

This booklet has been compiled and edited on behalf of EUS and Prostate Scotland by Mr Alan McNeill, with assistance from many but notably Professor J. -U. Stolzenburg, Dr Charles Wallis, Mrs Karen Edwards and Ms Fiona Brewster.

If you have any questions on information contained in this booklet contact Linda Fletcher on 01506 853864.

Prostate Scotland is a charity established to inform men in Scotland about prostate disease, support those with prostate disease and promote advances in research into treatment of prostate disease. If you would like to know more about prostate health issues or about Prostate Scotland, please go to [www.prostatescotland.org.uk](http://www.prostatescotland.org.uk), e-mail [info@prostatescotland.org.uk](mailto:info@prostatescotland.org.uk) or telephone 0131 226 8157

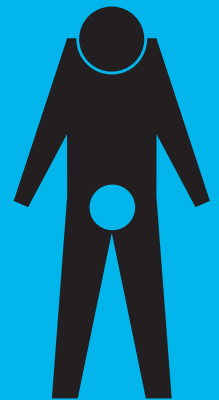


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PATIENT INFORMATION ●

## Operative Treatment of Prostate Cancer by Endoscopic Extraperitoneal Radical Prostatectomy



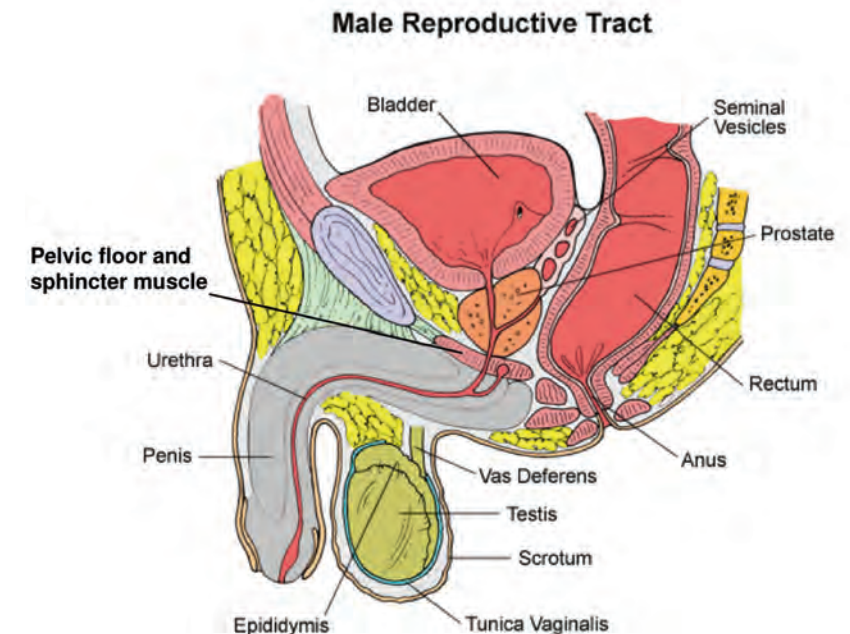
at Spire Murrayfield Hospital, Edinburgh

You have been diagnosed with prostate cancer and, after considering the treatment options available to you, you may decide to undergo surgical removal of the entire prostate as treatment for your cancer. This booklet provides detailed information about how the operation is performed using minimal access (keyhole) surgical techniques. It also provides information about the hospital stay, the associated risks and expected recovery time, as well as providing an outline of alternative treatments available to you. It is intended to provide you with information that will help you choose the treatment best suited to you after discussions with your consultant.

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The prostate is a gland, normally the size of a chestnut, which lies underneath the bladder and surrounds the first part of the urethra (the water-pipe draining the bladder) between the bladder neck and the urinary sphincter (the valve-like muscle responsible for your continence). The back of the prostate lies in front of the rectum and this is why it can be examined with a finger inserted through the anus.

