Title: Prostatic Urethral Lift Procedure for the Treatment of BPH

Description/Background

BENIGN PROSTATIC HYPERPLASIA (BPH)
Benign prostatic hyperplasia is a common, noncancerous enlargement of the prostate gland. The enlarged prostate may compress the urethra, which courses through the center of the prostate, impeding the flow of urine from the bladder through the urethra to the outside of the body. If the prostate enlargement is severe enough, complete urinary blockage can occur. BPH generally begins after age 30, evolves slowly, and causes symptoms usually only after age 50. Half of all men over the age of 50 develop symptoms of BPH, but only a minority need medical or surgical intervention. BPH can cause urinary problems such as:

- Trouble getting a urine stream started and completely stopped (dribbling).
- Urinary urgency and frequency (including nocturia)
- Weak urine stream
- Inability to empty the bladder completely

A questionnaire is often used to evaluate the severity of the patient’s BPH. Several scoring systems have been developed to assess the subjective symptoms of BPH, including the American Urological Association (AUA) symptom index. The AUA test contains seven questions, and the resulting symptom score is from mild to severe. Each question is answered with a score ranging from 0 for none to 5 for severe. The symptom score (i.e., sum of the answers) is ranked as follows:

- Mild prostatism (0 to 7)
- Moderate prostatism (8 to 19)
- Severe prostatism (20 to 35)

Patients with mild symptoms (IPSS/AUA-SI score < 7) or moderate-to-severe symptoms (IPSS/AUA-SI score ≥8) of BPH who are not bothered by their symptoms and are not experiencing complications of BPH should be managed with a strategy of watchful waiting. In
these situations, medical therapy is not likely to improve their symptoms and/or quality of life (QOL). In addition, the risks of treatment may outweigh any benefits. Patients managed expectantly with watchful waiting are usually re-examined annually. In current clinical practice, most patients with BPH do not present with obvious surgical indications. Instead, they often have mild lower urinary tract symptoms (LUTS) and are initially treated with medical therapy.

The era of medical therapy for BPH dawned in the mid-1970s with the use of nonselective alpha-blockers such as phenoxybenzamine. The medical therapeutic options for BPH have evolved significantly over the last 3 decades, and include drugs in two major classifications, alpha-antagonists, and 5-alpha-reductase inhibitors, used alone or in combination therapy. Hormonal drugs have also been used.

If medical therapy fails, or the man wishes to terminate medical therapy, surgical intervention may be considered. The indications to proceed with a surgical intervention for BPH include acute urinary retention, failed voiding trials and frequent urinary tract infections which may progress to renal insufficiency secondary to obstruction in severe cases.

There are a number of surgical interventions for BPH, including, but not limited to:

- Transurethral resection of the prostate (TURP), which has long been accepted as the criterion standard for relieving bladder outlet obstruction secondary to BPH
- Transurethral incision of the prostate (TUIP)
- Transurethral microwave thermotherapy (TUMT)
- Transurethral needle ablation (TUNA)
- Laser prostatectomy

Laser-based procedures including contact laser ablation of the prostate (CLAP), holmium laser procedures of the prostate (HoLAP, HoLEP, HoLRP), photoselective laser vaporization of the prostate (PVP), transurethral ultrasound-guided laser induced prostatectomy (TULIP), and visually-guided laser ablation of the prostate (VLAP, also called non-contact laser ablation of the prostate)

A new procedure, the Prostatic Urethral Lift, also known as Prostatic UroLift (PUL), the UroLift® System or the transprostatic implant system, has been developed for the treatment of LUTS associated with BPH. The manufacturer, NeoTract, Inc., has developed a system to retract the prostate tissue away from the urethra without cutting, heating or removing prostate tissue. The PUL procedure consists of the insertion of small, permanent transprostatic implants, placed cystoscopically around the prostate tissue to compress it and retract the obstructing lateral lobes, thereby increasing the urethral lumen and reducing obstruction to urine flow. Subsequently, 4 or 5 implants are delivered into the prostatic urethra to maintain urethral patency. (The PUL has been compared to the way curtains are pulled apart using curtain tiebacks.) A final cystoscopy confirms that the implants were appropriately positioned. The bladder is filled at the end of the procedure and the patient voids. This technique is proposed as an option for men who are poor candidates for more invasive BPH procedures. According to the manufacturer, PUL has no incidence of sexual side effects and complications such as bladder neck contracture, stricture, hematuria or incontinence associated with existing BPH surgical procedures.
**Regulatory Status**

The UroLift System received FDA authorization for marketing through a de novo classification approval on September 13, 2013 (K130651), as a Class II device. It is indicated for the treatment of symptoms due to urinary outflow obstruction secondary to benign prostatic hyperplasia (BPH) in men age 50 and above. Per the FDA approval, the UroLift System should not be used if the patient has:

- Prostate volume of >80 cc;
- An obstructive or protruding *median* lobe of the prostate;
- A urinary tract infection;
- Urethra conditions that may prevent insertion of delivery system into bladder;
- Urinary incontinence;
- Current gross hematuria; or
- A known allergy to nickel.

In addition, the UroLift Implant has been shown to be MR Conditional and can be scanned under the following conditions:

- Static magnetic field strength of 3 Tesla or less;
- Maximum spatial gradient magnetic field of 720 Gauss/cm;
- A maximum whole-body-averaged specific absorption rate (SAR) of 4 W/kg for 15 minutes of scanning.

In March 2016, FDA determined that the UL500 was substantially equivalent to existing devices (UL400) for the treatment of symptoms of urinary flow obstruction secondary to benign prostatic hyperplasia in men age 50 years and older. FDA product code: PEW.

**Medical Policy Statement**

The safety and efficacy of the prostatic urethral lift procedure for the treatment of benign prostatic hypertrophy (BPH) have been established. It is a useful therapeutic option for men with symptomatic BPH who have failed conventional pharmacologic therapy.

**Inclusionary and Exclusionary Guidelines (Clinically based guidelines that may support individual consideration and pre-authorization decisions)**

**Inclusions:**
Candidates for the prostatic urethral lift procedure must meet all of the following guidelines:

- Age 50 years or older
- A documented diagnosis of symptomatic benign prostatic hypertrophy (BPH) of the *lateral* lobes of the prostate, including but not limited to the following symptoms:
  - Difficulty starting and stopping urination (hesitancy and straining).
  - Decreased strength of the urine stream (weak flow).
  - Dribbling after urination.
  - Feeling that the bladder is not completely empty.
  - An urge to urinate again soon after urinating (urgency).
  - Pain during urination (dysuria).
– Nocturia – waking up several times during the night with the urge to urinate.
– Frequent urinary tract infections secondary to urinary obstruction.

