Newcastle upon Tyne NHS Hospitals Trust

Freeman Hospital

Department of Urology

Portfolio of Learning Opportunities

(P.O.L.O)

Designed for Student Nurses

Russell Atkinson, (Staff Nurse), June 2012. Review Date June 2014.
The Urology Department at the Freeman Hospital is the largest in the UK, providing a “Hub & Spoke” facility which serves a population over 1.5 million.

This Hub & Spoke facility incorporates four hospitals where all outpatient work in undertaken in the spoke hospitals (Gateshead, Wansbeck, Hexham & North Tyneside), with all inpatient work and specialist procedures being undertaken in the Hub – the Freeman.

Each spoke area has a Nurse Practitioner for Urology Services working as both an independent practitioner as well as part of the whole Urology team. This will provide excellent educational opportunities for students within Urology.

The Urology Department consists of three inpatient wards, various outpatient clinics, Haematuria and Erectile Dysfunction clinics, two Urology theatres, an Endo-Urology theatre, an Investigation Suite, Lithotripsy Suite and several Clinical Nurse Specialists (CNS), who are all linked to Urology. We also have close links to the Emergency Admissions Unit.

In these areas we provide many services, including – percutaneous procedures, minor and major surgery, Oncology and Chemotherapy, lithotripsy, Uro-dynamics and Haematuria clinics.

There is also a Research arm, where clinical pharmaceutical trials are undertaken, using a team of nurses who oversee and manage the patients in these trials.

This P.O.L.O will provide you with the information you will need to understand the day to day running and routines of the ward unit, (based on level 3), various Mission Statements from the C.N.S’ and other nurses, describing their main role and how it links to Urology, and also their contact information so you may arrange to spend time with them, enabling you to widen your student experience and increase your Urological knowledge base.

We prefer you to take responsibility for your own learning, but we will endeavour to facilitate this process by providing you with appropriate, valid and up-to-date opportunities to develop your skills.

Also included in this pack are some approved internet links which you may access yourself to view information which will be used in all specialities, including information such as medical/nursing terminology, prefixes and suffixes to help in your understanding of anatomy and surgical procedures and also abbreviations used in prescribing and drug administration which you may find used in your daily work on Drug Charts.
**Role of Directorate Manager**

To ensure delivery of the contracted activity and achieve local and national targets all within budget
To work with the CD and clinical team to deliver clinically effective, high quality evidence based care for patients.
To provide leadership to the Directorate team.

Clinical Director, Director of Operations and Development  (Trust Board Member)

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Directorate Manager

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Matrons, Heads of Dept, Office Manager

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Ward and Departmental Staff

Communication Strategy

Heads of Dept meetings
Sisters and Specialist Nurses meetings
Ward/departmental meetings
Trust Communications meetings (notes on intranet)
Global emails
Intranet
Policies and Procedures
Departmental Newsletters
Directorate Emails
Medical Communication meetings
Senior Staff Business meetings
Role of the Matron in Urology

As Matron in Urology Services my areas of responsibility are Wards 1, 2, and 3, Emergency Admission Suite, Day Treatment Centre, Urology Investigation and Treatment Suites, Lithotripsy and the Urology Specialist Nursing Team.

A key aspect of my role is to ensure the safe and effective delivery of high quality patient centred care. This is achieved by working closely with the ward and department teams, by regular monitoring of standards of care and by being a very visible and accessible presence at ward and department level. I am always happy to answer any questions and queries you may have however minor they may seem.

It is essential that I maintain a proactive approach in responding to any queries or concerns raised by patients or their carers and I work alongside the ward sister to achieve a satisfactory resolution to their concerns. Again I am always happy to talk to any patients or carers at any time.

It is vital that I ensure the Trust environmental and cleanliness standards are maintained at all times, this is achieved by ensuring all staff are aware of the standards they are working towards and are aware of their individual responsibilities in meeting these standards. A monthly environmental and cleanliness audit is undertaken by myself in all of my areas of responsibility, to ensure compliance with these standards.

On a day to day basis my role is very varied and involves undertaking work that meets both the Directorate and Trust priorities. Much of this work is about looking at how we can continue to enhance the service we provide for patients and ensuring that we all work in an efficient and effective way to ensure the best outcome for patients.