In most cases cancer develops and slowly grows unrecognised in the prostate. If untreated, it grows into the capsule that surrounds the prostate, the seminal vesicles (which are immediately adjacent to the prostate), the bladder neck or the urethral sphincter muscle. On some occasions, the cancer may invade even the bladder and the ureters (the water-pipes connecting your kidney with bladder). In advanced cases, cancer cells can spread through the blood and the lymph vessels seeding in other parts of the body to form secondary deposits, which are called metastases. These metastases are most often located in lymph nodes of the pelvis or in the bone (e.g. pelvis, spine) but may appear in other organs (e.g. lungs and liver). It is extremely important to diagnose prostate cancer at an early stage when the cancer is still confined to the prostate in order that treatment has the best chance of cure.



The treatment of prostate cancer depends on several factors such as stage of the cancer, age and presence of other illnesses, which can limit life expectancy. Treatment modalities that aim to cure the disease include radiotherapy or surgical removal of the entire prostate.

The operation to remove the entire prostate can be done as an open procedure through an incision in the lower abdomen or through an incision in the perineum (between the anus and the scrotum). Within the last 10 years methods have been developed that allow the operation to be performed by minimally invasive surgery, as a laparoscopic or endoscopic extraperitoneal (without entering the abdominal cavity) procedure (EERP or keyhole surgery). The advantages of the laparoscopic/endoscopic approach include better visualisation of the operating field for the surgeon allowing precise dissection, which promotes good functional results. The precise suturing of a watertight anastomosis (join) between the bladder and urethra (water passage) with a shorter duration of catheter drainage post-operatively is also beneficial. The smaller incisions used in 'key-hole' surgery have been shown to reduce post-operative pain and aid a faster recovery. The low blood loss means that there is very small risk of transfusion with EERP, which is also an advantage.

The success of the endoscopic extraperitoneal radical prostatectomy (EERP) depends upon early diagnosis of the cancer. In organ confined disease (cancer entirely within the prostate), the chance of long-term cure after the operation is 85-95%. This chance is reduced if there is invasion of the capsule, seminal vesicles, bladder or involvement of lymph nodes. If the tumour cannot be completely removed (positive surgical margin) or if there is invasion of the lymph nodes (secondaries or metastasis), further therapy in the form of radiotherapy +/- hormone suppression treatment is likely to be necessary. This will be discussed with you when the pathology report is available.

Hormone suppression treatment usually takes the form of a 3-monthly injection, which suppresses the production of testosterone by the testes. Alternatively the testes may be surgically removed. This causes the cancer to regress and is an efficient treatment for prostate cancer, although not curative. This is a good treatment option for advanced prostate cancer or in patients with multiple coexisting diseases/illnesses, which make surgery or radiotherapy less appropriate.

You will have been informed about the different treatment options for prostate cancer during your outpatient appointments and you may decide/have decided to undergo EERP. Further information about the operation is provided overleaf.

### 1. General anaesthetic

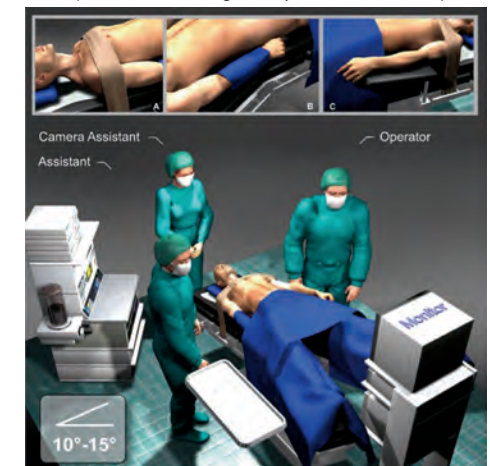
The operation requires a general anaesthetic, which means you will be asleep throughout. You will be seen by your anaesthetist on the day of your surgery. He/she will check over your pre-assessment information and discuss your anaesthetic. Of particular interest will be your general health, any previous anaesthetics, your teeth and mouth opening.