• Documented failure of, inability to tolerate, or undesirable side effects of pharmacologic interventions for BPH, including, but not limited to
  – Alpha blockers such as Uroxatral, Cardura, Rapaflo, Flomax or Hytrin
  – 5-Alpha Reductase Inhibitors for BPH, such as Avodart or Proscar
  – Combination drugs using both an alpha blocker and a 5-alpha reductase inhibitor.

Exclusions:
Patients not meeting the patient selection criteria above.

CPT/HCPCS Level II Codes
(Note: The inclusion of a code in this list is not a guarantee of coverage. Please refer to the medical policy statement to determine the status of a given procedure.)

Established codes:
52441  52442

Other codes (investigational, not medically necessary, etc.):
N/A

Rationale
Evidence reviews assess the clinical evidence to determine whether the use of technology improves the net health outcome. Broadly defined, health outcomes are the length of life, quality of life, and ability to function—including benefits and harms. Every clinical condition has specific outcomes that are important to patients and managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of technology, two domains are examined: the relevance and the quality and credibility. To be relevant, studies must represent one or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be adequate. RCTs are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

PROSTATIC URETHRAL LIFT

Clinical Context and Therapy Purpose
The purpose of PUL in patients who have lower urinary tract symptoms due to benign prostatic hyperplasia (BPH) is to provide a treatment option that is an alternative to or an improvement
on existing therapies such as medical management or transurethral resection of the prostate (TURP).

The question addressed in this evidence review is: Does PUL improve the net health outcome in individuals with BPH?

The following **PICOTS** were used to select literature to inform this review.

**Patients**
The relevant population-of-interest are men who are experiencing lower urinary tract symptoms without a history suggesting non-BPH causes of the symptoms and who do not have sufficient response to medical therapy or are experiencing significant side effects with medical therapy.

**Interventions**
The therapy being considered is PUL. The PUL procedure involves placement of one or more implants in the lateral lobes of the prostate using a transurethral delivery device. The implant device is designed to retract the prostate to allow expansion of the prostatic urethra. The implants are retained in the prostate to maintain an expanded urethral lumen.

One device, the NeoTract UroLift System, has been cleared for marketing by the U.S. Food and Drug Administration (see Regulatory Status section). The device has two main components: the delivery device and the implant. Each delivery device comes preloaded with a UroLift implant.

**Comparators**
Various surgical or ablative procedures are used to treat BPH. TURP is generally considered the reference standard for comparisons of BPH procedures. Several minimally invasive prostate ablation procedures have also been developed, including transurethral microwave thermotherapy, transurethral needle ablation of the prostate, urethromicroablation phototheraphy, and photo-selective vaporization of the prostate.

**Outcomes**
A number of health status measures are used to evaluate symptoms relevant to BPH and adverse events of treatment for BPH, including urinary dysfunction measured by urinary flow rate (Qmax), ejaculatory dysfunction, overall sexual health, and overall quality of life. Some validated patient-reported scales are shown in Table 1.

Of note, prostate volume does not have a direct correlation with severity of urinary symptoms.8

**Table 1. Patient-Reported Health Outcome Measures Relevant to Benign Prostatic Hyperplasia**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Outcome Evaluated</th>
<th>Description</th>
<th>Clinically Meaningful Difference (if Known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Sexual Health Questionnaire for Ejaculatory Dysfunction9</td>
<td>Ejaculatory function and quality of life</td>
<td>Patient-administered, 4-item scale. Symptoms rated as absent (15) to severe (0). QOL assessed as no problem (0) to extremely bothered (5).</td>
<td></td>
</tr>
<tr>
<td>Sexual Health Inventory for Men10</td>
<td>Erectile function</td>
<td>Patient-administered, 5-item scale. Erectile dysfunction rated as severe (1-7), 5-point change11</td>
<td></td>
</tr>
</tbody>
</table>
American Urological Association Symptom Index; International Prostate Symptom Score\(^1,3,12\)  Severity of lower urinary tract symptoms

- Patient-administered, 7-item scale. Symptoms rated as mild (0-7), moderate (8-19), or severe (20-35)
- IPSS asks an additional question, rating QOL as delighted (0) to terrible (6).

Benign Prostatic Hyperplasia Impact Index\(^6,14\)  Effect of urinary symptoms on health domains

- Patient-administered, 4-item scale. Symptoms rated as absent (0) to severe (13).

QOL: quality of life

Timing
Outcomes data demonstrating durability to at least two years is preferred.

Setting
Medical management of BPH may occur in the primary or secondary care setting. Men needing surgical management are referred to urologists with experience in surgical procedures for treating BPH.

Study Selection Criteria
Methodologically credible studies were selected using the following principles:

- a. To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs;
- b. In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- c. To assess longer-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- d. Studies with duplicative or overlapping populations were excluded.

Systematic Reviews
Several systematic reviews on PUL have been published. They include a similar set of trials and noncomparative studies. For example, Perera et al (2015) reported on the results of a systematic review and meta-analysis\(^15\) of studies reporting outcomes after the PUL procedure, which included 7 prospective cohort studies,\(^16-22\) a crossover study (Cantwell et al [2014]\(^{23}\)), and the LIFT RCT (Roehrborn et al [2013],\(^{24}\) McVary et al [2014]\(^{25}\)). The pooled standardized mean gain estimates for prostate symptoms scores (International Prostate Symptom Score [IPSS], Benign Prostatic Hyperplasia Impact Index [BPH-II]), and sexual health scores used responses from 452 to 680 patients. The standardized mean gain for prostatic symptoms scores ranged from -1.3 (95% confidence interval [CI], -1.4 to -1.2) to -1.6 (95% CI, -1.7 to -1.3), which translated into a clinically meaningful improvement. The standardized mean gain for sexual health scores ranged from 0.3 (95% CI, 0.2 to 0.4) to 0.4 (95% CI, 0.3 to 0.5), suggesting a small improvement.

Shore (2015)\(^{26}\) performed a systematic review of UroLift studies, which included the LIFT RCT (Roehrborn et al [2013]\(^{24}\); Roehrborn et al [2015]\(^{27}\); McVary et al [2014]\(^{25}\)), a crossover study (Cantwell et al [2014]\(^{23}\)), and 4 prospective cohort studies (Garrido Abad et al [2013]\(^{16}\); Chin et al [2012]\(^{20}\); Woo et al [2012]\(^{21}\); McNicholas et al [2013]\(^{19}\)). Only data that showed absolute change, supported by a 95% CI or standard deviation, were included in the weighted analysis.
Reviewers reported that, from 0.5 to 1.5 months to 2 years, mean peak urinary flow rate (Qmax) increased from 3.3 to 4.15, IPSS improved from -4.5 to -9.2 relative to baseline, quality of life improved from -1.2 to -2.2 relative to baseline, and BPH-II scores improved from -0.1 to -3.8 relative to baseline. Changes in post-void residual volume were not statistically significant.

