Aim: The Korean urological association (KUA) organized the benign prostatic hyperplasia (BPH) guideline developing committee composed of experts in the field of BPH with the Korean Academy of Family Medicine (KAFM) and the Korean Continence Society (KCS) to develop Korean clinical practice guidelines (CPG) for BPH. The purpose to develop Korean CPG for BPH is to provide current and comprehensive recommendations for the evaluation, medical and surgical treatment of BPH.

Materials and methods: The committee comprised of 17 members appointed by KUA, KCS and KFMS determined to develop CPG with mainly adapting from existing guidelines and partially using de novo method. The clinical practice guideline development committee consulted to experts for the search of data and meta-analysis. The committee determined 13 key questions that were required for diagnosis and treatment of BPH under the principle of PICO (population, intervention, comparison and outcome). A comprehensive literature review was carried out primarily from 2009 to 2013 using medical search engines including data from Korea. Twelve committee members evaluated the quality of the selected guidelines for adaptation with K-AGREE II (the Korean Appraisal of Guidelines for Research & Evaluation II). The Delphi method was used to make consensus for recommendations through three rounds. A peer-review for the recommendations selected by consensus was done by review committee with an independent process.

Results: Based on the published evidence, recommendations were synthesized, and the level of evidence of the recommendation was determined. A draft guideline was reviewed by expert peer reviewers and also discussed at an expert consensus meeting until final agreement was achieved. We held two times outside public hearings to collect opinions about our guideline. This guideline was certified by the KUA, KAFM and KCS and obtained the certification mark of excellence from the Clinical Practice Guideline Evaluation System of the KAMS (Korean Academy of Medical Science). Table 1 shows the summary of recommendations for Korean BPH guideline.

Interpretation: This guideline was the first BPH guideline that was certified by the KUA, KAFM and KCS and obtained the certification mark of excellence from the Clinical Practice Guideline Evaluation System of the KAMS (Korean Academy of Medical Science) with multi-disciplinary research in Korea.

Conclusions: This evidence-based guideline for BPH provides recommendations to primary practitioners and urologist for the diagnosis and treatment of men older than 40 years old with BPH in Korea.
Table 1. The summary of recommendations.

Recommendations (Level of recommendation/Level of Evidence)

1. Is the IPSS questionnaire more helpful than a simple medical history for diagnosis during initial assessment in BPH patients?
   - 1-1. IPSS is recommended for an objective assessment of symptoms at initial contact, for follow-up of symptom evolution for those on watchful waiting and for evaluation of response to treatment. (Strong/B)

2. Is voiding diary more helpful than a simple medical history to diagnose BPH patients?
   - 2-1. Voiding diary is helpful in clarifying the information obtained from history taking and for accurate diagnosis. (Strong/B)

3. Do uroflowmetry and measurement of post void residual volume have advantage on the establishment of treatment strategy in BPH patients?
   - 3-1. Uroflowmetry can be conducted selectively in patients with lower urinary tract symptoms. (Strong/C)
   - 3-2. Measurement of post void residual volume can be conducted selectively in patients with lower urinary tract symptoms. (Strong/C)
   - 3-3. Uroflowmetry and measurement of post void residual volume can be conducted in patients with lower urinary tract symptoms and with whom need the specific evaluation of urologists. (Strong/B)

4. Could the transrectal ultrasonography have a better role than digital rectal examination for the measurement of prostatic anatomy in BPH patients?
   - 4-1. For precise evaluation of prostatic anatomy, besides the digital rectal examination, transrectal ultrasonography is warranted. (Strong/B)

5. Should PSA be measured in BPH patients?
   - 5-1. PSA should be measured in the patients aged 40 years or older with LUTS. (Strong/A)
   - 5-2. The combination therapy of 5α-reductase inhibitors and alpha-blocker is more effective treatment for improving lower urinary tract symptoms than alpha-blocker mono-therapy in BPH patients. (Strong/A)
   - 5-3. The combination therapy of anticholinergics and alpha blocker is performed when the effect of alpha-blocker monotherapy is insufficient. (Strong/B)

6. Does medical treatment considered first as primary treatment ahead of surgical treatment in BPH patients?
   - 6-1. Watchful waiting is preferred for men with mild LUTS symptoms. (Strong/B)
   - 6-2. Men with LUTS should be advised about life style modification before and during treatment. (Strong/B)

