

# Canine Prostate Disease



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## KEYWORDS

- Prostate • Benign prostatic hyperplasia (BPH) • Prostatitis • Prostatic neoplasia
- Canine prostate-specific arginine esterase (CPSE)

## KEY POINTS

- All intact, male dogs eventually develop benign prostatic hyperplasia and a subset will develop clinical signs associated with subfertility, discomfort, or infection.
- Any male dog may develop neoplasia associated with the prostate, with a higher proportion of neutered males being affected.
- Ultrasound imaging and prostatic tissue cytology remain the most reliable diagnostic tests for canine prostate disease, but canine prostate-specific arginine esterase shows value as a supporting diagnostic test.
- Older recommendations to treat prostatitis for 4 to 8 weeks with appropriate antibiotics have been updated to now recommend a truncated 4-week treatment regime for acute cases.
- Medical treatments for benign prostatic hyperplasia have variable effects on prostate size and function, and may affect androgen production.



Video content accompanies this article at <http://www.vetsmall.theclinics.com/>.

## INTRODUCTION

The prostate is the only accessory sex organ in dogs. Diseases of the canine prostate are relatively common. The canine prostate is constantly developing and growing under androgenic influence throughout the life of the intact male dog. This androgenic influence seems to have a protective effect in the case of neoplastic disease,<sup>1–3</sup> but the increase in size under androgens also predisposes the canine prostate to infection and cystic disease.<sup>4–6</sup> The consequences of these diseases range from mild discomfort to varying effects on semen quality to very painful or life-threatening illness. An evolving understanding of the way the canine prostate functions has led to expanded diagnostic options and recent changes in treatment recommendations for some of these conditions. Each prostatic condition is discussed separately.

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The author has nothing to disclose.

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## PROSTATIC ANATOMY AND PHYSIOLOGY

The prostate in the dog is a bilobed, oval to spherical-shaped organ with both a dorsal and ventral sulcus that sits in the cranial pelvic canal or in the caudal abdomen. The proximal urethra runs through the prostate between the 2 lobes. Testosterone is converted to dihydrotestosterone (DHT) via the enzyme 5 $\alpha$ -reductase and it is this androgen, DHT, that stimulates prostatic development, growth, and secretions.<sup>7</sup> The enzyme 5 $\alpha$ -reductase is found in 2 isoenzymes in the body, types 1 and 2. Each isoenzyme is encoded by a different chromosome, but common coding sequences indicate a common evolutionary precursor. Isoenzyme type 1 is found throughout the body, including the skin, liver, and prostate. Isoenzyme type 2 is found predominantly in the prostate and other genital tissue. Testosterone and DHT both bind to the same androgen receptors and cause the same effects. The binding of DHT to the androgen receptor, however, is much tighter and of longer duration than that of testosterone. The resultant effect is that lower concentrations of DHT cause an amplified response compared with testosterone.<sup>8,9</sup> This mechanism is important to consider when discussing medical treatment of BPH elsewhere in this article.

### *Benign Prostatic Hyperplasia*

The disorder consists of both cellular hyperplasia and hypertrophy.<sup>10</sup> The prostate exhibits continual, androgen-dependent growth, eventually exhibiting hyperplasia and hypertrophy that is, sensitive to estrogens, which increase androgen receptors, leading to more hyperplasia.<sup>11,12</sup> Although benign prostatic hyperplasia (BPH) can be present as early as 1 year of age, it does become increasingly more prevalent as intact dogs age (Table 1).<sup>13</sup> Approximately one-half of intact male dogs will have histologic signs of BPH by 4 years of age and more than 90% by 8 years of age. Most dogs with BPH do not show any clinical signs and, therefore, require no immediate treatment, although preventative treatment has been advocated and is discussed elsewhere in this article. Clinical signs may include sanguinous prostatic fluid dripping from the prepuce, hematospermia, hematuria, dysuria, constipation, or tenesmus.<sup>14</sup>

Dogs with BPH will show signs of subfertility, often accompanied by a marked number of red blood cells in the prostatic fluid. Spermatozoa from dogs with BPH have

Age Range (y)	Total Prevalence of Canine, n/N BPH (%)
0.1–1.0	0/25 (0)
1.1–2.0	3/19 (16)
2.1–3.0	8/25 (32)
3.1–4.0	9/21 (43)
4.1–5.0	5/9 (56)
5.1–6.0	34/39 (87)
6.1–7.0	15/18 (83)
7.1–8.0	9/10 (90)
8.1–9.0	27/28 (96)
9.1–10+	25/27 (93)

*Abbreviation:* BPH, benign prostatic hyperplasia.

*Modified from* Berry SJ, Strandberg JD, Saunders WJ, et al. Development of canine benign prostatic hyperplasia with age. *Prostate* 1986;9(4):363–73; with permission.

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