Jones et al (2016) performed a systematic review of UroLift studies with at least 12 months of follow-up.28 Seven studies were identified, which included 4 noncomparative studies (Woo et al [2011],22 Chin et al [2012],20 McNicholas et al [2013],19 Bozkurt et al [2016]29), a crossover study (Cantwell et al [2014]23), and 2 RCTs (LIFT24 and BPH611). Reviewers included data from 440 patients. Only the data from men in the UroLift arms of these RCTs were included. Results were combined to create summaries, but the meta-analytic methods used to combine the data were not described, and precision estimates were not given. Reviewers reported that Qmax increased from 8.4 mL/s to 11.8 mL/s, mean IPSS improved from 24.1 to 14, mean quality of life improved from 4.5 to 2.3, and mean 5-item International Index of Erectile Function score improved from 17.7 to 18.2. The most frequent complications reported were dysuria, hematuria, and pelvic pain.

The National Institute for Health and Care Excellence (2016) published a technical guidance on prostatic lift procedures.30 The National Institute for Care Excellence performed a literature search and data synthesis to support the development of the guidance. Studies selected were the same studies included in Perera et al (2015),15 except for the exclusion of Hoffman et al (2012)17 and the inclusion of Garrido Abad et al (2013)16 in the analysis. Comparators for the review were TURP and holmium laser enucleation of the prostate (HoLEP). When the literature search was performed, there were no studies directly comparing PUL with either TURP or HoLEP. Therefore, the National Institute and Care Excellence extracted data from a TURP vs. HoLEP systematic review to perform a “pragmatic indirect comparison” of these comparators with prostatic lift procedures. Reviewers concluded that while PUL provided a significant improvement in IPSS, BPH-II, and quality of life, those improvements were smaller than those seen with TURP or HoLEP; however, it should be noted that the PUL procedure was associated with a slight improvement in erectile or ejaculatory function.

Randomized Controlled Trials
Two RCTs of PUL have been performed. Key trial characteristics and study results are shown below in Tables 2 and 3. Additionally, a brief description of each trial is provided in the following sections.

### Table 2. PUL Randomized Controlled Trial Characteristics

<table>
<thead>
<tr>
<th>Study; Trial</th>
<th>Countries</th>
<th>Sites</th>
<th>Dates</th>
<th>Inclusion Criteria</th>
<th>Baseline Prostate Volume, cm³</th>
<th>Active</th>
<th>Comparator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonksen et al (2015)11; BPH6</td>
<td>Denmark, Germany, U.K.</td>
<td>10</td>
<td>Feb 2012-Oct 2013</td>
<td>Age ≥50 y, IPSS &gt;12, prostate volume &lt;60 cm³</td>
<td>16-59</td>
<td>PUL=46</td>
<td>TURP=45</td>
</tr>
<tr>
<td>Roehrborn et al (2013)24; LIFT</td>
<td>U.S., Canada, Australia</td>
<td>19</td>
<td>Feb-Dec 2011</td>
<td>Age ≥50 y, IPSS &gt;13, prostate volume 30-80 cm³, washed out of BPH medications</td>
<td>30-77</td>
<td>PUL=140</td>
<td>Sham=66</td>
</tr>
</tbody>
</table>
Sonksen et al (2015) reported on the results of a multicenter RCT comparing the PUL procedure with TURP among individuals ages 50 and older with lower urinary tract symptoms, secondary to benign prostatic obstruction. Eligible patients had an IPSS above 12, a Qmax of 15 mL/s or less for a 125-mL voided volume, a post-void residual volume less than 350 mL, and prostate volume of 60 cm³ or less on ultrasound. Patients were excluded if there was median lobe obstruction in the prostate or signs of active infection. The trial used a novel composite endpoint, referred to as the BPH6, which included the following criteria:

- Lower urinary tract symptom relief: Reduction in IPSS by ≥30% within 12 months, relative to baseline
- Recovery experience: Self-assessed by patients as ≥70% within 1 month, using a visual analog scale
- Erectile function: Reduction in Sexual Health Inventory for Men (SHIM) score by ≤6 points within 12 months, relative to baseline
- Ejaculatory function: Emission of semen as assessed by question three in the Male Sexual Health Questionnaire for Ejaculatory Dysfunction (MSHQ-EjD)
- Continence preservation: Incontinence Severity Index ≤4 points at all follow-up visits
- Safety: No treatment-related adverse events exceeding grade 1 on the Clavien-Dindo classification system at time or procedure or any follow-up.

Patients were considered treatment responders if they met all six composite criteria. While this composite endpoint has not been previously validated, core components of the composite score have been independently validated in a clinical setting. The trial used a noninferiority design with a margin of 10% for the primary endpoint, BPH6. Study investigators modified 2 of the original endpoint definitions in the study’s analysis, including changing the sexual function element assessment from a single time point (12 months) to assess sustained effects during 12 months of follow-up, and lowering the threshold of quality of recovery on a visual analog scale from 80 to 70.

Table 3. Summary of Evidence From the BPH6 Study

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>3 Months</th>
<th>12 Months</th>
<th>24 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean change in IPSS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>42</td>
<td>34</td>
<td>40</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>-11.7 (8.5)</td>
<td>-11.8 (9.5)</td>
<td>-10.9 (7.9)</td>
</tr>
<tr>
<td>p</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Comparison (p)</td>
<td>0.978</td>
<td>0.013</td>
<td>0.004</td>
</tr>
<tr>
<td>Change in IPSS QOL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>43</td>
<td>34</td>
<td>40</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>-2.6 (1.7)</td>
<td>-2.4 (2.0)</td>
<td>-2.8 (1.8)</td>
</tr>
<tr>
<td>p</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Comparison (p)</td>
<td>0.55</td>
<td>0.436</td>
<td>0.066</td>
</tr>
<tr>
<td>Change in Qmax</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>33</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>4.2 (5.0)</td>
<td>12.7 (9.8)</td>
<td>4.0 (4.8)</td>
</tr>
<tr>
<td>p</td>
<td>&lt;0.001</td>
<td>0.003</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Comparison (p)</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>0.002</td>
</tr>
<tr>
<td>Change in SHIM score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>38</td>
<td>27</td>
<td>32</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>-0.7 (5.2)</td>
<td>-1.0 (5.2)</td>
<td>-0.1 (4.7)</td>
</tr>
</tbody>
</table>
### Change in MSHQ-EjD function score

