder cancer cases in China was approximately 80,500, with an incidence rate of 5.85/100,000. The age-standardized incidence rate by Chinese standard population (ASIRC) was 3.55/100,000, and the age-standardized incidence rate by world standard population (ASIRW) was 3.50/100,000. The incidence rate was higher in males (9.17/100,000) than in females (2.39/100,000), and higher in urban areas (6.81/100,000) than in rural areas (4.56/100,000). The estimated number of bladder cancer deaths in 2015 was 32,900, with a mortality rate of 2.39/100,000. The age-standardized mortality rate by Chinese standard population (ASMRC) was 1.31/100,000, and the age-standardized mortality rate by world standard population (ASMRW) was 1.30/100,000. From 2000 to 2015, the ASIRC of bladder cancer in China showed an upward trend (APC = 1.3%,

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1 Introduction

Bladder cancer is one of the most common malignant tumors of the urinary system. According to the 2022 global cancer statistics released by the International Agency for Research on Cancer (IARC), there were approximately 614,000 new cases and 220,000 deaths from bladder cancer worldwide. In China, the incidence and mortality rates of bladder cancer have shown an upward trend in recent years. Data from the National Cancer Center of China indicates that in 2022, there were approximately 92,900 new cases and 41,400 deaths from bladder cancer in China, ranking it as the most common malignant tumor of the urinary system.

Bladder cancer is characterized by high heterogeneity and a high recurrence rate. Approximately 75% of newly diagnosed patients have non-muscle-invasive bladder cancer (NMIBC), while the remaining 25% have muscle-invasive bladder cancer (MIBC) or metastatic disease. Although the prognosis for NMIBC is relatively good, the recurrence rate remains as high as 50% to 70%, and approximately 10% to 20% of cases will progress to MIBC. Once the disease progresses to the muscle-invasive or metastatic stage, the 5-year survival rate drops significantly. Therefore, early diagnosis and standardized early treatment are crucial for improving the prognosis of bladder cancer patients and reducing the socioeconomic burden.

In recent years, with the continuous advancement of diagnostic technologies—such as liquid biopsy, multimodal imaging, and artificial intelligence—and the emergence of new treatment modalities—including novel intravesical instillations, antibody-drug conjugates (ADCs), and immunotherapy—the management of bladder cancer has entered a new era. To further standardize the clinical practice of early diagnosis and treatment of bladder cancer in China, the Chinese Urological Oncology Group (CUOG) organized domestic

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Note: Figure translations are in progress. See original paper for figures.