

## Benign Prostatic Hyperplasia: Diagnosis and Treatment

<http://www.medicine.ox.ac.uk/bandolier/band11/b11-3.html>

Note for new visitors

**Bandolier** now has a section dedicated to benign prostatic hyperplasia, with updated information as better information becomes available from systematic reviews. You can visit it by clicking [Here](#) .

The US Agency for Health Care Policy and Research (AHCPR) was established in December 1989 to enhance the quality, appropriateness, and effectiveness of health care services. From time to time AHCPR publishes evidence-based Clinical Practice Guidelines.

The eighth in the series is devoted to benign prostatic hyperplasia (BPH) diagnosis and treatment. The main book (220 pages and 300 references) is accompanied by a patient booklet and quick reference guide for clinicians. This may seem daunting, but this is a real and readable example of everything you wanted to know about BPH but were afraid to ask! **Bandolier** has no hesitation in encouraging any healthcare professional or patient to read and enjoy this publication.

How big is the problem?

BPH is the most common benign neoplasm (non cancerous enlargement of the prostate gland) in men, and has a high prevalence that increases with age. The increase in size of the prostate inside its capsule exerts pressure on the urethra, which passes through the capsule, resulting in obstruction to urine flow.

Half of all men have BPH identifiable histologically at age 60 years, and by 85 years the prevalence is about 90%. In the USA about 25% of men will be treated for BPH by age 80, and over 300,000 surgical procedures are performed each year for BPH (mostly transurethral resection of the prostate, TURP). This makes TURP the second most common surgical procedure, second only to cataract surgery - at a cost estimated at \$2 billion per year.

What are the symptoms?

Most patients with BPH consult their GP with bothersome symptoms concerning urination. A simple symptom index has been drafted by the American Urologists Association (AUA). By answering seven questions about the severity of symptoms, it is possible to define whether the symptoms are mild (0-7 points), moderate (8-19 points) or severe (20-35 points).

## AUA Symptom Index

Circle 1 number on each line

Questions to be answered	Not at all	Less than 1 time in 5	Less than half the time	About half the time	More than half the time	Almost always
1: Over the past month, how often have you had a sensation of not emptying your bladder completely after you finished urinating?	0	1	2	3	4	5
2: Over the past month, how often have you had to urinate again less than 2 hours after you finished urinating?	0	1	2	3	4	5
3: Over the past month, how often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5
4: Over the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5
5: Over the past month, how often have you had a weak urinary stream?	0	1	2	3	4	5
6: Over the past month, how often have you had to push or strain to begin urination?	0	1	2	3	4	5
7: Over the past month, how many times did you most typically get up to urinate from the time you went to bed at night until the time you got up in the morning?	0	1	2	3	4	5

Sum of 7 circled numbers (AUA Symptom Score): \_\_\_\_\_

This Symptom Index is recommended as the symptom scoring instrument to be used in the initial assessment of each patient presenting with symptoms of prostatism, and should be the primary determinant of treatment response or disease progression in the follow up period.

What diagnostic tests are useful?

Although there are a number of diagnostic test procedures which can be used for BPH, urine flow rate recording is the single best non invasive urodynamic test to detect lower urinary tract obstruction. There is insufficient evidence to recommend a cut-off value to document appropriateness of therapy.

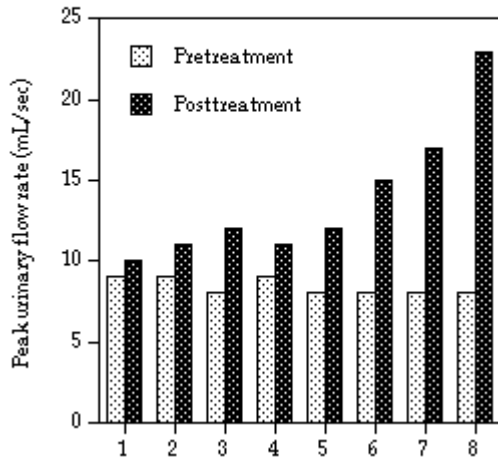
This test measures the peak or average flow rate of urine, and peak flow rates (Q<sub>max</sub>) of above 15 mL/second are usually found in asymptomatic men of 25 to more than 60 years of age. Responses to treatment are less good in patients with a Q<sub>max</sub> of more than 15 mL/sec.