Because my role has both Directorate and Trust responsibilities, I am in an ideal position to ensure that staff working in the wards and departments are kept up to date with any new initiatives or developments taking place within the Trust, and to ensure as a team we can contribute to the success of these initiatives.

I hope you enjoy your time working in Urology, I certainly think it is a varied and interesting place to work where there are lots of opportunities to extend your knowledge and skills and where you are actively encouraged to continue your professional development.

I look forward to working with you.

Sally Ridley, Urology Matron, DECT 48822.
Ward 1.

Ward 1 is a 20 bedded mixed sex urology ward, comprising of 3 bays of 6 beds and 2 single cubicles.

We are a day of surgery ward so the patients come in on the morning or afternoon of surgery.

Post operatively our major cases will be transferred to either ward 2 or 3 (our inpatient urology wards), though we do have patients who can stay on ward 1 overnight.

Ward 1 also have ward attendees who come in for minor procedures which are carried out on the ward - T.W.O.C, change of catheter, wound checks, P.N.E line removals and the Andrology Clinic.

There are 15 consultants in our urology department, all having patients admitted to ward 1 on different days, and we are open Monday 7am until Saturday lunch time.

Our shift patterns include –

Long day – 06.30 – 20.15

Early – 06.30 – 15.00

Late – 11.45 – 20.15

Early half – 06.30 12.45

Late half – 14.15 – 20.15

Shifts are spread over 6 days, and our off duty will be prepared at least two weeks in advance. Even though students are super-numery you will have planned off duty to ensure you have sufficient contact time with your mentor to enable you to meet all your learning outcomes.

We also have urology nurse specialists who work within the department. They work with patients who have prostate, kidney and bladder conditions. You may have the opportunity to work with these nurses during your placement.

Ward 1 is a very busy ward with a high turnover of patients. We are able to give you a lot of insight into urological conditions, and the opportunity to visit other departments within our unit.
Wards 2 & 3.

Both wards are a 30 bedded, mixed sex, inpatient ward. They accept regular planned admissions, and, on a weekly rotational basis, accept Urological emergencies for a one week period. They also accept transfers from Ward 1, the Urology day case/short stay ward.

Wards 2 & 3 provide acute and ongoing care for patients requiring either open or laparoscopic surgery, or investigations for a wide range of urological conditions, encompassing both benign and malignant diseases of the bladder, prostate and kidneys. We also provide a variety of treatments for renal calculi.

Our elective patients are admitted daily, one day prior to surgery, though we do sometimes accept day of surgery admissions. Most of our patients have been to the Pre-Assessment Clinic prior to admission.

Emergency admissions are referred to our Emergency Admission Suite (NOT an A&E), and will then be assessed and transferred to the ward. We may also be required to accept emergency admissions from other specialities, depending upon bed availability.

**Shift Pattern**

We work a full 37.5 hour week using a combination of shifts;

- Early shift 07.30 – 14.00 (15 min break).
- Late shift 14.00 – 21.00 (45 min Break).
- Long Day 0730 – 21.00 (15 min & 45 min break).

You will work alongside your designated Mentor(s) and can arrange your shifts at the start of your Placement.

Our staff nurses work differently, some work only long days, others a mixture. You will need to spend at least 50% of your week with your Mentor to meet all of your Objectives, but we will do our best to accommodate any specific request.

In Urology, we work alongside many varied specialist staff, clinics and theatres. This pack will provide you with enough information to realise the professional scope of Urology and provide you with enough essential information to arrange visits to these outlying areas.
Endo-Urology, Level 3.

Endo-Urology is a diverse department incorporating a theatre, a Uro-Dynamic Suite and various treatment clinics, providing all aspects of Urological care for in-patients, day case patients and out-patients.

Our department provides Urological treatment, investigation, diagnosis and surveillance for patients with Urological conditions.

What do we do?

