

A SYLLABUS FOR UROLOGY

SAC in Urology

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**This document is active only until 2005 or unless another is produced
beforehand.**

INTRODUCTION

The syllabus for urology is - urology. The Intercollegiate Speciality Examination is part of the preparation for consultant practice, and there is no syllabus for urology outpatients. The syllabus, as written, should be interpreted in this light. Its aim is to state explicitly what a candidate would be expected to know and what an examiner might ask in the Intercollegiate Speciality examination, emphasising particularly those subjects of which a fairly comprehensive knowledge is expected.

A comprehensive urological knowledge requires regular reading, both of textbooks and journals. Teaching as part of training programmes can supplement, but not replace, regular planned study throughout training. Campbell's "Urology", Gillenwater's "Adult and Paediatric Urology", Whitfield and Hendry's "Textbook of Genito-Urinary Surgery", Blandy and Fowler's "Urology", George NJ, Fitzpatrick J, Mundy AR and Neal DE: "Basic Science in Urology", Isis Publications. 1999, and Krane, Siroki and Fitzpatrick's "Clinical Urology" are the best known texts, and other more specialised texts may be consulted about specific topics. A candidate can reasonably be expected to have a knowledge of the important publications on a subject and their authors, particularly in recent editions of important journals such as the BJU International and the Journal of Urology. Urologic Clinics of North America provide good regular reviews of the literature, and Urology and European Urology also publish important papers. The Update series of the BJUI International provides good educational reviews.

A urologist should have at least a passing familiarity with the history of urology, particularly with reference to the treatment of bladder outflow obstruction in which the contributions of Freyer, Millin and others should be understood, and to the history of treatment of stone disease. While a candidate would not be failed for lacking this knowledge, such a familiarity would undoubtedly gain extra points. Also, as surgeons in the wider sense, trainee urologists should have a general knowledge of the principles of medicine and surgery as applied to urology, and be aware of important medical advances.

The Examination

The Intercollegiate Specialty Examination in Urology has five parts, an MCQ, a spot test and three paired oral examinations which currently cover the topics shown in Table 1. The purpose of the examination is to define the border of safe and effective practice. In other words, the examination is a "criterion referenced" examination to determine "pass" and "fail".

MCQ, Spot Tests and Orals

The MCQ and Spot Tests are the more "objective" parts of the examination. Any topic might be covered, but particularly includes factual knowledge or management pathways connected to those aspects of urology related to core clinical and basic science.

The oral examinations will provide an opportunity to explore topics in greater depth, allowing the better candidate to add to his marks (and perhaps aspire to the Keith Yeates' medal, which is awarded for an outstanding performance) and help the borderline candidate to improve his/her position. However, it should be noted that at each stage (until the final adjudication) the examiners are not aware of the candidates' performance in other parts of the examination. Although the syllabus does coincide approximately with the topics covered in each oral as listed above, it should not be read as a series of "mini-syllabi" for the orals, as some overlap is inevitable.

Please remember that in each section questions may be asked about applied anatomy, technical details of operations, investigations and post-operative complications. Also included in these general points are patho-physiology, histo-pathology, molecular and cellular

aspects and pharmacology. Please remember that as a urologist you also require generic skills. These include:

- The pre-operative, peri and post-operative management of patients including the assessment and management of patients with common medical problems that might impact on the safety of anaesthesia, safety of surgery and the development of complications (eg: renal failure, cardio- respiratory disease, malnutrition, anaemia, jaundice, diabetes, steroid therapy, anti-coagulents, immuno-suppression, drugs for psychiatric disorders, DVT and PE).
- Knowledge about clinical audit and research
- Surgery in patients with Hep B and HIV, blood product useage etc
- General care of patients including how to handle a complaint, clinical governance

Table 1 - structure of oral examinations

1a	Oncology	1b	Paediatric urology
2a	Stone disease, endourology and infection	2b	Applied patho-physiology; nephrology, transplantation and principles of urology
3a	Trauma, female urology and reconstruction	3b	BPH, andrology and bladder dysfunction

(The content of the orals is reviewed periodically)