7. Should medical treatment be offered to men with moderate-to-severe lower urinary tract symptoms in BPH patients?
   - 7-1. Medication therapy is recommended as a primary treatment in patients with moderate or severe symptom. But surgical intervention is an appropriate treatment as an alternative for patients with moderate-to-severe LUTS and for patients with developed AUR or other BPH-related complications (bladder stone, bladder diverticulum, renal failure, hematuria). (Strong/B)
   - 7-2. 5α-reductase inhibitors should be offered to men with moderate-to-severe lower urinary tract symptoms in enlarged prostate volume by digital rectal examination/prostate ultrasound or elevated serum prostate specific antigen as BPH progression. (Strong/A)
   - 7-3. Cholinergic receptor antagonists might be considered in men with moderate to severe lower urinary tract symptoms with predominant storage symptoms. However caution is warranted for its usage in men with bladder outlet obstruction. (Strong/A)

8. Can combination therapy increase the treatment effect of alpha blocker mono therapy in BPH patients?
   - 8-1. The combination therapy of 5α-reductase inhibitor and alpha-blocker is more effective for treatment of improving lower urinary tract symptoms than alpha-blocker mono-therapy in BPH patients. (Strong/A)
   - 8-2. The combination therapy of anticholinergics and alpha blocker is more effective than alpha-blocker monotherapy in reducing moderate to severe lower urinary tract symptoms. (Weak/A)
   - 8-3. The combination therapy of anticholinergics and alpha blocker is carefully performed for suspected men having bladder outlet obstruction and large post voided urine volume. (Strong/A)
   - 8-4. The combination therapy of PDE5 inhibitors and alpha-blocker is more effective than alpha-blocker mono-therapy in reducing moderate to severe lower urinary tract symptoms. (Weak/A)

9. Is TWOC (Trial without catheter) considered first before surgical treatment in BPH patients with acute urinary retention?
   - 9-1. TWOC is considered first before surgical treatment in BPH patients with acute urinary retention. (Strong/A)
   - 9-2. Alpha blocker is helpful for treatment of AUR before/after indwelling urethral catheter. (Strong/B)

10. Is TURP considered as the primary surgical treatment option in BPH patients rather than the open prostatectomy?
    - 10-1. TURP is considered as the primary surgical treatment option in BPH patients. (Strong/C)
    - 10-2. Not only open prostatectomy but also endoscopic surgery is considered as the primary treatment option especially in prostate volume 70gm or higher. (Strong/A)

11. What kinds of treatment can we recommend in inappropriate patients to surgical treatments for various reasons such as high-risk comorbidities?
    - 11-1. We can recommend the intermittent or indwelling catheterization for inappropriate patients to surgical treatments. (Strong/B)
    - 11-2. We can recommend the transurethral microwave thermotherapy (TUMT) or transurethral needle ablation (TUNA) as minimally invasive surgical therapies for inappropriate patients to surgical treatments. However, patients should be aware of significant retreatment rates and less improvement in symptoms and quality of life in aspect of long-term effects compared with transurethral resection of prostate. (Strong/A)
    - 11-3. In some patients for inappropriate patients to surgical treatments, intraprostatic injection of botulinum toxin or emergent materials are being tried and positive results are being reported, but should be performed only in clinical trials. (Strong/A)

12. What diagnostic tests are necessary for the follow-up and how should we set the period of follow-up in BPH patients?
    - 12-1. Follow-up for watchful waiting, medical or surgical treatment is based on physicians' empirical data or preference. (Strong/C)
    - 12-2. IPSS, DRE, PSA, uroflowmetry, PVR volume and TRUS are recommended at follow-up visits for monitoring of disease progression. (Strong/C)

13. When should you refer BPH patients to urologists?
    - 13-1. If patients with lower urinary tract symptoms do not improve with primary medication, the patients should be referred to urologist (Strong/B)
    - 13-2. If patients with lower urinary tract symptoms worsen with the objective findings such as urinary tract infection, hematuria and repetitive urinary retention, the patients should be referred to urologist. (Strong/A)
    - 13-3. If patients with lower urinary tract symptoms had abnormal serum prostate-specific antigen test or abnormal rectal examination, the patients should be referred to urologist for differential diagnosis of prostate cancer. (Strong/A)

The levels of evidence are classified in 3 grades and based on the levels of evidence for therapy, prognosis and diagnosis published by the Oxford Centre for Evidence-Based Medicine in 2011 (www.cebm.net/ocebm-levels-of-evidence). The levels of recommendation were defined with two ratings according to the median value of the Delphi consensus (strong: most or all individual will be best served by the recommended course of action and weak: not all individuals will be best served by the recommended course of action. There is a need to consider more carefully than usual individual patient's circumstances, preferences, and values).