<table>
<thead>
<tr>
<th>n</th>
<th>Mean (SD)</th>
<th>p</th>
<th>Comparison (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>-0.7 (2.1)</td>
<td>0.251</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>27</td>
<td>-3.0 (4.1)</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
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<tr>
<td>32</td>
<td>1.3 (3.3)</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>27</td>
<td>-3.7 (4.1)</td>
<td>0.067</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>29</td>
<td>0.3 (3.4)</td>
<td>0.832</td>
<td>0.666</td>
</tr>
<tr>
<td>27</td>
<td>-4.0 (4.6)</td>
<td>0.067</td>
<td>0.201</td>
</tr>
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</table>

### Change in MSHQ-EjD bother score

<table>
<thead>
<tr>
<th>n</th>
<th>Mean (SD)</th>
<th>p</th>
<th>Comparison (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>-0.7 (2.1)</td>
<td>0.062</td>
<td>0.069</td>
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<tr>
<td>28</td>
<td>0.2 (1.5)</td>
<td>0.359</td>
<td>0.359</td>
</tr>
<tr>
<td>32</td>
<td>0.5 (2.2)</td>
<td>0.214</td>
<td>0.214</td>
</tr>
<tr>
<td>27</td>
<td>0.0 (1.5)</td>
<td>0.896</td>
<td>0.896</td>
</tr>
<tr>
<td>29</td>
<td>-0.1 (2.2)</td>
<td>0.734</td>
<td>0.734</td>
</tr>
<tr>
<td>27</td>
<td>-0.3 (1.9)</td>
<td>0.415</td>
<td>0.415</td>
</tr>
</tbody>
</table>

### Clavien-Dindo adverse events

<table>
<thead>
<tr>
<th>Grade 1, n (%)</th>
<th>Adverse events</th>
<th>Grade 2, n (%)</th>
<th>Adverse events</th>
<th>Grade 3, n (%)</th>
<th>Adverse events</th>
</tr>
</thead>
<tbody>
<tr>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>30 (68)</td>
<td>60</td>
<td>3 (7)</td>
<td>3</td>
<td>4 (9)</td>
<td>4</td>
</tr>
<tr>
<td>26 (74)</td>
<td>79</td>
<td>4 (11)</td>
<td>5</td>
<td>5 (14)</td>
<td>5</td>
</tr>
</tbody>
</table>

### Ninety-one patients were randomized to TURP (n=45) or PUL (n=46). Ten patients in the TURP group and 1 patient in the PUL group declined treatment, leaving an analysis group of 80 subjects. The analysis was per-protocol, including 35 in the TURP group and 44 in the PUL group (87% of those randomized; 1 patient was excluded for violating the active urinary retention exclusion criterion). Groups were similar at baseline, except for the MSHQ-EjD function score. For procedure recovery, 82% of the PUL group achieved the recovery endpoint by 1 month compared with 53% of the TURP group (p=0.008). For the study’s primary outcome, the proportion of participants who met the original BPH6 primary endpoint was 34.9% for the PUL group, and 8.6% for the TURP group (noninferiority p<0.001; superiority p=0.006). The modified BPH6 primary endpoint was met by 52.3% of the PUL group and 20.0% of the TURP group (noninferiority p<0.001; superiority p=0.005). Both groups demonstrated improvements over IPSS, IPSS quality of life score, BPH-II score, and Qmax over time, as described in Table 3. There were 60, grade 1 adverse events in 30 (68%) PUL patients and 79 adverse events in 26 (74%) TURP patients. The number of patients experiencing grade 2 and 3 adverse events was similar between groups. Intention-to-treat analyses were not reported.

Gratzke et al (2017) reported on 2-year results from BPH6. Two additional patients were excluded from analysis: one TURP patient who discontinued participation; and one PUL patient who had a protocol violation. Composite scores for the two groups were not reported. Both groups continued to show significant improvements in IPSS score, IPSS quality of life, BPH-II score, and Qmax during the two-year follow-up, as described in Table 3. Six (14%) PUL patients and 2 (6%) TURP patients had secondary treatment (PUL, intradetrusor botulinum toxin, laser or TURP procedure), showing moderate durability over 2 years.

**Subsection Summary: BPH6 Study**
In the BPH6 study, PUL was both noninferior (p<0.001) and superior (p=0.005) to TURP for the study’s composite endpoint. This endpoint was calculated using the concurrent achievement of validated measures of symptoms and complications and is sufficient to describe patient health outcomes. TURP was associated with greater improvements in urinary tract obstruction symptom outcomes and with greater declines in ejaculatory function compared with PUL.

**LIFT Study**

**Comparative Data**

Roehrborn et al (2013) reported on results of the pivotal LIFT study, an RCT comparing PUL with sham control among 206 individuals ages 50 and older with lower urinary tract symptoms secondary to BPH. Eligible patients had an American Urological Association Symptom Index (AUASI) score of 13 or greater, Qmax of 12 mL/s or less for a 125-mL voided volume, and a prostate volume between 30 and 80 mL. Patients were excluded if there was median lobe obstruction in the prostate, post-void obstruction of more than 250 mL, or signs of active infection. Patients underwent washout of BPH medications before enrollment; the washout period was two weeks for α-blockers and three months for 5α-reductase inhibitors. Patients were randomized to PUL (n=140) or sham control (n=66) and evaluated at 3 months post-procedure for the trial’s primary efficacy endpoint. After that, all patients were unblinded, and sham control patients were permitted to undergo the PUL procedure. Fifty-three control subjects eventually underwent a PUL procedure. The analysis was intention-to-treat. The study met its primary efficacy endpoint, which was that the reduction in AUASI score at 3 months post-procedure had to be at least 25% greater after the PUL than the reduction in AUASI score seen with sham (p=0.003). The AUASI score decreased from 24.4 at baseline to 18.5 at 3-month follow-up for sham control patients and from 22.2 at baseline to 11.2 at 3-month follow-up for PUL patients (see Table 4). The 3-month change in Qmax was 4.28 mL/s for PUL patients and 1.98 mL/s for sham control patients (p=0.005). Compared with sham control patients, PUL patients had greater improvements in quality of life scores and BPH-II score (see Table 5). Nine serious adverse events in seven patients were reported in the PUL group, and one serious adverse event was reported in the sham group during the first three months of follow-up.