On the day of surgery you will be taken on your bed from the ward to the theatre reception area. Here you will have blood pressure cuff and ECG leads attached. You may also have a warming blanket applied. In the anaesthetic room you will have an intravenous cannula inserted and given some oxygen. You will receive an intravenous anaesthetic which will put you off to sleep smoothly. Once asleep, a breathing tube will be placed in your windpipe, but you will not be aware of this. An extra cannula may be placed on the pulse on your wrist. This will accurately measure your blood pressure when asleep, but will usually be removed when you wake up.

You will be kept asleep by anaesthetic gases, and you will receive painkillers to keep you comfortable when you wake up. During your operation you will be on your back in a slightly head down position. Sometimes this causes some puffiness of the face, which resolves after the operation. The theatre team are arranged as shown below.

### 2. Urethrocystoscopy (inspection of the bladder with a telescope/camera)

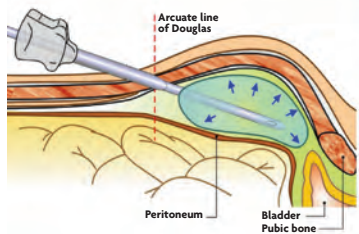
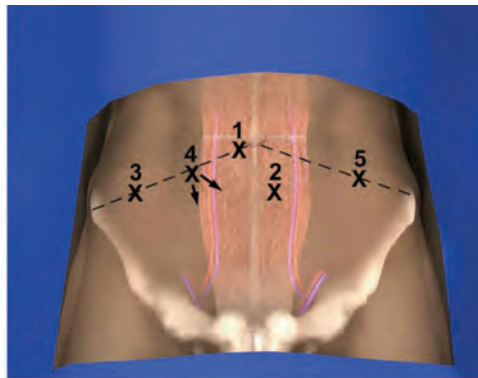
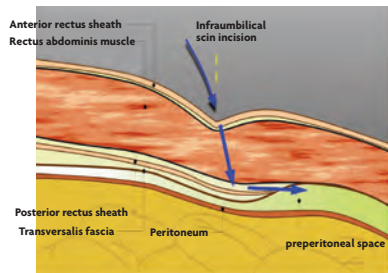
In order to plan the operation and to avoid complications (assessment of prostate size, measurement of the distance between the prostate and ureters (tubes connecting kidneys to the bladder) and to exclude a coexisting bladder tumour), a telescopic examination of the bladder will take place once you are asleep and before your main operation has started. During this procedure, 2 stents (plastic tubes) may be inserted into your ureters. This is done to reduce the risk of injury to the ureters during the operation. These stents may be removed during the operation or under local anaesthetic at a later date.



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**3. Preparation of the operating field (figures below)**

After making a small incision, a space is created between the muscles of the abdominal wall and the peritoneum (lining of the abdominal cavity) with a special balloon. This space is then distended with carbon dioxide and ports (trocars) are then inserted. The port sites used are numbered 1-5. Port-site 1 is where the camera and gas inflow are attached while trocars 2-5 are used to insert special instruments needed to perform the operation. At the end of the operation the 5th trocar incision is extended to remove the prostate and a drain is brought out through port site 3.



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**4. Prostatectomy**

The prostate and seminal vesicles are removed using minimally invasive techniques (no abdominal cut). The middle trocar [1] is used to insert a camera that magnifies the operating field 5-15X allowing more precise identification of structures and dissection during the operation. In some patients the pelvic lymph nodes need to be removed at the beginning of the operation.

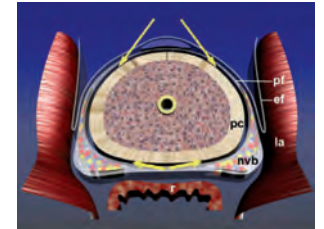
Further steps of the operation

**5. Nerve-sparing procedure**

The following circumstances permit a nerve-sparing procedure on one or both sides, meaning the preservation of the nerves responsible for erection:

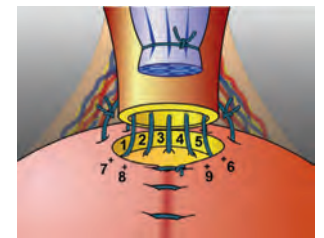
- potency which is present before the operation
- PSA less than 10 ng/ml
- Gleason score less than 7 (3+4)

The nerves run along the side and the back of the prostate and are located within the periprostatic fascia (pf) in the diagram:



**6. Anastomosis**

Up to 8 or 9 stitches are needed to reconnect (anastomose) the urethra (waterpipe which runs inside your penis) and the bladder. In the vast majority of cases the anastomosis is watertight. A drain (tube coming out of your tummy) is inserted near the operating field (for 2-3 days) and a catheter draining urine from the bladder (for a minimum of 6 days), although occasionally a longer period of drainage is required.



