

# What is Bladder Anatomy?

## Worksheet

The bladder is a distensible muscular sac in the pelvis with a three-layered wall (mucosa, detrusor muscle, adventitia) and a triangular base called the trigone; it stores 400-600 mL of urine and empties it through the urethra.

## Questions

1. What is the main muscle layer of the bladder wall called?
  - A) Myometrium
  - B) Detrusor muscle
  - C) Diaphragm
  - D) Sphincter ani
2. What is the trigone of the bladder?
  - A) The bladder's outer fat pad
  - B) A triangular area defined by the two ureteral openings and the urethral opening
  - C) The bladder's blood supply
  - D) A fold in the external sphincter
3. Which epithelium lines the inner surface of the bladder?
  - A) Simple squamous
  - B) Transitional (urothelium)
  - C) Ciliated columnar
  - D) Stratified squamous keratinized
4. Approximately how much urine can a healthy adult bladder normally hold?
  - A) 50-100 mL
  - B) 400-600 mL
  - C) 2-3 liters
  - D) 10 mL
5. How much urine can a healthy adult bladder hold before a strong urge to void occurs?
6. Trace the path of urine from the kidneys to outside the body through the bladder.
7. A patient's bladder wall is described as having three muscle layers. Name them and their orientation.
8. Define: What is the detrusor muscle?
9. Define: What is the trigone?
10. Define: What type of epithelium lines the bladder?

## Answer Key

1. B) Detrusor muscle - The detrusor muscle is the smooth-muscle layer that contracts to empty the bladder.
2. B) A triangular area defined by the two ureteral openings and the urethral opening - The trigone is a smooth triangular zone on the posterior bladder wall between the ureter openings and the internal urethral orifice.
3. B) Transitional (urothelium) - Transitional epithelium can stretch dramatically as the bladder fills, then relax when it empties.
4. B) 400-600 mL - Normal functional capacity is roughly 400-600 mL, though the urge to void starts much earlier.
5. The first urge to urinate is usually felt around 150-200 mL A strong, hard-to-ignore urge appears around 300-400 mL Maximum comfortable capacity is about 400-600 mL, after which the detrusor reflex forces voiding
6. Kidneys filter blood and produce urine continuously Urine travels down two ureters (about 25-30 cm long) into the bladder at the trigone The bladder stores urine, expanding as the detrusor muscle relaxes During voiding, the detrusor contracts and urine exits through the urethra (about 4 cm in females, 20 cm in males)
7. Inner layer: longitudinal smooth muscle fibers Middle layer: circular smooth muscle fibers (thickest, forms functional support near the neck) Outer layer: longitudinal smooth muscle fibers Together these three layers make up the detrusor muscle
8. The smooth muscle of the bladder wall, arranged in three layers, that contracts to expel urine during voiding.
9. A smooth triangular area on the bladder's posterior wall marked by the two ureteral openings and the internal urethral orifice.
10. Transitional epithelium (urothelium), which stretches and thins as the bladder fills.

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