Other diagnostic tests such as post void residual urine volume and some pressure flow studies are regarded as optional, but other tests (filling cystometry, urethrocystoscopy, imaging of the urinary tract) are not recommended.

What are the treatment options?

There are a number of treatment options. These include watchful waiting, medical therapy, balloon dilatation and various surgical procedures.

Mean pre- and post treatment urinary flow rates for various BPH treatments



Treatment

1. Placebo
2. Watchful waiting
3. Alpha blocker
4. Finasteride
5. Balloon dilation
6. TUIP
7. TURP
8. Open prostatectomy

The effects of these various treatments on peak urinary flow rate have been surveyed in the AHCPR review, and are summarised in the figure. TURP and open prostatectomy, as well as TUIP (which is not commonly performed in the UK) are the most effective in producing an increase in urinary flow rate.

Similar summaries of the effects of various treatments on symptom improvement are shown in the Table.

<b>Mean probability of symptom improvement</b>	
<b>Treatment</b>	<b>Median probability (95% CI, percent)</b>
Placebo	45 (20-65)
Watchful waiting	42 (31-55)
Alpha blocker	74 (59-86)
Finasteride	67 (54-78)
Balloon dilation	57 (37-76)
TUIP	80 (78-83)
TURP	88 (75-96)
Open prostatectomy	98 (94-99)

About half the patients treated with placebo or watchful waiting reported symptom improvement, compared with

about 90% for TURP. The proportion reporting worse symptoms is small (usually less than 5%) except for watchful waiting where it can be as high as 25%.

The AHCPR review has also estimated the magnitude of the symptom improvement. For the placebo and medical treatments this was of the order of 30-40% improvement, but for the surgical procedures was 70-85% improvement, clearly superior to other treatments.

### BPH Treatment Options

- Watchful waiting: A strategy of management in which the patient is monitored but receives no active treatment.
- Alpha blocker therapy: Treatment using alpha-1-adrenergic receptor blockers that inhibit contraction of prostatic smooth muscle.
- Finasteride therapy: Treatment using finasteride, an enzyme inhibitor that lowers prostatic androgen levels and can result in some decrease of prostate size.
- Balloon dilation: A catheter with a balloon at the end is inserted through the urethra and into the prostatic urethra. The balloon is then inflated to stretch the urethra where narrowed by the prostate.
- Transurethral incision of the prostate (TUIP): An endoscopic surgical procedure in which patients with smaller prostates (<30 g) have an instrument inserted through the urethra to make one or two cuts in the prostate and reduce the constriction on the urethra.
- Transurethral resection of the prostate (TURP): Surgical removal of the prostate's inner portion by endoscopic approach through the urethra. This is the most common active treatment.
- Open prostatectomy: Surgical removal of the prostate via an incision in the lower abdomen. It usually requires a longer hospital stay.

What are the adverse events with treatment?

Few treatments are without any adverse consequences, and this is particularly so with treatments with BPH, where there is a delicate balancing act between the benefits and demerits of the treatments available.

The adverse events following treatment for BPH include impotence (with 90% confidence intervals for various surgical procedures ranging from about 4 % to 40%; the incidence of impotence is also increased after some medical treatments), incontinence (stress incontinence about 3% after surgery, with total urinary incontinence approaching 1%), and the need for re-treatment.

Re-treatment over a five year period was calculated by the AHCPR for a number of treatment options. Thus for watchful waiting, balloon dilation and medical treatments some 30-40% of men would expect to suffer treatment failure over five years; for surgical procedures treatment failure over the same period was calculated at 2-10%.