BENIGN PROSTATIC HYPERPLASIA

- The anatomy of the prostate with particular reference to "zones" and to glandular/stromal tissue
- The embryology of the prostate
- Growth factors in the prostate
- The function of prostate and its role in ejaculation and fertility
- The endocrine control of the prostate
- The aetiology and pathogenesis of BPH
- The pathology of BPH
- The clinical features of BPH - understanding of the concepts of benign prostatic hyperplasia, prostatic enlargement, bladder outflow obstruction and lower urinary tract symptoms; their interrelationship and correlation
- The role and value of symptom scores in the assessment of patients with lower urinary tract symptoms
- The appropriate use of investigations and their pitfalls, particularly in relation to flow rate studies and urodynamics
- Interpretation of flow rates and urodynamic studies in relation to the diagnosis of outflow obstruction
- The urodynamic nature and pathophysiology of outflow obstruction
- A familiarity with the urodynamic literature on the relationship between detrusor instability and outflow obstruction. The urodynamic definition of outflow obstruction
- The inter-relationship between BPH, detrusor instability, detrusor failure and ageing
- The management of BPH and of bladder outflow obstruction
- The management of acute and chronic retention of urine and other complications of BPH
- Standard surgical treatments, particularly transurethral resection of the prostate, and their complications

- The follow up and the assessment of the results of treatment of bladder outflow obstruction
- An appreciation of the literature concerning the results of TUR
- Alternatives to prostatectomy in the treatment of BPH
- The physiological basis of alpha blockers and 5 α reductase inhibitors showing an understanding of the indications for their use and their value
- Catheterisation
- The role of lasers, stents, and other new technology

ANDROLOGY

- Spermatogenesis, sexual behaviour, erection and ejaculation and their endocrine control
- Age related changes in erectile dysfunction and fertility
- The effect of urological disease and its treatment on erectile function, ejaculation and fertility
- The causes of erectile dysfunction
- The investigation of erectile dysfunction with an appreciation of sources of error in their interpretation
- An understanding of the role of penile prosthesis in the treatment of erectile dysfunction
- Peyronie's disease - its nature, clinical features and treatment
- Priapism - its causes and their differentiation and the treatments available
- The causes and treatment of retrograde ejaculation
- The causes of infertility
- The controversy surrounding varicocele and its effect on fertility; the technique, pitfalls and interpretation of semen analysis and the use of hormone assays
- The role of scrotal exploration, vasography and testicular biopsy
- The treatment of infertility including the appropriate use of surgery and non-surgical treatments
- Vasectomy including counselling prior to vasectomy, techniques, early and late complications
- Vasectomy reversal including counselling patients pre-operatively, technique and results
- The various types of artificial conception and the principles of such treatments

BLADDER DYSFUNCTION

- The anatomy, physiology and pharmacology of the lower urinary tract
- The physiology and hydrodynamics of bladder filling and emptying and the higher centres involved in their control. The effect of various pharmacological agents on these activities and their mechanism of action
- Clinical assessment of bladder dysfunction and its pitfalls
- Urodynamic evaluation of lower urinary tract function
- The distinction between disorders of contractility and disorders of compliance
- Detrusor instability - its nature, causes, diagnosis and treatment
- Impaired detrusor contractility - its nature, causes, clinical features, diagnosis and treatment and particularly its association with ageing and with bladder outflow obstruction
- Clean intermittent self catheterisation and a detailed appreciation of its use, value and complications

- Drugs used in the treatment of bladder dysfunction and the details of their pharmacological action and side effects
- An appreciation of the contributions of the ISC Standardisation Committee
- The role of electrical stimulation in the treatment of bladder dysfunction
- Neuro-urology, management of spinal injuries with respect to disordered bladder function.
- Surgical management of neurogenic bladder dysfunction

TRAUMA

- The assessment and general management of a patient following injury
- Hypovolemic shock - its patho-physiology, clinical features, diagnosis and management
- The nature, presentation and distinction between different types of blunt and penetrating injury
- The inter-relationship between urological and other types of injury and their relative importance
- Renal injury - types, classification, investigation, management and indications for surgery
- The causes, presentation, investigation and management of ureteric injury with particular reference to gynaecological and urological iatrogenic trauma
- The causes, presentation, investigation and management of bladder trauma
- The causes, presentation, investigation and management of urethral trauma with particular reference to pelvic fracture injuries and straddle injuries
- The causes, presentation, assessment and management of genital injury including fractured penis and domestic injuries

