

Ultrasound — artefacts, organ numbers, FAST

PROBE & ARTEFACTS

Micro-convex 5–8 MHz abdomen · **Linear 10–18** GI wall, adrenals (cat), neck, tendons · **Phased 3–7** heart. Highest frequency that reaches the depth.

Clean shadow = mineral · **dirty/reverberating shadow** = gas · **enhancement** behind fluid · **comet tail** = gas/metal (needles, catheters) · **twinkle** (colour Doppler) = rough mineral = stone · **mirror** = liver across the diaphragm (normal).

Echogenicity is RELATIVE: compare liver vs spleen vs renal cortex at the same depth and gain.

LIVER · GALLBLADDER · SPLEEN

Liver grades 0–3: vs spleen at same depth; grade 3 = brighter than spleen, deep attenuation, vessel walls lost (vacuolar hepatopathy, lipidosis, fibrosis, lymphoma). Diffuse vs focal is the US job; cytology names it.

GB: sludge = gravity-dependent, moves · mucocoele = immobile stellate 'kiwi', thick wall, rupture risk · wall mass with DOPPLER FLOW = neoplasia · stone = shadow + twinkle.

Spleen: nodules cannot be classified by US (HSA vs hyperplasia) — say so. Mass + free fluid + collapse = haemoabdomen.

KIDNEY · ADRENAL · BLADDER

Kidney cat 3.0–4.3 cm · dog kidney-length : aortic-diameter 5.5–9.1 (< 5.5 small, > 9.1 large) · pelvis < 2 mm · proximal ureter ≤ 1.8 mm. Read: size, cortex echogenicity, CMD, pelvis, infarcts, mineral.

Adrenal caudal pole dog < 10 kg ≤ ~5.4 mm · 10–30 kg ≤ ~6.8 · > 30 kg ≤ ~8.0 (Soulsby 2015, Bento 2016) · cat ≤ ~4.3–4.8 (Combes). Left = peanut cranio-medial to L kidney at the phrenicoabdominal vein; right = arrow-head against the CVC (intercostal window).

Bilateral symmetric plump = PDH · one large + one atrophied = adrenal tumour · check CVC / phrenicoabdominal vein invasion. US never diagnoses Cushing's — endocrine tests do.

Bladder: sediment shifts with gravity; masses don't. Scan the WHOLE urethra (os penis stones hide from films).

GI WALL · PANCREAS · REPRO

Five layers (lumen → out): mucosal surface (bright) · mucosa (dark) · submucosa (bright) · muscularis (dark) · serosa (bright).

Upper limits (mm): dog stomach 5 · duodenum 5 (large dogs 6) · jejunum 4.1 (> 20 kg 4.7) · colon 2–3. Cat stomach 4.4 (interrugal 2) · duodenum/jejunum 2.5 · colon 1.7 · muscularis > submucosa (■ 1 mm) = IBD vs lymphoma → sample.

Layering LOST + thick → sample (neoplasia vs severe inflammation). Preserved layering + thick muscularis in cats = IBD OR lymphoma — histology decides. Two loop populations = obstruction; target sign = intussusception.

Pancreas: R lobe along duodenum, L lobe caudal to stomach; pancreatitis = enlarged, hypoechoic, bright fat, ± fluid. Normal scan does NOT exclude it.

Pyometra: fluid-filled convoluted horns between bladder and colon, no fetal structures.

POINT-OF-CARE: AFAST · TFAST · VET BLUE (LISCIANDRO)

AFAST diaphragmatico-hepatic · spleno-renal · cysto-colic · hepato-renal → abdominal fluid score 0–4. **TFAST** chest-tube site (pneumothorax: no glide sign), pericardial site (effusion, LA:Ao), pleural fluid.

Vet BLUE — 4 regions bilateral, gator-sign orientation: caudodorsal (8–9 ICS, upper third) · perihilar (6–7, middle) · middle (4–5, lower) · cranial (2–3, lower; extend foreleg) + DH view.

Signs: dry lung = A-lines + glide · wet lung = B-lines (count 0 / 1 / 2 / 3 / > 3 / ∞) · shred = aerated consolidation · tissue = hepatisation · nodule · wedge = PTE.

Patterns: all dry → rules out L-CHF (asthma, upper airway, PTE) · wet dorsal + perihilar bilateral → cardiogenic oedema · wet dorsal only → non-cardiogenic oedema · wet ventral ± shred/tissue → pneumonia · multiple nodules → mets / granulomas.

Echo quick: LA:Ao < 1.5 · FS 25–45 % · pericardial effusion: scan R auricle & heart base before draining.