McVary et al (2014) reported on sexual function outcomes in a subset of patients from the LIFT study. At baseline, 53 (38%) PUL subjects and 23 (53%) sham control subjects were sexually inactive or had severe erectile dysfunction and were censored from the primary sexual function analysis. Scores on the SHIM, MSHQ-EjD function scale and the MSHQ-EjD bother scale did not differ significantly between groups.

**Table 4. Summary of LIFT Initial Trial Results**

<table>
<thead>
<tr>
<th>Study</th>
<th>Populationa</th>
<th>Interventionb</th>
<th>Comparatorc</th>
<th>Outcomesd</th>
<th>Following-Up e</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPH6</td>
<td>3. Unclear history of BPH treatments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIFT</td>
<td>3. Unclear history of BPH treatments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The evidence gaps stated in this table are those notable in the current review; this is not a comprehensive gaps assessment. BPH: benign prostatic hypertrophy.

a Population key: 1. Intended use population unclear; 2. Clinical context is unclear; 3. Study population is unclear; 4. Study population not representative of intended use.
Table 5. Study Design and Conduct Gaps

<table>
<thead>
<tr>
<th>Study</th>
<th>Allocationa</th>
<th>Blindingb</th>
<th>Selective Reportingd</th>
<th>Data Completenesse</th>
<th>Powerd</th>
<th>Statisticalf</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPH6</td>
<td></td>
<td></td>
<td></td>
<td>6. Only per-protocol analysis presented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIFT</td>
<td>1. Blinding not feasible</td>
<td></td>
<td>1, 2, 5. High losses and/or exclusions in extended follow-up, only LOCF sensitivity analyses provided</td>
<td></td>
<td>3, 4. CI not reported for treatment effects</td>
<td></td>
</tr>
</tbody>
</table>

The evidence gaps stated in this table are those notable in the current review; this is not a comprehensive gaps assessment.

CI: confidence interval; LOCF: last observation carried forward.

d Data Completeness key: 1. High loss to follow-up or missing data; 2. Inadequate handling of missing data; 3. High number of crossovers; 4. Inadequate handling of crossovers; 5. Inappropriate exclusions; 6. Not intent to treat analysis (per protocol for noninferiority trials).
e Power key: 1. Power calculations not reported; 2. Power not calculated for primary outcome; 3. Power not based on clinically important difference.
f Statistical key: 1. Analysis is not appropriate for outcome type: (a) continuous; (b) binary; (c) time to event; 2. Analysis is not appropriate for multiple observations per patient; 3. Confidence intervals and/or p values not reported; 4. Comparative treatment effects not calculated.

Subsection Summary: BPH6 Study
In the BPH6 study, PUL was both noninferior (p<0.001) and superior (p=0.005) to TURP for the study’s composite end-point. This end-point was calculated using the concurrent achievement of validated measures of symptoms and complications and is sufficient to describe patient health outcomes. TURP was associated with greater improvements in urinary tract obstruction symptom outcomes and with greater declines in ejaculatory function compared with PUL.

LIFT Study

Comparative Data
Roehrborn et al (2013) reported on results of the pivotal LIFT study, an RCT comparing PUL with sham control among 206 individuals ages 50 and older with lower urinary tract symptoms secondary to BPH.25 Eligible patients had an American Urological Association Symptom Index (AUASI) score of 13 or greater, Qmax of 12 mL/s or less for a 125-mL voided volume, and a prostate volume between 30 and 80 mL. Patients were excluded if there was median lobe obstruction in the prostate, postvoid obstruction of more than 250 mL, or signs of active infection. Patients underwent washout of BPH medications before enrollment; the washout period was 2 weeks for α-blockers and 3 months for 5α-reductase inhibitors. Patients were randomized to PUL (n=140) or sham control (n=66) and evaluated at 3 months post-procedure for the trial’s primary efficacy end-point. After that, all patients were unblinded, and sham
control patients were permitted to undergo the PUL procedure. Fifty-three control subjects eventually underwent a PUL procedure. The analysis was intention-to-treat. The study met its primary efficacy endpoint, which was that the reduction in AUASI score at 3 months post-procedure had to be at least 25% greater after the PUL than the reduction in AUASI score seen with sham (p=0.003). The AUASI score decreased from 24.4 at baseline to 18.5 at 3-month follow-up for sham control patients and from 22.2 at baseline to 11.2 at 3-month follow-up for PUL patients (see Table 6). The 3-month change in Qmax was 4.28 mL/s for PUL patients and 1.98 mL/s for sham control patients (p=0.005). Compared with sham control patients, PUL patients had greater improvements in quality of life scores and BPH-II score (see Table 7). Nine serious adverse events in 7 patients were reported in the PUL group, and 1 serious adverse event was reported in the sham group during the first 3 months of follow-up. Limitations in trial design are summarized in Tables 4 and 5.

McVary et al (2014) reported on sexual function outcomes in a subset of patients from the LIFT study. At baseline, 53 (38%) PUL subjects and 23 (53%) sham control subjects were sexually inactive or had severe erectile dysfunction and were censored from the primary sexual function analysis. Scores on the SHIM, MSHQ-EjD function scale and the MSHQ-EjD bother scale did not differ significantly between groups.

### Table 6. Summary of LIFT Initial Trial Results

<table>
<thead>
<tr>
<th>Study</th>
<th>Change in IPSS</th>
<th>Change in IPSS QOL</th>
<th>Change in Qmax</th>
<th>Change in MSHQ-EjD Function</th>
<th>Change in MSHQ-EjD Bother</th>
<th>Any Adverse Events, n (%)</th>
<th>Serious Adverse Events, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIFT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N at 3 months</td>
<td>206</td>
<td>206</td>
<td>182</td>
<td>144</td>
<td>177</td>
<td>206</td>
<td>206</td>
</tr>
<tr>
<td>PUL</td>
<td>-11.0 (7.7)</td>
<td>-2.2 (1.8)</td>
<td>4.3 (5.2)</td>
<td>2.2 (2.5)</td>
<td>-1.8 (1.5)</td>
<td>122 (87%)</td>
<td>7 (5%)</td>
</tr>
<tr>
<td>Adverse events</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sham</td>
<td>-5.9 (7.7)</td>
<td>-1.0 (1.5)</td>
<td>2.0 (4.9)</td>
<td>1.7 (2.6)</td>
<td>-0.7 (1.6)</td>
<td>43 (52%)</td>
<td>1 (1.5%)</td>
</tr>
<tr>
<td>TE (p)</td>
<td>NR</td>
<td>NR (&lt;0.001)</td>
<td>NR (0.005)</td>
<td>NR (0.283)</td>
<td>NR (0.60)</td>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

Adapted from Roehrborn et al (2013). Values are mean (standard deviation) unless otherwise indicated. IPSS: International Prostate Symptom Score; MSHQ-EjD: Male Sexual Health Questionnaire for Ejaculatory Dysfunction; NR: not reported; PUL: prostatic urethral lift; Qmax: mean peak urinary flow rate; QOL: quality of life; TE: treatment effect.