FEMALE UROLOGY

- Hormonal influences on female bladder function, the effects of pregnancy (infection and ureteric obstruction)
- Hormonal influences on female bladder function
- The correct use of antibiotics, including use in pregnancy and in patients taking oral contraception
- The nature, presentation, diagnosis and management of urethral syndrome
- The nature, presentation, diagnosis and management of interstitial cystitis and related sensory disorders
- The causes, presentation, diagnosis and management of urinary fistulae to the female genital tract
- The nature, presentation and effect of vaginal prolapse and its inter-relationship with urinary and ano-rectal dysfunction
- The assessment and management of women with genuine stress incontinence alone and when combined with detrusor instability, voiding dysfunction or prolapse
- The causes, pathophysiology, clinical features, investigation and treatment of genuine stress incontinence including non-surgical and surgical treatments
- The roles of transvaginal and open surgery; techniques, success rates and complications both short and long-term
- The artificial urinary sphincter and its role in genuine stress incontinence
- The role of periurethral injections and other minimally invasive treatments in genuine stress incontinence
- Urethral diverticulum - causes, presentation, diagnosis and management
- Other cystic/mass lesions palpable through the anterior vaginal wall

RECONSTRUCTIVE UROLOGY

- The general appreciation of the role of reconstructive surgery in the treatment of patients with congenital anomalies of the urinary tract
- A general appreciation of the indications for and techniques of augmentation and substitution cystoplasty and continent diversion
- The long-term complications of enterocystoplasty with particular reference to acid base balance and its consequences, bacteriuria and malignant change
- A general appreciation of the role of urethroplasty in the treatment of patients with urethral strictures
- A general appreciation of the techniques used in the management of ureteric injury
- A general appreciation of the medico-legal aspect of iatrogenic and traumatic injury and their implications in the management of such patients
- Urological problems in adolescence with urological problems particularly as a result of congenital anomalies, and their sexual connotation

ONCOLOGICAL UROLOGY

- The general pathology of cancer - its causes, development, invasion and spread; clinical features and diagnosis; tumour markers and related diagnostic and prognostic factors; the role of surgery, radiotherapy, chemotherapy and immunotherapy and its treatment; the care of the terminally ill patient
- The genetic basis of urological malignancies
- The histopathology, presentation, investigation, assessment and management of a patient with renal cell carcinoma including the results of surgical treatment and an appreciation of the role of radiotherapy, chemotherapy, immunotherapy, endocrine therapy and embolisation
- The technique of radical nephrectomy
- Tumours which simulate renal cell carcinoma, their distinction and management
- The role of partial nephrectomy in managing renal tumours
- Von Hippel-Lindau disease and other conditions with which renal cell carcinoma is associated
- Transitional cell carcinoma - its aetiology, pathology, staging, grading and progression including its presentation as an industrial disease
- The chromosomal and molecular biological factors involved in the progression from normal urothelium to malignancy and on to invasiveness and metastases
- The clinical presentation, assessment and management of transitional cell carcinoma
- Invasive potential of superficial bladder cancer; its incidence, determination and prognostic factors
- The surgical treatment of superficial bladder cancer and the role of intravesical chemotherapy
- Industrial bladder cancer, occupations at risk and an appreciation of the principles of case control studies and other methods of investigation
- The management of carcinoma in situ of the bladder
- The surgical treatment of advanced bladder cancer and the role of radiotherapy
- A general appreciation of the role of systemic chemotherapy in the patient with locally advanced or metastatic bladder cancer
- A general appreciation of the techniques of orthotopic bladder substitution or continent urinary diversion as an alternative to ileal conduit diversion after cystectomy
- The presentation, diagnosis and management of transitional cell carcinoma of renal pelvis and ureter