To name a few:

**Endoscopic surgery/treatment**  **Urology surgery/treatment**

- T.U.R.P
- T.U.R.(B).T
- H.O.L.E.P
- Cystoscopy
- P.C.N.L
- Ureteric & Renal stone removal
- Extraction/Tumour Laser Ablation
- Greenlight Laser
- Stent change/insertion
- Prostate Brachytherapy
- Circumcision
- Penile surgery
- Vasectomy
- Hydrocele/scrotal surgery
- Supra-Pubic catheter insertion
- T.O.T* procedures

_Urodymanics_ - Cystometrogram (C.M.G) to assess bladder function

Flow Clinic

Prostate assessment clinic

_T.R.U.S.S (Trans Rectal Ultra Sound Scan) clinic_ – Prostate scans & biopsies

_Haematuria Clinic_ – Haematuria investigation

Ultrasound/K.U.B/C.T

Flexible Cystoscopy
Cystoscopy Clinic

Follow up clinic for cancer surveillance

Diagnosis for new patients

Research - Nurse Practitioner lead clinical trials

* Trans Obsturator Tape

Visits are welcomed and actively encouraged,

Please contact SR. J. Maddick or A.Rawlings to arrange on 38582
**Emergency Admission Suite (EAS)**

The EAS is situated on the second floor of Freeman Hospital to the right of the main entrance.

We are open 24 hours a day, however there are no beds on the EAS. Patients stay for a short time (as Outpatients) and if admission is needed, are then transferred to the wards (as an Inpatient) after a request is made via the Patient Services Co-ordinator.

The doctor on call refers patients to the EAS via the bed bureau. Patients referred by the bed bureau will either be transferred from an A&E department, outpatients clinic or from the GP’s surgery.

We are a friendly team of dedicated nurses with a broad range of skills and knowledge. As part of the multi-disciplinary team (MDT), nursing staff work closely with medical staff and other professionals allied to healthcare.

On the EAS we care for the following patients: -

- Urology
- General Surgery
- Vascular Surgery
- ENT
- Renal

At present the EAS has five cubicles where patients are assessed. Bay 4 is the resuscitation room, which is equipped for acutely ill patients. Bay 6 is used for ENT patients and bay 7 used for urology patients.
Urology Investigation Suite, Level 3.

Here, we perform various Urological investigations on both male and female patients who have been referred to us either by their own GP, or as a result of an emergency admission into the Urology dept.

Included in these investigations are:

**Trans-rectal Ultrasound Scans (T.R.U.S.) Clinic**

These take place on Monday and Tuesday afternoons.

Scanning the prostate and obtaining biopsies in order to diagnose or stage Prostate Cancer and other conditions.

**Flexible Cystoscopy Clinic**

For surveillance of Bladder Cancer patients and also stent removals.

**Haematuria Clinics**

Investigating patients with both microscopic and visible Haematuria.

To spend time in this area, please feel free to contact me to arrange a visit.

Mark Davis

Urology Nurse Practitioner

Tel 48277
Kidney Cancer Clinical Nurse Specialist.

A key worker and contact for patients diagnosed with Kidney Cancer, I am here to support the patients and their families throughout their journey. I am available for help and advice and to ensure that patients have all the information they need about specific conditions, treatments and care. Patients and families are welcome to contact me with queries and worries.

I see patients in clinic at the time of diagnosis and support them when receiving bad news. I organise pre-operative assessments and diagnostic tests and check that they are carried out in a timely and organised manner and also liaise with colleagues to organise surgery dates, which not only meet official targets but are appropriate to the best care for each patient.


I also work with patients who experience metastatic disease to organise any oncological and community team involvement. I provide emotional support if that is what the patient and their family wish.

I work closely with the Bladder C.N.S and we cross-cover for each other where necessary.

Patients requiring retroperitoneal lymph node dissection (RPLND) as part of their treatment for testicular cancer are supported by me because there is no designated CNS for this patient group.

Nursing students, in particular, those at management stage might find time with me useful as there is a lot of administrative work to undertake.

I aim to be available as much as possible and will always do my best to help.

Joanne Gregor, DECT 48672
**Bladder Cancer Clinical Nurse Specialist.**

My role within the department is to co-ordinate patient care and be the key worker for all patients diagnosed with bladder cancer. This involves caring for patients with Non-muscle invasive bladder cancer (superficial) and muscle invasive bladder cancer.

Patients who are diagnosed with non-muscle invasive bladder cancer often require Intravesical treatments after surgery to prevent/reduce the risk of their cancers coming back. This treatment is instilled into the bladder and is either a cytotoxic chemotherapy agent called Mitomycin-C or Epirubicin, or BCG which is known as immunotherapy.