Combined analysis of published data estimated that the mean probability for perioperative mortality (death within 90 days of a procedure) was 1.5% for TURP. For open surgery it was 2.4% and for balloon dilation it was 3.5%.

What do treatments cost?

The AHCPR has calculated treatment costs from Medicare data. In absolute terms this is not entirely pertinent for British experience, but the relative costs are probably similar, and the figures are given in the table below in US\$.

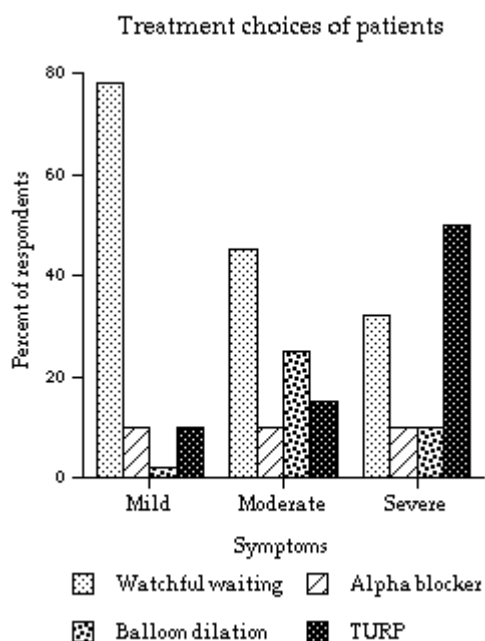
Treatment	Cost for treatment and first year	Cost for second year of treatment
Watchful waiting	1,162	640
Finasteride	1,328	798
Alpha blocker	1,385	845
Balloon dilation	3,723	513
TURP	8,808	380
Open prostatectomy	12,788	88

Treatment preference?

BPH affects the quality rather than the quantity of life. It is therefore the degree to which the patient's symptoms bother him that will determine the need for therapy; the relative benefits and harms of each treatment option will help to determine their therapeutic preference.

AHCPR therefore gauged the range of personal preferences by looking at the way in which a small band of patients (53) who were given information on the benefits and adverse effects of different treatments made judgements about their own treatment options. Nine of the 53 had mild symptoms, 19 moderate and 12 severe symptoms by the AUA scoring system.

The results are shown in the figure.



Watchful waiting was the most frequently chosen treatment for those patients with mild and moderate symptoms. Those with severe symptoms most frequently chose surgery. Medical therapies and balloon dilation were chosen by only a small percentage of the patients.

New treatment options?

There are number of new treatment options becoming available, though none of these has yet to be tested rigorously in randomised controlled trials, and even in the open studies so far reported there is no clear indication that they offer any particular benefits over conventional therapies. Judgement, however, must await publication of good clinical trials.

The new therapies fall into some clear groups.

Laser prostatectomy uses energy from directed neodymium yttrium aluminium garnet lasers to destroy prostate tissue. Initially bare laser fibres were used, with fairly disappointing results, but later technology advances enabled

right angled fibres to direct the laser energy more directly at the tissue. The lasers are directed by ultrasound or direct cystoscopy.

Hyperthermia of the prostate tissue utilises microwaves to `cook' the prostate tissue and destroy it. A number of technologies have been used to deliver microwaves transrectally or transurethrally.

Prostatic stents are metal devices that can be placed in the prostatic urethra to expand the urethra and make urine flow easier.

To these surgical options must be added a number of medical treatments currently under trial. The AHCPR report concluded that there was presently insufficient data on any of these to permit conclusions regarding their safety and efficacy. The new treatments should not form part of purchasing contracts until one year follow up data from properly conducted randomised controlled trials are available.

How to get the report?

Copies of this highly recommended report and the associated documents are available from AHCPR Publications Clearinghouse, PO Box 8574, Silver Spring, MD 20907-8547, USA (Tel 0101-800-358-9295).