- A general understanding of the aetiology, prognosis and management of squamous cell carcinoma and adenocarcinoma of the bladder
- The aetiology, pathology, staging, grading, invasion and spread of prostate cancer
- The epidemiology of prostate cancer, including geographical and racial variations in incidence, familial prostate cancer and an appreciation of current understanding of aetiological factors
- The clinical features and presentation of carcinoma of the prostate
- PSA; its role in screening, diagnosis and follow up of prostate cancer
- T1 prostate cancer, with reference to incidental disease found at TURP and T1c disease
- The investigation of prostate cancer including the appropriate use of PSA and a bone scan and other staging investigations
- The management of early prostate cancer, selection of patients for radical prostatectomy, radiotherapy and watchful wait
- The role of watchful waiting, hormonal treatment and radiotherapy in patients with advanced prostate cancer
- The principles of endocrine therapy of prostate cancer
- The treatment of metastatic prostate cancer
- Appreciation of the inter-relationship between gynaecological and colo-rectal malignancy and the urinary tract
- Pre-malignant lesions of the penis, the aetiology, histopathology, development, spread, diagnosis and management of squamous cell carcinoma of the penis
- The aetiology and classification of tumours of the testis with particular reference to seminoma and non-seminomatous germ cell tumours of the testis
- The nature of tumour markers and their role in the diagnosis, management and follow up of patients with testicular tumours
- The significance of carcinoma in situ of the testis and the role of contralateral testicular biopsy
- Classification of and understanding of the management of testicular tumours other than adult germ cell tumours
- The presentation, assessment and diagnosis and treatment of these testicular tumours including the role of surgery, chemotherapy and radiotherapy
- The principles of statistics with particular reference to trial design and studies of cancer treatment

PAEDIATRIC UROLOGY

- Peri-natal urology - embryology of renal tract, anatomy and physiology.
- Assessment of renal function in the neonate
- Antenatal diagnosis and management of anomalies. Management in neonate
- The foreskin, its anomalies and complications. Circumcision - its history, indications, techniques, results and complications. Relationship to penile cancer
- The undescended testis - the current views on aetiology, presentation, diagnosis, management and its association with infertility and testicular tumours. The acute scrotum in childhood. Torsion of testis and torsion of Hydatid. Scrotal swellings in childhood, congenital hydrocoele and its management.
- Penile abnormalities; hypospadias - clinical assessment and principles of surgical correction. Chordee, epispadias and micropenis - general principles.
- The diagnosis and rational; approach to investigation of urinary tract infection in neonates and in childhood. The significance of urinary tract infection in boys and in girls
- Vesico-ureteric reflux; its pathophysiology, grades of severity, implications for renal function, assessment and management. Principles and rationale of surgical treatment

- Renal masses and their differential diagnosis. Pathology and management of Wilms' tumour
- The assessment and management of urinary incontinence in childhood
- Pelvi-ureteric junction obstruction - its nature, pathophysiology, presentation, diagnosis and treatment including an appreciation of the diagnostic problems and the relative roles of the available investigational modalities. Duplications of the upper urinary tract and ectopia; understanding of basic anatomy and of clinical relevance
- The "wide ureter" classification, diagnosis and management
- The clinical diagnosis of posterior urethral valves
- A general understanding of other congenital conditions (eg prune belly syndrome) which can be associated with urological abnormalities
- Intersex - basic overview including clinical diagnosis and principles of surgical management of common conditions such as congenital adrenal hyperplasia
- Imaging techniques in children; differences to investigation of adults. The role and interpretation of antenatal ultrasound detection of urinary tract abnormalities in the foetus

STONES AND ENDOUROLOGY

- The aetiology, presentation, investigation and management of the patient with stone disease
- The biochemical and biophysical factors involved in the generation of urinary stone disease with particular reference to calcium oxalate, urate and triple phosphate stone disease
- The biochemical investigation of patients with recurrent urinary stone disease
- The surgical treatment of renal calculi including PCNL and open surgery
- The mode of action of extracorporeal energy sources used in the treatment of stone disease and their application to patients with renal and ureteric calculi
- The significance and management of infective staghorn calculi
- Ureteric calculi and their endoscopic treatment
- The assessment and management of bladder stones
- PCNL, ureteroscopy and other aspects of endourology
- Endourological treatment of upper tract malignancy
- Principles of laparoscopy
- Laparoscopic procedures applied to urology

