The Royal College of Pathologists
Pathology: the science behind the cure

The Royal College of Pathologists' response to the Men's Health Strategy for England: call for evidence July 2025

Improving Men's Health in Prostate Cancer: A Histopathological Perspective

Prostate cancer remains one of the most common cancers affecting men globally, with significant variations in incidence and mortality. In the UK alone, over 52,000 men are diagnosed each year, making it the most commonly diagnosed male cancer. From a histopathological point of view, addressing this disease more effectively requires a balanced approach: increasing early and accurate diagnosis, improving treatment stratification, and crucially, avoiding the harms of overdiagnosis and the associated strain on pathology services.

The ethnic differences in prostate cancer mortality and morbidity are also a concern with a higher rate of diagnosis and high grade disease in black men.

The Histopathological Role in Diagnosis and Management

Histopathology is central to the diagnosis and grading of prostate cancer. Following a prostate biopsy—often triggered by raised PSA (Prostate-Specific Antigen) levels or abnormal digital rectal examination—pathologists assess the tissue, assign Gleason scores, and determine prognostic grade groups. These grades guide treatment, from active surveillance to radical intervention.

Not all prostate cancers behave in a predictable manner. Many are indolent and would not cause clinical harm during a man's lifetime. Early diagnosis may not alter disease course (the lag time) and thus men may suffer unnecessary harm in terms of earlier surgery and psychological harm from the knowledge of a cancer diagnosis.

Histopathology also has a pivotal role in distinguishing between clinically significant and insignificant disease.

Challenges of Overdiagnosis and Overtreatment

Overdiagnosis is a critical issue. PSA testing, while simple and accessible, lacks specificity. It detects many slow-growing tumours that would never progress to symptomatic or lethal disease. As a result, many men undergo biopsies and even radical treatments that may have long-term side effects—such as incontinence and impotence—without survival benefit.

Autopsy studies suggest that incidental prostate cancer is found in up to 70% of men over 80, yet most of these men die with, not from, the disease (Sakr et al., 1996). Thus, any public health strategy to reduce mortality must avoid increasing detection of these indolent cases.

Stratified Screening and Risk-Based Approaches

Current discussions around prostate cancer screening in Europe and the UK centre on risk-stratified approaches. Large-scale studies, such as the European Randomized Study of Screening for Prostate Cancer (ERSPC), have shown that PSA screening can reduce prostate cancer mortality by around 20%, but at the cost of high overdiagnosis and overtreatment (Schröder et al., 2012).

Histopathology can support better stratification by integrating emerging diagnostic tools:

- MRI-targeted biopsies, rather than random systematic sampling, are improving diagnostic yield for significant cancer and reducing unnecessary biopsies.
- Molecular biomarkers and genomic classifiers (e.g., Decipher, Oncotype DX) may help predict tumour behaviour and guide active surveillance versus intervention.

Implementing these tools at scale, however, introduces workload and training demands on pathology departments.

Pathology Workload and System Pressures

The rise in prostate biopsies, especially with the introduction of pre-biopsy MRI and fusion-targeted biopsies, has increased the complexity and volume of cases that pathologists

face. A 12-core biopsy might now include targeted cores, each of which requires detailed mapping and annotation, raising reporting time and the risk of variability.

A 2022 Royal College of Pathologists workforce census reported a severe shortage of histopathologists, with nearly one in three posts unfilled and over half of current consultants due to retire within a decade. Simultaneously, prostate cancer incidence continues to increase, and the push for early detection intensifies.

Digital pathology and AI solutions offer some promise here. AI tools trained to detect and grade prostate cancer are being piloted and validated, including solutions like Paige Prostate and Ibex, which have demonstrated non-inferiority to human pathologists in detecting malignancy and grading. But adoption is still slow, and regulatory frameworks and trust remain barriers.

Improving Mortality Without Overdiagnosis

To truly improve men's health from a histopathological standpoint without fuelling overdiagnosis:

- Implement MRI-first diagnostic pathways, ensuring biopsies are only taken when imaging suggests clinically significant disease.
- Focus screening efforts on high-risk groups, such as Black men and those with family history, rather than blanket screening.
- Invest in training and retaining histopathologists, and expand the use of digital pathology to reduce bottlenecks.
- Use pathology data to refine prognostic models, incorporating histological, molecular, and imaging features to personalise treatment.
- Promote active surveillance for low-risk disease, relying on clear histopathological criteria and regular monitoring rather than immediate treatment.
- Encourage trials such as TRANSFORM to examine the utility of these newer techniques rather than blanket adoption.

Conclusion

Improving prostate cancer outcomes without triggering a wave of overdiagnosis requires nuanced use of histopathology. Pathologists are vital not only for diagnosis but for guiding risk-stratified management. Their workload must be respected and supported with staffing, technology, and training. A future of smarter screening, better biopsy strategies, and AI-augmented diagnosis holds promise—if implemented with care.

Key References

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About the Royal College of Pathologists

The Royal College of Pathologists is a professional membership organisation with more than 11,000 fellows, affiliates and trainees, of which 23% are based outside of the UK. We are committed to setting and maintaining professional standards and promoting excellence in the teaching and practice of pathology, for the benefit of patients.

Our members include medically and veterinary qualified pathologists and clinical scientists in 17 different specialties, including cellular pathology, haematology, clinical biochemistry, medical microbiology and veterinary pathology.

The College works with pathologists at every stage of their career. We set curricula, organise training and run exams, publish clinical guidelines and best practice recommendations and provide continuing professional development. We engage a wide range of stakeholders to improve awareness and understanding of pathology and the vital role it plays in everybody's healthcare. Working with members, we run programmes to inspire the next generation to study science and join the profession.