### Table 7. Summary of Evidence for LIFT Study, Including Participants in the PUL Group

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>3 Months</th>
<th>1 Year</th>
<th>2 Years</th>
<th>3 Years</th>
<th>5 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>140</td>
<td>129</td>
<td>118</td>
<td>109</td>
<td>87</td>
</tr>
<tr>
<td>Death/LTFU</td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Protocol deviations</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Retreatment</td>
<td>0</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Change in IPSS</td>
<td>136</td>
<td>123</td>
<td>103</td>
<td>93</td>
<td>72</td>
</tr>
<tr>
<td>Change</td>
<td>-11.4 (7.72)</td>
<td>-10.61 (7.51)</td>
<td>-9.13 (7.62)</td>
<td>-8.83 (7.41)</td>
<td>-35.9%</td>
</tr>
<tr>
<td>95% CI</td>
<td>-12.45 to -9.83</td>
<td>-11.95 to -9.27</td>
<td>-10.62 to -7.64</td>
<td>-10.35 to -7.30</td>
<td>-44.4% to -27.3%</td>
</tr>
<tr>
<td>p</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Change in IPSS QOL</td>
<td>136</td>
<td>123</td>
<td>103</td>
<td>93</td>
<td>72</td>
</tr>
</tbody>
</table>
Follow-Up of Sham-Assigned Crossover Participants

Cantwell et al (2014) reported on 12-month outcomes for 53 subjects in the LIFT sham control group who underwent PUL after unblinding at 3 months postprocedure.23 Crossover (unblinded) patients had a change in IPSS from 23.4 to 12.3 at 3 months post-procedure compared with the change in IPSS from 25.2 to 20.2 at 3 months after the sham procedure. Subjects had greater improvements in BPH-II score in the crossover period (-3.3) than in the sham period (-1.9; p=0.024) but did not report significant differences in improvement in Qmax. Change in sexual function scores did not differ significantly after the sham procedure compared with after active procedure.

Rukstalis et al (2016) reported on 24-month outcomes for 42 of the 53 participants in the LIFT sham group who underwent PUL after unblinding.33 During the 24 months, 4 patients were known to have had TURP, and 1 patient required additional PUL implants. The change in IPSS from baseline to 24 months was -9.6 (-35%; 95% CI, not reported; p<0.001) and there was significant score improvements in Qmax, BPH-II scores, and quality of life. There were no significant changes compared with baseline for SHIM scores; however, MSHQ-EjD scores improved by 41% (p<0.001).

Follow-Up of PUL-Assigned Participants

Roehrborn et al (2015) reported on 3-year results from patients randomized to PUL in the LIFT study.27 After exclusion of 11 subjects who were lost to follow-up, 36 subjects with missing data, protocol deviations, medication treatment for BPH, or other prostate procedures, and 15 subjects who underwent surgical retreatment for lower urinary tract symptoms (6 with repeat PUL procedures, 9 with TURP or laser vaporization), the 3-year effectiveness analysis included 93 (66%) of the original 140 subjects. For subjects with follow-up data, change in IPSS was -8.83 (95% CI, -10.35 to -7.30; p<0.001). Significant improvements were also
reported for the quality of life score, BPH-II score, and Qmax. Sexual function was unchanged. Implants were removed from ten participants. No analyses were performed to assess how sensitive the results were to changes in the assumptions about the considerable amount of missing data.

Roehrborn et al (2016) reported on 4-year results from patients randomized to PUL in the LIFT study. Of the 140 originally randomized patients, 32 were lost by the 4-year follow-up visit (6 losses were deaths). Of the remaining 108 patients for whom data were available, an additional 29 patients were excluded from analysis for BPH retreatment or protocol deviations. For the 79 (56%) of the 140 subjects included in the analysis, change in IPSS score was -8.8 (precision not given) or -41% (95% CI, -49% to -33%; p<0.001). Significant improvements (vs. baseline) were also reported for scores relating to the quality of life, BPH-II, and Qmax. Authors reported that 14% “of the 140 originally enrolled” participants had surgical retreatment at some point during the 4 years; however, the 4-year follow-up included 79 patients, so the denominator for the 14% is not clear, and estimated retreatment rates are likely underestimated since individuals lost to follow-up could also have received retreatment. Attributes of patients who received retreatment were not analyzed. SHIM scores did not differ statistically from baseline.

Roehrborn et al (2017) reported on 5-year results from patients randomized to PUL in the LIFT study. The authors reported two analyses. The first was called a per-protocol analysis, which censored patients who had additional BPH procedures, started a BPH medication or had a protocol deviation. A second analysis was called intention-to-treat analysis, which used last observation carried forward to impute values that were censored in the per-protocol analysis. While there were 104 participants with 5-year data, only 72 patients were included in the per-protocol analysis after exclusion for protocol violations, additional BPH procedures, or treatment with BPH medication. In the intention-to-treat analysis, change in IPSS was -7.85 at 5 years (-35%; 95% CI, -41% to -29%; p<0.001). In the per-protocol analysis, change in IPSS was -7.56 at 5 years (-35.9%; 95% CI, -44% to -27%). Significant improvements, compared with baseline, continued to be reported for scores associated with quality of life, Qmax, and BPH-II.

Subsection Summary: LIFT Study
The LIFT RCT compared PUL with a sham procedure in individuals who had completed a washout period for BPH medications before enrollment. The PUL procedure was associated with greater improvements in lower urinary tract symptoms compared with sham; additionally, the PUL procedure was found to have not worsened sexual function after three months of follow-up. After 3 months, patients were given the option to have PUL surgery and about 80% of the sham patients did so. Functional improvements, compared with baseline, appear durable in patients over two years and are consistent with the BPH6 study. Follow-up over three to five years was notable for a high number of patients who were either excluded or lost.

Section Summary: Randomized Controlled Trials
The BPH6 study demonstrated that PUL is noninferior to TURP when assessed by a composite score, which reflects concurrent improvements in validated scales of symptoms, safety, and sexual function. These findings are reflected in the analysis of the individual aspects of the composite score. PUL demonstrates measurable improvements in urinary symptoms to two years and is superior to TURP in preserving sexual function. These findings were confirmed in the LIFT study, which compared PUL with a sham treatment. Prior to crossover at three months, patients were found to have greater improvement in urinary
symptoms and preserved sexual function relative to patients receiving sham treatment. After 3 months, 80% of patients who had received a sham treatment chose to have the PUL procedure. Patients treated with PUL had improvement of urinary symptoms with preservation of sexual function, consistent with the BPH6 study. These findings were preserved in a subset of patients over three to five years; a high number of patients were either excluded or lost to follow-up during this time.