● PELVIC LYMPH NODE DISSECTION (PLND)

As explained above there is a possibility that prostate cancer may spread to the lymph nodes in the pelvis. The risk may be determined pre-operatively by assessing parameters such as the PSA level, the Gleason grade, the findings on MRI or bonescan. Depending on this risk assessment it is sometimes necessary to remove some lymph nodes during the operation. These will be examined by a pathologist and if found to contain cancer then further treatment will be required in most cases.

If the risk of lymph node secondaries is low we do not recommend removal of any lymph nodes, so that the potential complications associated with this can be avoided.

### Possible risks of the operation

In the following tables we list the potential risks and complications associated with EERP. We will discuss all the complications when you are going to sign the consent form.

POSSIBLE COMPLICATIONS	PREVENTION/NOTES
<b>FORMATION OF BLOOD CLOTS</b> Possible results: deep vein thrombosis of the leg (DVT), pulmonary embolus (PE), stroke	TED stockings, daily heparin injections, early mobilisation
<b>PROBLEMS ARISING FROM POSITIONING</b> Possible results: skin irritation or damage pressure sores, nerve damage (with associated muscle weakness)	Careful cushioning of the body parts on the operating table
<b>SKIN DAMAGE</b> Arising from allergic reaction to the disinfectant, sterile gowns or electricity (used during surgery)	In general very rare complications
<b>INJURY TO MAJOR VESSELS</b> Possible results: bleeding with consequent blood transfusion, which carries risk of infection with blood borne diseases	In general very rare complications
<b>BLEEDING/HAEMATOMA</b> The prostate receives a high blood flow with the result of a risk of bleeding during operations involving this organ	The risk of bleeding sufficient to need a blood transfusion following EERP is <1%

### Specific risks of the operation

<b>URINARY INCONTINENCE</b> Inability to hold your water due to functional damage to the sphincter muscle (the muscle responsible for your continence)	Pelvic floor exercises and, where necessary, physiotherapy after catheter removal
<b>ERECTILE DYSFUNCTION (IMPOTENCE)</b> Inability to get erections due to injury or necessary removal of the neurovascular bundle (nerve and vessels) responsible for erections	A nerve-sparing operation can be performed under certain circumstances, but return of normal spontaneous erections cannot be guaranteed
<b>INFERTILITY</b> Both vasa deferentia (the tubes carrying your sperm) need to be divided and sealed during the operation	Unavoidable result of the operation