My role within this patient group is to co-ordinate appointments for treatment, administer and manage side effects of treatment and organise their follow up appointments throughout their patient pathway.

Patients with superficial bladder cancer require regular follow up in the form of a cystoscopy and will attend a urology unit for a long period of time (5-10 years), therefore I get to know my patients well and become very fond of them. It is one of the most rewarding jobs for continuity of patient care.

Superficial bladder cancer unfortunately at times becomes too aggressive to control and patients develop a more invasive disease or they are diagnosed initially with muscle invasive bladder cancer.

Treatment for this type of cancer is usually Cystectomy if the patient is fit enough for major surgery. This can either be surgery alone, or with chemotherapy (neo-adjuvant or adjuvant).

I work alongside the stoma/continence nurses with these patients in order to provide holistic care.

Patients who have more advanced disease (metastatic) are referred to Oncology to have palliative chemo/radiation therapy.

I am involved with weekly multi-disciplinary meetings where Urologists and Oncologists meet to discuss all urological cancer patients and offer specialist care.

I am occasionally involved in research, so please ask for any current or recent research information.
I cross cover with the Kidney cancer nurse specialist when she is on holiday/study leave, and also help with prostate cancer patients and run a haematuria clinic for initial investigations of visible and non-visible haematuria.

I am responsible for cancer targets and training of post-operative Mitomycin-C on the wards.

If you would like to spend some time with me, you would hopefully gain a lot of insight into the treatments of bladder cancer patients; observe catheterisation and instillation along with reconstitution of agents and a better understanding of their pathway.

Contact Lynsey Robson; DECT 48286
CONTINENCE & STOMA CARE CLINICAL NURSE SPECIALISTS.

We are nurse specialists for continence and stoma care. Our mission is to provide patient centred, evidence based holistic nursing care for our patients.

We aim to share our knowledge and experience with other members of the multidisciplinary team to enhance patient care.

Ward visits are in the majority to the urology wards; 1, 2 and 3, but we are often called to other areas in the hospital to provide specialist advice and practical care.

We take the lead role in facilitating, planning, co-ordinating, delivering and evaluating specialist nursing care for urology patients with a stoma, for patients with a catheterisable continent stoma, bladder reconstruction, and for those patients with continence issues related to urological conditions/procedures.

We develop strategies for advanced nursing care and enhance the body of nursing knowledge within this specialised field.

We aim to provide specialist urology stoma care / continence education and training, locally, regionally and nationally.

As a team we specifically support the provision of evidence/research-based information, and advice to patient and their families, co-ordinating and providing continuity to their care pathway of the following groups of patients:

- Established stoma patients
- Patients who are to undergo stoma formation
- Patients who are to undergo bladder reconstruction for malignancy or continence
- Patients with continence issues related to urological disorders and/or procedures
- Patients with artificial urinary sphincter/bladder neck cuff
- Patients who require intermittent self-catheterisation for bladder dysfunction.

As a team we also:

- Deliver, co-ordinate and supervise Stoma/continence care on the urology unit and throughout the Trust.
- Provide specialist advice internally within the Trust.
- Provide specialist training Locally, Regionally and Nationally, including curriculum development in specialist areas.
- Deliver nurse led clinics.
We are also accountable for the legal aspects of stoma siting:

- Correct site
- Patient visualisation
- Physical and psychological impact if not sited correctly
- Ensuring correct product choice

We also:

- Provide an accessible pathway for direct patient self-referral.
- Schedule follow up visits appropriately to monitor patients and evaluate health/illness care.

We encourage students to spend some time with us during their placement in the Urology unit. We can guarantee an interesting and varied experience, with inpatients, patients attending the unit as day cases and outpatients.

Liz Davis & Tracy Ord; DECT 48308.
The Urology Outreach Service is an integral part of Urological Care Provision for patients within the demographic of Newcastle and North Tyneside.

This service is co-ordinated and delivered utilising a hospital based model of care, the Nurse Specialist being part of the Urology team based within the department. Services are delivered on an outreach basis.