SUMMARY OF EVIDENCE
For individuals who have lower urinary tract obstruction symptoms due to BPH and receive a PUL, the evidence includes systematic reviews, randomized controlled trials, and noncomparative studies. Relevant outcomes are symptoms, functional outcomes, health status measures, quality of life, and treatment-related morbidity. One randomized controlled trial, the BPH6 study, compared the PUL procedure with transurethral resection of the prostate and reported that the PUL procedure was noninferior for the study’s composite endpoint, which required concurrent fulfillment of six independently validated measures of symptoms, safety, and sexual health. While transurethral resection of the prostate was superior to PUL in managing lower urinary tract symptoms, PUL did provide significant symptom improvement over two years. PUL was further superior to transurethral resection of the prostate in preserving sexual function. These findings were corroborated by another randomized controlled trial (the LIFT study), which compared PUL with sham control. Patients underwent washout of BPH medications before enrollment. LIFT reported that patients with the PUL procedure, compared with patients who had sham surgery and no BPH medication, had greater improvements in lower urinary tract symptoms without worsened sexual function at three months. After 3 months, patients were given the option to have PUL surgery; 80% of the patients with sham procedures chose that option. Publications from this trial reported that functional improvements were durable over 3-, 4-, and 5-year follow-ups in a subset of patients treated with PUL; there was a high number of exclusions and loss to follow-up in that group. The evidence is sufficient to determine the effects of the technology on health outcomes.

Ongoing and Unpublished Clinical Trials
A search of ClinicalTrials.gov did not identify any ongoing or unpublished trials that would likely influence this review.

CLINICAL INPUT
Clinical input is sought to help determine whether the use of prostatic urethral lift (PUL) for individuals with moderate-to-severe lower urinary tract obstruction symptoms due to benign prostatic hyperplasia (BPH) would provide a meaningful clinical benefit, defined as improved net health outcome, and whether this use is consistent with generally accepted medical practice.

RESPONDENTS
Clinical input was provided by the following specialty societies and physician members identified by a specialty society or clinical health system:
• John Lin, MD, Urology; identified by American Urological Association (AUA)a
• Anonymous, MD, Urology; identified by AUAa
• Anonymous, MD, Urology; identified by University of California San Francisco (UCSF) Medical Center
• Anonymous, MD, Urology; identified by UCSF Medical Center

a Indicates that conflicts of interest related to the topic where clinical input is being sought were identified by this respondent
Clinical input provided by the specialty society at an aggregate level is attributed to the specialty society. Clinical input provided by a physician member designated by a specialty society or health system is attributed to the individual physician and is not a statement from the specialty society or health system. Specialty society and physician respondents participating in the Evidence Street® clinical input process provide a review, input, and feedback on topics being evaluated by Evidence Street. However, participation by a specialty society and/or physician member designated by a specialty society or health system in the clinical input process does not imply an endorsement or explicit agreement with the Evidence Opinion published by BCBSA or any Blue Plan.

CLINICAL INPUT RESPONSES

Additional Comments
For use of PUL for individuals with moderate-to-severe lower urinary tract obstruction symptoms due to BPH and failed medical management:

- “After failure of medical management, I think offering PUL and TURP [transurethral resection of the prostate] would be equivalent. First, the efficacy of PUL appears to be clinically meaningful with fewer attendant risks. Moreover, the durability appears to be comparable to TURP. PUL may be more appropriate for younger patients where concern over erectile dysfunction (ED) and ejaculatory dysfunction may be more important. In addition, the prostate anatomy may impact selection - with a normal bladder neck and primarily lateral lobe obstruction better candidates for PUL, as well as not massively enlarged prostates.” (Anonymous, MD, Urology; identified by UCSF Medical Center)
- “In general patients select PUL after trying medical therapy, but holding this as a criterion for treatment is not recommended by AUA BPH guidelines, nor is it standard practice. There are many reasons certain men may wish to avoid a medication or increasing their polypharmacy, common in this demographic. If a man wishes to continue medical
therapy, he is usually returned to the care of his PCP until such time as he wishes to be more definitively treated. This makes sense for my practice and is undoubtedly more efficient quality care within insurance systems. If a man cannot tolerate medical therapy or is responding poorly to medical therapy, PUL is the obvious next line treatment option. It is the least invasive option that offers the most rapid result, the only option to not induce sexual dysfunction, and an option that has been shown to be at least as durable and arguably more durable than heat ablation treatments currently covered…” (Dr. Lin, Urology; identified by AUA)

For use of PUL for individuals with moderate-to-severe lower urinary tract obstruction symptoms due to BPH and not a surgical candidate:

• “This is the most likely clinical scenario for PUL, where the risks of TURP outweigh the benefits. We have many patients for whom TURP and the associated anesthesia pose significant risks. Thus, PUL may be the best approach with the ability to perform the procedure under anesthesia, and no risks of bleeding nor electrolyte and fluid abnormalities.” (Anonymous, MD, Urology; identified by UCSF Medical Center)

• “This is an important subset patient population that is well-served by PUL, but is already indicated by Indication #1 discussed above. By no means, however, should PUL indication be limited to this very sick population, as the majority of data published support PUL safety and effectiveness in healthier populations of #1. I deliver PUL in my office with minimal anesthesia required, a critical risk for these patients. As bleeding and bladder irrigation are minimized in PUL when compared to other BPH procedures, the risk of post op fluid shifts, transfusion, and readmissions is greatly minimized. There are very few of these patients included in the broad bibliography of clinical studies, but my personal experience has been positive.” (Dr. Lin, Urology; identified by AUA)

• “I have used UroLift for failed medical therapies and failed microwave treatments. Good success in patients with short term urinary retention. Ninety percent of such patients are catheter free at 4 weeks. Done most often in office with oral sedation.” (Anonymous, MD, Urology; identified by AUA)

• “In short- to medium-term studies, PUL shows improvement in patient symptom score. This provides a meaningful alternative to medical management or transurethral resection/ablation of the prostate. The benefit of PUL is that it can be done under minimal sedation, which provides a possibility of a procedure to benefit patients who have failed or cannot tolerate medical therapy but who are at high risk for general anesthesia. In addition, PUL can be performed safely for patients on anticoagulation, and this provides a significant benefit compared to TURP given that the risk of bleeding from TURP on anticoagulation is high, and this provides an alternative with a lower complication risk in that regard. Finally, the PUL sutures can be later removed during TURP, so this therapy does not preclude a TURP in the future if necessary for improved symptom control.” (Anonymous, MD, Urology; identified by UCSF Medical Center)