### Specific risks of the operation (continued)

POSSIBLE COMPLICATIONS	PREVENTION/NOTES
<b>ANASTOMOTIC LEAK</b> Leak in the area where the urethra was sutured to the bladder neck	If the cystogram (X-ray with contrast/dye) shows a leak at 7-9 days then the catheter may need to stay in for 1-2 weeks longer
<b>LYMPHOCELE FORMATION</b> (Collection of lymph fluid at the site of lymph node removal) Possible results: local pain, infection, fever, deep vein thrombosis of the leg (blood clots)	Small lymphoceles do not require any treatment and may go undiagnosed. If there are symptoms or the lymphocele is large a temporary drain has to be put in or a second operation may be required
<b>INJURY/NARROWING OF THE URETERS</b> Possible results: obstruction to the flow of urine from the kidney	Very rare complication
<b>NERVE IRRITATION OR INJURY</b> During pelvic lymph node dissection, the lymph nodes near a pelvic nerve (obturator nerve) are removed. During this dissection the nerve may be stretched (rarely divided)	Rare complication causing numbness or weakness of the muscle in the leg, which usually resolves without specific treatment
<b>INJURY TO THE RECTUM</b> Due to the close relationship of the prostate to the rectum, there is a risk of injury to the bowel	Rare complication (approx. 1%). If the injury is recognised during the operation, the rectum can be repaired with stitches and you might need to have a special diet after the operation. In some circumstances it is necessary to have a temporary colostomy (bag)
<b>TUMOUR TISSUE LEFT BEHIND</b> (Positive surgical margin) Possible result: further treatment is necessary post-operatively (mostly radiation therapy and hormone therapy)	An intraoperative frozen section (microscopic examination) can be of help in some circumstances and reduce the risk of a positive surgical margin
<b>CONVERSION INTO AN OPEN OPERATION</b> In case of severe adhesions or major bleeding	This has not yet been necessary in our patients
<b>ANASTOMOTIC STRICTURE</b> (Narrowing of the anastomosis which results in difficulty in passing urine)	Rare complication (<1%) occurring some time after the operation, which can be dealt with by performing an endoscopic operation

*(Please note the course outlined below may vary depending on your clinical course after the operation)*

### Day of admission

Admission to the ward. Blood and urine tests, clinical examination, ECG, X-ray as required. Informed consent for the operation (taken by the urological surgeon). Administration of heparin (injection under the skin) to prevent clots in the leg veins. Pre-op visit from anaesthetist.

### Day of operation

Enema to clear bowel on morning of operation. Operation and transfer to the ward (usually regular ward but occasionally high dependency unit).

### 1st day after the operation

Ward round, blood tests, clinical examination mobilisation and a light diet. During the operation you will have a catheter inserted into your bladder. This is necessary in order to facilitate urine flow and to maintain a watertight anastomosis (rejoining of your waterpipe to your bladderneck) whilst the initial swelling settles following the operation. It is important that you avoid any manipulation or pulling on the catheter.

### 2nd & 3rd day after the operation

Ward round, clinical examination, normal diet and full mobilisation. Removal of wound drain. Discharge home with urinary catheter with arrangements made for return for X-ray and catheter removal the following week. You should avoid baths during the time you have the catheter in but can have a shower if the wounds are healing well, avoiding contact of soap with the catheter or the wounds. After a shower you will need new dressings. You can continue with exercise (gradually increasing intensity) but should avoid sports that put a strain in your perineum (eg. bicycle riding, horseriding) for the first two months after the operation. If you develop pain you will need to get in touch with your doctor.

### 7-9th day after the operation

Attendance at hospital for X-ray to check that there is no leak from join between bladder and urethra (water pipe), then catheter removal. If there is a leak at the join then the catheter will be left in for another week or two to allow healing. Commence pelvic floor exercises after catheter removal.

### 4-6 weeks after the operation

There will be a follow up appointment approximately 4-6 weeks after the operation in outpatients. Here the pathology report will be discussed with you, your PSA blood test done and your recovery assessed. Commencement of medicine to promote recovery of erections if appropriate.

### Continence

As the urethral sphincter (valve) lies close to the prostate, its function may be temporarily impaired following surgery, therefore it is common for patients to experience some incontinence after the urinary catheter is removed. This incontinence is usually managed effectively using incontinence pads and will improve as the healing process takes place. The extent and duration of incontinence are affected by several factors and vary from individual to individual. Recovery is faster in younger, slimmer and fitter patients and is assisted by regular performance of pelvic floor exercises.

### Pelvic floor exercises

To do these exercises properly you first need to relax your abdominal and buttock muscles. At first they are best carried out lying down, but later whilst sitting or standing. To identify and correctly contract the pelvic floor muscles, imagine that you are trying to prevent a bowel movement or from passing wind. During this action you should feel the anus contract. Tighten the muscles for approx. 5 seconds then relax for 10 seconds and repeat regularly throughout the day. If you do not think you are doing the exercises properly please let us know and we can arrange for you to see a physiotherapist who will help.

