I-AIM FRAMEWORK FOR GASTRIC SONOGRAPHY

(I) INDICATION

Pre-anesthetic aspiration risk assessment in the setting of questionable per os intake:

- elective procedures but NPO guidelines not followed
- urgent/emergency procedures
- NPO status unknown

(A) ACQUISITION

Patient	▪ Position: supine and RLD ▪ Adjust ambient light ▪ Expose the upper abdomen	**Probe**	▪ Adults: low frequency curved probe ▪ Pediatrics: consider high frequency linear probe ▪ Acoustic medium: gel ▪ Sagittal scanning plane in the epigastrium
Picture	Scan	▪ sweep widely from left to right subcostal margin to systematically identify the stomach as a hollow viscus located superficially between the left lobe of the liver and the pancreas with a prominent muscularis layer within its wall ▪ rock and slide to positively identify the antrum at the level of the aorta ▪ rotate to obtain a true cross section of the antrum avoiding oblique views ▪ heel to toe movement to optimize acoustic reflections	
	Knobology	▪ primary: adjust depth and gain ▪ secondary: adjust tissue harmonics and focal zone ▪ tertiary: color or power Doppler to confirm vessel identity if required	
	Capture	▪ still frame or video as required ▪ if clear fluid content, measure antral CSA in RLD as a mean of 3 readings, between peristaltic contractions and estimate gastric volume using a predictive model such as: (Volume(mL)=27.0 + 14.6 x Right-lat CSA – 1.28 x age)	
Protocol	Complete written report (fig.x)		

(I) INTERPRETATION

Pattern recognition: gastric content nature

- Empty stomach, grade 0 antrum: minimal clear fluid/air content, flat antrum or "bull's eye" pattern in both supine and RLD
- Clear fluid (distended antrum with hypoechoic content)
  - -Grade 1 antrum (fluid visible in RLD only, suggesting low gastric volume)
  - -Grade 2 antrum (fluid visible in both supine and RLD, suggesting high gastric volume)
- Thick fluid or solid (distended antrum with hyperechoic/heterogeneous content)

Volume estimation

Helps differentiate clinically insignificant volume or baseline gastric secretions (<1,5 mL/kg of clear fluid) from greater than baseline volumes (>1,5mL/kg)

(M) MEDICAL DECISION MAKING

Clinical context	▪ History and physical exam ▪ Elective versus urgent versus emergency procedure ▪ Time interval since last meal ▪ Type and amount of meal ▪ Other aspiration risk factors (diabetes, GERD, stroke, active labor, Neuromuscular disease)
Image analysis	▪ Adequate ▪ Technically difficult ▪ Inadequate

Physician interpretation and decision making

Classify findings into one of 3 categories:

- Empty stomach or baseline gastric secretions suggesting LOW aspiration risk
- Clear fluid content (>1,5mL/kg) suggesting higher than baseline gastric volume and HIGH aspiration risk
- Thick fluid or solid content suggesting HIGH aspiration risk

Medical decision making

- Decide on anesthetic/surgical timing: proceed, delay, cancel
- Decide on anesthetic technique: general versus regional
- Decide on the need for aspiration precautions (e,g, need for intubation, rapid sequence induction)