Referrals into the service are made by staff in both Primary and Secondary Care Settings for patients with a broad spectrum of Urological disorders who require specialist intervention or treatments. The provision of such a service enables its users to have choice, convenience, and control, in terms of appointment times, treatment delivery at home and joint decision making following consultation with the Specialist.

The service also has a strong impetus on admission avoidance, which is achieved by jointly working with colleges in the Emergency Admission Suite and Primary Care Setting to identify individual patients, health care professionals, or care settings who would benefit from education or interventions to improve the provision of Urological care for their particular patient group.

This model of service provision is well established in Newcastle and following consultation with other Trusts has been replicated Nationaly. This is very much in line with the Governments focus to provide services away from acute hospital settings.

Anne-Marie Wilkinson; DECT 31730.
LITHOTRIPSY TREATMENT

A combination of two Greek words which means;

Litho- stone

Tripsus- to rub or crush.

The Freeman Hospital has a Lithotripter Machine which is used to fragment urinary tract stones (calculi) which will then make them easier to pass out of the body with the normal urine flow.

It is usually done on an out-patient basis but emergency in-patient cases are also accommodated.

The procedure is carried out by a radiographer or radiographer/sonographer after the patient’s suitability has first been discussed with the medical staff at a weekly meeting. There are some contra-indications to treatment.

THE ROLE OF THE NURSE

Patient safety is of prime importance so a basic clerking is performed on the day of treatment with a pro-forma completed. This can be re-used on subsequent visits providing it has been updated.

The patient may require an X-ray or Ultra-sound examination prior to treatment and these forms are prepared before the patient arrives.

Baseline observations are completed, including weight as there is a weight limit to this current machine. Dip-stick urinalysis, and any MRSA swabs obtained.

Patient informed consent must be obtained, which includes the reading of our leaflet normally sent out with appointment.

Prescribed analgesia is then administered which may include an opiate.

The patient is now ready for lithotripsy. Assistance is given to the radiographer in positioning the patient, applying ECG pads and ensuring a good pick-up to enable machine to work efficiently. Some patients may need BP monitoring.

Treatment may be painful which can make some people feel unwell so we must always be aware of para-sympathetic changes.
When treatment is complete (anything from 30mins to one hour) the observations are re-checked prior to discharge. Area of treatment is inspected for any bruising which may have occurred.

Constant re-assurance is given throughout the anticipated 2 ½ hour visit.

Pauline Hogg, Enrolled Nurse.

Tel: 37556
Erectile Dysfunction Clinic

For the E.D Clinic, patients are usually seen on a Monday, and come to us following referral from one of the Urology consultants.

These gentlemen have problems with attaining and/or maintaining an erection, which can be the result of surgery, health related conditions such as neurogenic disorders, psychological disorders, Diabetes, or M.S, also general ageing, side effects of drugs and sometimes lifestyle choices.

The men are reviewed by the Nurse Specialist who will discuss treatment options which include medicines, surgery and devices. Some treatments will require a further visit to commence them properly, with a follow up appointment to act as a general review of their situation.

DISCLAIMER = due to the sensitive nature of this clinic, it is not deemed appropriate for student attendance, but this information is provided for your knowledge and to realise an awareness of the range of Urological conditions we deal with here at the Freeman Urology Department.

Sue Collins = Ward 1, 37003.
Urology Research Team

Our portfolio of research studies includes both commercial and NIHR adopted projects. Studies include Phase II/III drug trials, device development, surgical intervention trials, biomarker work, stem cell research and observational trials although this not an exhaustive list. All our consultant urologists contribute to the portfolio and as a group we are recognised for the volume and quality of research we contribute to urology both nationally and internationally.

Almost all studies have a qualitative element to ensure we capture the patient’s experience of the intervention or treatment. Therapeutic areas include bladder, prostate and kidney cancers, stone disease and functional urology.

It is the role of the nurses to ensure the trials are conducted in keeping with the Trust’s Research and Clinical Governance Polices but most importantly to ensure the safety and well being of all research participants. Daily activities range from counselling, clinical observations, urodynamic testing, venepuncture and associated processing of samples. All activities require careful documentation which in turn requires scrupulous attention to detail when adding to data sets. Dissemination of findings is required at meetings locally, nationally and internationally. Research education and training is continuously on-going. One member of staff is currently completing an MSc.