Using pelvic floor exercises it may take up to 3-6 months for continence to return and improvement can continue to occur even up to 1 year following surgery. The majority of men (>80%) will require 1 pad or less at 3 months after the operation and 85-90% will become completely continent by 6 months to 1 year. A small number of men (approx. 1%) require a second procedure to make them dry.

### Urinary control usually returns in three phases:

**Phase 1.** You are dry when lying down at night

**Phase 2.** You are dry when walking or doing moderate activity

**Phase 3.** You are dry when you rise from a sitting position or cough or sneeze. This is the last aspect of continence to return after surgery

**Sexual Function (ability to get erections)**

In many cases it is not possible to spare the nerves and blood vessels necessary for normal spontaneous erections. This is because these nerves and vessels run in close proximity to the prostate and must be sacrificed to ensure complete excision of the cancer. No normal erections would be expected following a non-nerve-sparing procedure, but erection can be achieved with the assistance of injections into the penis or vacuum devices.

In some cases (low-volume and low grade cancer, with a PSA <10) it is reasonable to attempt a nerve-sparing procedure. The aim is to preserve the neurovascular bundle responsible for the erection of the penis without compromising the clearance of cancer. In such cases erectile protective measures like taking PDE inhibitor tablets (e.g Viagra, Cialis, Levitra) or self-injections of medication to cause erection (alprostadil) into the penis will assist the return of normal spontaneous erections if administered soon after the procedure. These drugs will need to be prescribed by your doctor.

The return of erections occurs gradually and visual and psychological stimulation will be less important than tactile sensation in aiding recovery. If you are able to regain a part erection then vaginal penetration should be attempted as soon as reasonable and use of a lubricant such as KY jelly may be helpful at this stage. Vaginal stimulation is a factor that can stimulate further erections and you should not wait until you have a 'full' erection before attempting sexual intercourse. After surgery the sensation of orgasm may be diminished and there will be no ejaculation.

The success of nerve-sparing is affected by age and the sexual function of the individual prior to surgery. Success rates vary with between 50 and 80% of men having return of normal sexual function depending on these factors. Return of normal spontaneous erections can also take up to 2 years as nerves do take a long time to recover following injury.

It must be understood that there is no curative treatment for prostate cancer where maintenance of spontaneous erections can be guaranteed, although most men can achieve satisfactory erections using injections or medications when spontaneous erections do not return.

In order for us to understand your sexual function prior to undertaking any surgery we have included in this booklet a questionnaire for you to complete and return to us. We would be very grateful if you would take the time to complete this and return to Linda Fletcher, Practice Manager, Edinburgh Urology Specialists, Spire Murrayfield Hospital, 122 Corstphine road, Edinburgh EH12 6UD.

**MALE SEXUAL FUNCTION :**

**NAME:** \_\_\_\_\_ **DOB:** \_\_\_\_/\_\_\_\_/\_\_\_\_

(Please answer by circling the response that best applies to you)

**1. In the past four weeks, how often were you able to get an erection during sexual activity?**

- 0 = No sexual activity
- 1 = Almost never / never
- 2 = A few times (much less than half the time)
- 3 = Sometimes (about half the time)
- 4 = Most times (much more than half the time)
- 5 = Almost always / always

**2. In the past four weeks, when you had erections with sexual stimulation, how often were your erections hard enough for penetration?**

- 0 = No sexual activity
- 1 = Almost never / never
- 2 = A few times (much less than half the time)
- 3 = Sometimes (about half the time)
- 4 = Most times (much more than half the time)
- 5 = Almost always / always

**3. In the past four weeks, when you attempted sexual intercourse, how often were you able to penetrate (enter) your partner?**

- 0 = Did not attempt intercourse
- 1 = Almost never / never
- 2 = A few times (much less than half the time)
- 3 = Sometimes (about half the time)
- 4 = Most times (much more than half the time)
- 5 = Almost always / always

**4. In the past four weeks, during sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?**

- 0 = Did not attempt intercourse
- 1 = Almost never / never
- 2 = A few times (much less than half the time)
- 3 = Sometimes (about half the time)
- 4 = Most times (much more than half the time)
- 5 = Almost always / always