SUPPLEMENTAL INFORMATION

CLINICAL INPUT FROM PHYSICIAN SPECIALTY SOCIETIES AND ACADEMIC MEDICAL CENTERS

While the various physician specialty societies and academic medical centers may collaborate with and make recommendations during this process, through the provision of appropriate reviewers, input received does not represent an endorsement or position statement by the physician specialty societies or academic medical centers, unless otherwise noted.
In response to requests, input on the prostatic urethral lift (PUL) for 3 indications were received from 4 respondents, including 2 physician-level responses identified by 1 specialty society and 2 physicians from 1 academic center while this policy was under review in 2017. Based on input on the evidence and independent clinical input, the clinical input supports that the following indications provide a clinically meaningful improvement in the net health outcome and are consistent with generally accepted medical practice:

- Use of prostatic urethral lift in individuals with moderate-to-severe lower urinary tract obstruction symptoms due to benign prostatic hyperplasia with normal bladder neck, prostate gland <80 mL, and no median lobe enlargement when either of the following two criteria is met:
  - Patient is unable to tolerate or has failed medical management; or
  - Patient is not surgical candidate for transurethral resection of the prostate.

Based on the evidence and independent clinical input, the clinical input does not support whether the following indication provides a clinically meaningful improvement in the net health outcome or is consistent with generally accepted medical practice:

- Use of prostatic urethral lift as first-line therapy in individuals with moderate-to-severe lower urinary tract obstruction symptoms due to benign prostatic hyperplasia or when the criteria above are not met.

PRACTICE GUIDELINES AND POSITION STATEMENTS

American Urological Association
The American Urological Association (2018) published guidelines on the surgical management of LUTS attributed to BPH. The guidelines made the following recommendations and statements regarding PUL.

- “Clinicians should consider PUL [prostatic urethral lift] as an option for patients with LUTS [lower urinary tract symptoms] attributed to BPH [benign prostatic hyperplasia] provided prostate volume <80g and verified absence of an obstructive middle lobe; however, patients should be informed that symptom reduction and flow rate improvement is less significant compared to TURP [transurethral resection of the prostate].”
  - Moderate Recommendation; Evidence Level: Grade C indicating “Benefits > Risks/Burdens (or vice versa); Net benefit (or net harm) appears moderate. Applies to most patients in most circumstances but better evidence is likely to change confidence”
  - “… the quality of evidence for nonserious harms related to the procedure was rated low, while that for incontinence, need for reoperation, and serious harms related to treatment was rated very low.”
  - “… patients selecting PUL should be informed that this is a relatively new intervention for LUTS/BPH with uncertainties in long-term durability, though such uncontrolled data are available.”

- “PUL may be offered to eligible patients concerned with erectile and ejaculatory function for the treatment of with LUTS attributed to BPH.”
  - Conditional Recommendation; Evidence Level: Grade C indicating “Risks/Burdens unclear; Alternative strategies may be equally reasonable. Better evidence likely to change confidence”

National Institute for Health and Care Excellence (NICE)
The National Institute for Health and Care Excellence (2014) published guidance on urethral lift implants to treat lower urinary tract symptoms (LUTS) secondary to benign prostatic hyperplasia (BPH). The guidance stated:

“Current evidence on the efficacy and safety of insertion of prostatic urethral lift implants to treat lower urinary tract symptoms secondary to benign prostatic hyperplasia is adequate to support the use of this procedure.”

The Institute (2015) published guidance on the use of UroLift for treating LUTS of BPH. The guidance stated: “the UroLift system is effective in relieving symptoms of benign prostatic hyperplasia” and “the UroLift system should be considered as an alternative to current surgical procedures for use in a day-case setting in individuals with lower urinary tract symptoms of benign prostatic hyperplasia who are aged 50 years and older and who have a prostate of less than 100 ml without an obstructing middle lobe.”

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**Government Regulations**

**National/Local:**

There is no national coverage determination on this topic. Medicare has established a fee for CPT codes 52441 and 52442.

4/14/15-It has been confirmed by WPS staff that 52441 and 52442 are payable if the services are medically necessary and documented as such by the provider in the medical record.

*(The above Medicare information is current as of the review date for this policy. However, the coverage issues and policies maintained by the Centers for Medicare & Medicare Services [CMS, formerly HCFA] are updated and/or revised periodically. Therefore, the most current CMS information may not be contained in this document. For the most current information, the reader should contact an official Medicare source.)*

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**Related Policies**

N/A

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**References**


The articles reviewed in this research include those obtained in an Internet based literature search for relevant medical references through November 2018, the date the research was completed.
<table>
<thead>
<tr>
<th>Policy Effective Date</th>
<th>BCBSM Signature Date</th>
<th>BCN Signature Date</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>9/1/15</td>
<td>6/16/15</td>
<td>7/16/15</td>
<td>Joint policy established</td>
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<tr>
<td>9/1/16</td>
<td>6/21/16</td>
<td>6/21/16</td>
<td>Routine policy maintenance. Added Hayes rating, Added BCBSA policy information.</td>
</tr>
<tr>
<td>5/1/17</td>
<td>2/21/17</td>
<td>2/21/17</td>
<td>Routine policy maintenance. Added the word “general” to clarify anesthesia on pg 5. Added article to references</td>
</tr>
<tr>
<td>3/1/19</td>
<td>12/11/18</td>
<td></td>
<td>Rationale reorganized, added reference 37 and 38. Added clinical input.</td>
</tr>
</tbody>
</table>

Next Review Date: 4th Qtr, 2019
## Blue Care Network Benefit Coverage
**Policy: Prostatic Urethral Lift Procedure for the Treatment of BPH**

### I. Coverage Determination:

<table>
<thead>
<tr>
<th>Plan Description</th>
<th>Coverage Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial HMO (includes Self-Funded groups unless otherwise specified)</td>
<td>Covered; criteria apply</td>
</tr>
<tr>
<td>BCNA (Medicare Advantage)</td>
<td>Covered; no LCD or NCD but Medicare has a fee for the procedures and the manufacturer NeoTract, Inc., states that the UroLift procedure is covered. WPS has confirmed coverage for Medicare beneficiaries.</td>
</tr>
<tr>
<td>BCN65 (Medicare Complementary)</td>
<td>Coinsurance covered if primary Medicare covers the service.</td>
</tr>
</tbody>
</table>

### II. Administrative Guidelines:

N/A