URINARY TRACT INFECTION

- The bacteriology of acute pyogenic upper and lower urinary tract infection
- The aetiology, presentation, clinical features, investigation, diagnosis and treatment of upper and lower urinary tract infection
- The general principles of antibiotic chemotherapy and chemoprophylaxis with particular reference to the urinary tract
- Diagnosis and management of gram negative septicaemia
- The aetiology, clinical features, investigation, diagnosis and treatment of prostatitis and its various sub-types
- Viral diseases of the genital tract including urethral condylomata, AIDS and herpes
- The aetiology, clinical features, investigation, diagnosis, surgical and non-surgical treatment of tuberculosis of the urinary tract
- Management of radiation induced cystitis
- The aetiology, clinical features, investigation, diagnosis, non-surgical and surgical treatment of schistosomiasis affecting the urinary tract

- Drug and chemical induced cystitis and its management & prophylaxis

NEPHROLOGY AND TRANSPLANTATION

- The structure and function of the kidney including glomerular and tubular physiology
- Obstructive nephropathy with particular reference to pelvi-ureteric junction obstruction, its pathophysiology, investigation and treatment
- The aetiology, pathophysiology, diagnosis and treatment of acute renal failure with particular reference to hypovolemic shock, septicæmic shock and obstructive nephropathy
- The causes, investigation and management of a chronic renal failure from a surgical perspective
- A general knowledge of the inter-relationship between hypertension and renal disease. The consequences of analgesic nephropathy
- A general appreciation of glomerular and tubular disease of the kidney and its manifestations and investigation
- The role of peritoneal dialysis, haemodialysis and haemofiltration in the management of acute and chronic renal failure
- The general principles of access surgery for such treatments
- A general knowledge of the techniques of renal retrieval and renal transplantation, including an appreciation of the ethical issues involved, and selection of organ donors
- The principles of immunology and immuno-suppression
- The results and complications of renal transplantation with particular reference to the urological complications of transplantation

APPLIED PATHO-PHYSIOLOGY, NEPHROLOGY, TRANSPLANTATION AND PRINCIPLES OF UROLOGY

At entry into the SpR grade, trainees should have knowledge of the principles of basic sciences (anatomy, biochemistry physiology, pharmacology, and pathology). This knowledge would include basic sciences relevant to assessment of critically ill and peri-operative patients. The Senate of Surgery has particularly emphasised the need for a knowledge of applied anatomy. The core knowledge would include:

- Principles of anaesthesia and local anaesthesia
- Pain control
- Applied cardio-respiratory patho-physiology relevant to clinical examination and surgery
- Patho-physiology in children, the elderly and those with intercurrent disease
- Knowledge specific to the specialty including regional anatomy, molecular biology, laboratory based scientific research and relevant systemic pathology. Some of these points are outlined in the individual sections above with particular reference to:
 - Normal structure (macroscopic and microscopic), physiology and function, including relevant neurology, neuropharmacology, biochemistry, and cellular and molecular biology
 - Disordered function - aetiology, pathophysiological response (at macroscopic, microscopic and molecular level) and local, distant and systemic consequences
 - In addition, a knowledge of statistics and trial design, and the scientific principles of surgical and non surgical treatment of urological disorders
 - Basic principles of cell biology, cell structure and biochemistry
 - Principles of renal physiology, effects of disease, renal failure
 - Common metabolic problems seen in urological patients
 - Principles of stone formation

- Structure and function of the lower urinary tract
- Male sexual function, androgen receptor, prostate physiology
- Embryology
- Energy sources
- General principles of tumour biology applied to urology
- Embryology and intersex
- Principles of immunology
- Clinical trials and screening
- Principles of wound healing, inflammation and coagulation

INVESTIGATIVE& TECHNICAL ASPECTS

- An understanding of the biochemical, haematological and bacteriological tests used in urology
- The measurement of renal function by biochemical means
- A general appreciation of the methods used in histopathology with specific reference to biopsy techniques and the initial handling of surgical specimens
- A general understanding of the principles of urological investigations with particular emphasis on the safe use of X-rays, radioisotopes and lasers
- Imaging the urinary tract radiologically and by ultrasound; the use of nuclear medicine techniques
- Principles of sterilisation and asepsis, particularly as applied to endoscopes
- Radiobiology and the principles of therapeutic use of external beam radiotherapy and radioisotopes
- Principles of diathermy and associated hazards.

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