**5. In the past four weeks, during sexual intercourse, how difficult was it to maintain your erection to completion of intercourse?**

- 0 = Did not attempt intercourse
- 1 = Extremely difficult
- 2 = Very difficult
- 3 = Difficult
- 4 = Slightly difficult
- 5 = Not difficult

**6. In the past four weeks, how many times have you attempted sexual intercourse?**

- 0 = No attempts
- 1 = One to two attempts
- 2 = Three to four attempts
- 3 = Five to six attempts
- 4 = Seven to ten attempts
- 5 = Eleven + attempts

Please detach and return to us



**7. In the past four weeks, when you attempted sexual intercourse, how often was it satisfactory for you?**

- 0 = Did not attempt intercourse
- 1 = Almost never / never
- 2 = A few times (much less than half the time)
- 3 = Sometimes (about half the time)
- 4 = Most times (much more than half the time)
- 5 = Almost always / always

**8. In the past four weeks, how much have you enjoyed sexual intercourse?**

- 0 = No intercourse
- 1 = No enjoyment
- 2 = Not very enjoyable
- 3 = Fairly enjoyable
- 4 = Highly enjoyable
- 5 = Very highly enjoyable

**9. In the past four week, when you have sexual stimulation or intercourse, how often did you ejaculate?**

- 0 = No sexual stimulation / intercourse
- 1 = Almost never / never
- 2 = A few times (much less than half the time)
- 3 = Sometimes (about half the time)
- 4 = Most times (much more than half the time)
- 5 = Almost always / always

**10. In the past four weeks, when you had sexual stimulation or intercourse, how often did you have feelings of orgasm or climax?**

- 0 = No sexual stimulation / intercourse
- 1 = Almost never / never
- 2 = A few times (much less than half the time)
- 3 = Sometimes (about half the time)
- 4 = Most times (much more than half the time)
- 5 = Almost always / always

**11. In the past four weeks, how often have you felt sexual desire?**

- 1 = Almost never / never
- 2 = A few times (much less than half the time)
- 3 = Sometimes (about half the time)
- 4 = Most times (much more than half the time)
- 5 = Almost always / always

**12. In the past four weeks, how would you rate your level of sexual desire?**

- 1 = Very low / none at all
- 2 = Low
- 3 = Moderate
- 4 = High
- 5 = Very high

**13. In the past four weeks, how satisfied have you been with your overall sex life?**

- 1 = Very dissatisfied
- 2 = Moderately dissatisfied
- 3 = About equally satisfied and dissatisfied
- 4 = Moderately satisfied
- 5 = Very satisfied

**14. In the past four weeks, how satisfied have you been with your sexual relationship with your partner?**

- 1 = Very dissatisfied
- 2 = Moderately dissatisfied
- 3 = About equally satisfied and dissatisfied
- 4 = Moderately satisfied
- 5 = Very satisfied

**15. In the past four weeks, how do you rate your confidence that you could get and keep an erection?**

- 1 = Very low
- 2 = Low
- 3 = Moderate
- 4 = High
- 5 = Very high

**Contact Details**

Mr McNeill - via Linda Fletcher, Practice Manager - 0131 334 0363 Ext 2943  
 Ward Telephone number - 0131 316 2591  
 Specialist physiotherapist (Kate Leishman) - 0131 316 2537

**Prostate Cancer Support Group**

Edinburgh and Lothian Prostate Cancer Support Group - 0131 208 3067  
 Edinburgh & Lothian Prostate Cancer Support Group - West Lothian. Charlie Hogg 01506 845981  
 Borders Prostate Cancer Support – Andrew Wood 01875 341979

**Prostate Scotland**

Prostate Scotland has a range of information materials to download from the website, [www.prostatescotland.org.uk](http://www.prostatescotland.org.uk) or these can be sent out by contacting [info@prostatescotland.org.uk](mailto:info@prostatescotland.org.uk) or by telephoning 0131 226 8157

It is not possible for Prostate Scotland to provide medical advice for individual patients.

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