Our patients are both inpatients and outpatients. We welcome staff and students from any department to visit our office and clinics to learn more about our activities and performance.

Contact any of the staff: 37322

Wendy Robson  Senior Research Nurse
Peter Murphy   Research Nurse
Bernadette Kilbane  Research Nurse
Joyce Jennings  Research Nurse
Nicola Brown   Data Manager
Rachel Forrest  Clinical Trials Officer

Teresa Lennon   Senior Research Nurse
Nicola Trewick   Research Nurse
Barbara Hattrick  Secretary
Kathleen Parker  Secretary
General

There are numerous Trust based Policies and Procedures which you could access to read and understand the how’s and why’s of many of daily tasks. They are research based and have been developed from National guidelines.

They can be found on the Intranet and printed off for your own use.

**Commonly used Urological Terminology for you to research and learn:**

- Nephro =
- Uretero =
- Vescico =
- Cysto =
- Uretero =
- Meato =
- Epididymo =
- Orchido =
- Pyelo =

- -ectomy =
- -otomy =
- -plasty =
- litho =
- -oscopy =
- -ogram =
- -itis =
- -paxy =
- Trans =
- -ostomy =

Approved Internet links for :

**Medical terminology - roots, prefixes & suffixes, & Abbreviations used in Prescribing**


**Lower Urinary Tract Diagrams**

**Male**

http://www.patient.co.uk/pilsinl/076.gif
Female

http://www.urologygroupvirginia.com/female.gif

Anatomy of the Kidney Diagram


Anatomy of the Urinary Bladder diagram

http://academic.kellogg.edu/herbrandsonc/bio201_mckinley/f27-9a_urinary_bladder_c.jpg

You could also research diagrams of the male and female pelvic cavities and genitalia, diseases of the urinary tract (usually found on the ward) and urological cancers.

Also linked with Urology but not included in this pack are the Pre-Assessment Clinic, and the Renal Transplant Co-ordinator. We have strong links to Renal in general.
**THE KIDNEYS**

**Diseases of the Renal System**

**Renal Adeno-carcinoma:** a malignant tumor of the kidney, which accounts for 80% of renal tumors. Peak incidence is in 65 to 75 age group, and reatment is a radical Nephrectomy.

**Pelvi-Ureteric Junction obstruction:** a structural defect to the pelvis of the kidney at its junction with the ureter. Can be congenital or as the result of frequent infections or injury. Treatment is a pyleoplasty. (an incision into the pelvis of the kidney to relieve the obstruction).

**Renal calculi:** stones which develop in the renal pelvis or calyx. These can be either:

**Infection stones** (struvite): caused by chronic urinary infection and are composed of calcium, phosphate, and magnesium phosphate. These stones grow to fill the calyx causing renal impairment. Treatment is surgical removal or lithotripsy.

**Uric Acid stones:** found in patients with acidic urine. The stones grow to form staghorn calculi within the calyx. Treatment initially advises oral intake of 3 litres per day to prevent dehydration, oral sodium bicarbonate or potassium citrate to alter the pH of the urine to make it more alkaline.
**Calcium oxalate stones:** caused by hypercalcaemia. Treatment is dependant on causes of the hypocalcaemia i.e. patients with hyperparathyroidism require surgical intervention.

**Cystine stones:** caused by cystinuria, a genetic disorder in which amino acids are not reabsorbed causing cystine crystals to form. Treatment is a fluid intake of 3 litres which can inhibit the growth of stones or a specific drug called Penicillamine.

**Iatrogenic stones:** caused by drugs which are insoluble in urine such as sulphonamides.

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**Renal Investigations**

**Intravenous urogram (IVU):** a series of X-Ray images which visualise the entire urinary tract. Contrast medium is injected into the patient and its progress through the urinary system is imaged. Useful for demonstrating calculi, an obstruction and any abnormalities.

**Kidney, ureter and bladder (KUB):** A anterior and posterior X-Ray showing the urinary tract without contrast medium. Used to screen for renal calculi.

**Computed Tomography of the kidneys, ureter and bladder (CT KUB):** A computer generated image of the urinary system. Useful for patients who have non radio opaque stones.
**Nuclear magnetic resonance imaging (NMRI):** A scan that produces images of the body subjected to a strong magnetic field. Useful for detecting and staging of cancer.

