**Detecting a Ketotic State**

Early diagnosis of diabetic ketoacidosis (DKA) is important for decreasing mortality risk. This study evaluated the use of a handheld 3-hydroxybutyrate (3-HB) meter for ketotic patients compared with standard acetoacetate (AcAc) test strips; 3-HB meters are the method of choice for diagnosing DKA in humans. Capillary and venous blood samples from 15 dogs with diabetic ketosis (DK) and 10 dogs with DKA were collected and analyzed using a 3-HB meter, urinary AcAc strip, and blood gas analysis.

Results showed 3-HB levels to be elevated in all dogs, although levels were higher in the DKA group. Good agreement was found between 3-HB measurements taken from capillary blood compared with venous blood. Authors found DKA can be excluded with a value of <0.5 mmol/L 3-HB at 100% sensitivity; conversely, there is reasonable support for DKA at values >3.8 mmol/L. DK could not be differentiated from DKA based on this single test. When compared with results of AcAc strips, 40% of dogs with DKA were negative. AcAc values of 1+ or greater were, however, 89% specific for DKA. The authors contend that clients should be trained in 3-HB testing, because of ease of capillary blood draws and the potential for at-home early detection of DKA. Future research regarding these two ketones and how levels vary during treatment is needed.

### Commentary

The treatment of DK and DKA in veterinary medicine is hampered by difficulty in detecting a ketotic state. Urine test strips or typical ketone test strips that evaluate AcAc require urine or plasma and are frequently negative regardless of whether the patient is ketotic. The predominant elevated ketone in human and canine diabetic ketosis is 3-HB. A handheld bedside test for this ketone would be ideal, rather than having to wait for laboratory ketone analysis; the authors of this study utilized a readily available handheld human test kit (Optium Xceed). Because the level of 3-HB rises with decreasing pH, handheld 3-HB testing may eventually provide a method of home detection, allowing early intervention in cases of ketosis. In addition to helping avert emergency visits, this could become an important part of preventative medicine for veterinary diabetic patients.—Ewan Wolff, DVM, PhD

### Source


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**When the Glove Breaks**

Surgical site infections (SSIs) are an inherent risk of any surgical intervention and a common occurrence in veterinary practice. The estimated infection incidence is 4%-6%, although this varies widely based on the procedure and methods of defining infection. Prevention of SSIs relies on strict adherence to surgical asepsis, and recognition of other patient, environmental, and pathogenic factors. Surgical gloves are an essential part of the barrier between the surgeon and the patient; however, this effect is diminished with glove puncture.

This observational cohort study investigated the incidence and risk factors associated with glove perforation in 2132 gloves worn in 363 surgical procedures in a veterinary teaching hospital. A perforation was detected postoperatively in 6.2% of gloves and 26.2% of procedures and went undetected by the wearer in 69.2% of cases. Increased risk factors included gloves made of polyisoprene rather than latex, increased duration of wear, wear by the primary surgeon, orthopedic procedure rather than soft tissue, and use of surgical wire or air-powered instruments. Odds of glove perforation increased by 79% when gloves were worn for longer than 1 hour.

### Commentary

SSIs are a considerable cause of patient morbidity, mortality, and owner burden in veterinary and human medicine. The increase in nosocomial multidrug resistant bacterial infection and risk of human–animal transmission escalates the need for optimizing infection prevention measures. This study identifies elements of routine surgical practice that contribute to glove perforation. Methods of prevention such as double gloving or use of thicker orthopedic-specific gloves may reduce puncture in high-risk cases. Similarly, surgeons with a latex allergy may consider surgical glove alternatives other than polyisoprene (eg, neoprene, nitrile, double gloving with latex on the exterior). Application of this data to surgical practice is practical, although it is only a small aspect of the global plan for SSI control and prevention.—Jason Bleedorn, DVM, DACVS

### Source