**Renogram:** A radioactive compound is injected into the patient and the passage of the dye is monitored. Used to assess renal function.

**Bone scan:** A radioactive compound is injected. Used to detect bone metastases.

**Ultrasound:** Sound waves are used to reflect off the body’s tissues to produce a diagnostic image.

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**Renal Procedures**

**Extra-corporeal Shock Wave Lithotripsy (ESWL):** Shock waves are generated in water by the isualizatio which pass through the soft tissues of the body until a hard surface (calcification) is found and the energy is released. X-ray is used for isualization of the calcification. Advantages include minimal pain and increased morbidity. Disadvantages include poor results with hard cystine stones and repeated hospital visits for large stones (over 1cm).

**Percutaneous Nephrolithotomy (PCNL):** The kidney is punctured through a small incision in the flank and a telescope is used to identify and extract calculi.

**Radical Nephrectomy:** Excision of the kidney, adrenal gland and surrounding tissue. Performed for renal carcinoma. Can be done either laparoscopically (minimally invasive) or by an open procedure.
**Nephrostomy tubes:** A tube is inserted into the renal pelvis. 2 types: a fine bore nephrostomy tube is inserted under local anaesthetic to relieve hydronephrosis caused by ureteric obstruction. 2nd type is a large bore tube inserted following a PCNL.

**Pyeloplasty:** performed for pelvi-ureteric junction obstruction. Usually performed laproscopically but can be an open procedure.
THE BLADDER

Diseases of the bladder

**Bladder cancer:** the most common of urological cancers (along with prostate cancer), 90% of which are transitional cell carcinomas (TCC). Staging is clarified by the use of the TNM+G classification.

**Bladder stones:** can be due to bladder outflow obstruction, diverticula (folds of the bladder mucosa) or a foreign body in the bladder.

**Urinary incontinence:** can be classified as stress, urge, neurogenic, or congenital.

**Stress incontinence:** leaking urine during physical exercise due to sphincter weakness. In women, can be caused by childbirth, in men a prostatectomy.

**Urge incontinence:** an involuntary loss of urine following the desire to void.

**Neurogenic incontinence:** can be caused by lesions in the Central Nervous System which interfere with voluntary control. e.g Spina Bifida or spinal cord trauma.

**Congenital incontinence:** failure of the lower body to develop normally.
**Bladder outflow obstruction:** can be **congenital** i.e. a urethral stricture, or **acquired** i.e. benign prostatic hypertrophy, or due to neurological diseases such as Multiple Sclerosis.

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**Bladder investigations**

**Urinalysis:** a non invasive test which can provide information on the urinary tract. Initially a urine dipstick test.

**Urinary pH:**
Normal urine should have a pH of 4-8. A persistent Alkaline Urine (pH 7-8) can indicate a Urinary Tract Infection. A persistent acid urine (pH 5-7) can indicate the presence of fever.

**Protein:** the presence of protein can indicate infection or renal impairment.

**Blood:** the presence of blood can indicate infection, stones or urological cancer.

**Nitrites:** can indicate infection.

**Early morning urine (EMU):** can indicate tuberculosis or cancer of the urinary tract.
**Urine culture:** can demonstrate the presence of infection. The lab will provide information on the type of bacteria and therefore which antibiotics are effective.

**Cystoscopy:** allows a direct view of the urethra and bladder. Can be performed using a ridgid cystoscope under a general anaesthetic, or using a flexible cystoscope using local anaesthetic.

**Uroflowmeter:** measures the rate and volume of urine in mls per second. Used for the diagnosis of bladder outflow obstruction.

**Non-video or simple Cystometrogram (CMG):** Used to measure the bladder whilst filling and emptying. The patient is catheterised urethrally using a double lumen catheter. One lumen is used to fill the bladder the other to measure the pressure inside the bladder. A separate rectal line is inserted to measure the rectal pressure. Useful when it is not necessary to see the bladder neck i.e. when diverticular disease is suspected.

**Video Cystometrogram (VCMG):** same as above with radio opaque dye used to fill the bladder to show the bladder neck.

Both methods of CMG studies can show stress incontinence, overactive bladder and outflow obstruction, but the VCMG can show the site of the obstruction also i.e. prostate.
**Bladder Procedures**

**Trans urethral resection of bladder tumor (TURBT):** Resection of bladder tumor using an endoscopic procedure under general anaesthetic. Can be used in T2 bladder tumors and patients may receive intravesical chemotherapy.

**Cystectomy and formation of ileal conduit:** removal of the bladder and transplantation of the ureters into an isolated loop of the ileum which is brought to the surface of the abdomen to form a urostomy. The procedure is performed for bladder cancer.

**Litholopaxy:** Crushing of the bladder stone and removal via irrigation fluid.

**Trans-vaginal Tape (T.V.T)/T.O.T:** a surgical procedure where a mesh like tape is inserted trough the vagina to support the bladder neck and urethra. Used in patients with stress incontinence.

**Augmented Cystoplasty:** a portion of the ileum is used to increase the capacity of the bladder. Used in patients with urge incontinence.

** Continent Urinary diversion:** the formation of a reservoir within the lower abdomen to hold urine, (the patients own bladder can be used). Then the construction of a channel which can be catheterized. Used for patients with neurogenic incontinence.

**Optical Urethrotomy:** the urethral stricture is cut along its length to allow tissue to grow and widen the urethra.
**Urethroplasty**: repair of a urethral defect such as a stricture.
THE PROSTATE

Diseases of the Prostate

**Prostatitis:** an acute or chronic inflammation or infection of the prostate.

**Benign Prostatic Hypertrophy (B.P.H):** non cancerous growth of the prostate gland.

**Prostate Adenocarcinoma:** malignant tumor of the prostate gland. Accounts for the most commonly diagnosed cancer in men aged 55 and over. Diagnosis is based upon D.R.E, P.S.A levels, a bone scan and MRI. Treatment is dependant on classification using the Gleason scale.

Prostatic Investigations

**Digital rectal examination (DRE):** used as a good indication of prostate cancer. A non malignant prostate will feel smooth, whilst a malignant prostate will feel hard and lumpy.

**Prostate Specific Antigen (PSA):** a blood test which measures the specific antigen secreted by the prostate. In malignancy this value is raised from the normal (4 and below). Unfortunately this is not a definitive test as a rise in PSA levels can be caused by BPH, or recent instrumentation and not all men with raised PSA levels have prostate cancer.

**Trans rectal ultra sound and biopsy (TRUS):** An Ultrasonic probe is inserted in the rectum and produces an image of the size and shape of the prostate. If
cancer is suspected a biopsy can be taken which can be classified using the Gleason scale.

**Gleason scale:** most commonly used system for grading the aggressiveness of prostate cancer. The prostate biopsies are examined by a pathologist who determines where the cancer is most prominent (the primary area), then where the cancer is next most prominent. A score of between 1-5 is given. The sum of these grades give a score e.g 7 is 4+3. The higher the score the more aggressive the cancer is deemed to be. Staging (spread of the tumor) is required for treatment options, which are based upon an evaluation of the extent of the primary tumor and the existence or not of metastases. The TNM (Tumor, Node, Metastases) classification is used.

**TNM Classification of Prostate cancer:** A staging system for cancer which describes the extent of the primary tumor (T), the lymph nodes (N), and metastases (M). These stages range from T1 through to T4, NO to N1, MO to M1.

**Prostatic procedures and treatment**

**Trans urethral resection of prostate (TURP):** A rectoscope is used to cut slices of the prostate away. Retrograde ejaculation is a consequence of the bladder neck being resected. This procedure is known to be the “gold standard” for patients with BPH.

**Drug therapy:** for BPH.
**Alpha-1 adrenceptor blockers:** these drugs (such as Tamsolosin), improve urinary flow by relaxing the muscle in the prostatic urethra. Relief of symptoms occurs within 3 weeks. Side effects include dizziness and palpitations

**5-Alpha reductase inhibitors:** these drugs shrink the size of the prostate by blocking the enzyme needed for prostatic growth. An example of this drug is Finasteride. Symptomatic relief can take up to 6 months. Side effects include impotence.

Both drugs can be used together but further research is necessary to determine their joint effectiveness.

**Bladder neck incision (BNI):** used for patients who have a defect of the bladder neck causing the muscle to either fail to contract or relax during voiding.