OUTLINE

• ASPIRATION: DEFINITION & INCIDENCE
• WHO’S AT RISK?
• CURRENT PRE-OP FASTING GUIDELINES
• FASTING VOCABULARY: LOST IN TRANSLATION?
• EFFECTS OF STARVATION
• CURRENT TRENDS: PRE-OP CHO LOADING
• THE BOTTOM LINE
ASPIRATION

• **DEFINITION:** ASPIRATION IS A RARE BUT POTENTIALLY DEVASTATING COMPLICATION OF GENERAL ANAESTHESIA

• IT OCCURS SECONDARY TO THE PASSIVE REGURGITATION OF GASTRIC CONTENTS, WHICH PASS INTO THE LUNGS AND INDUCE AN INFLAMMATORY RESPONSE

• **INCIDENCE**
  • 2011: RISK OF ASPIRATION IN ADULTS 1:2000–3000 FOR ELECTIVE SURGERY AND AS HIGH AS 1:600–800 FOR EMERGENCY SURGERY (NAP-4)
  • OVER 50% OF AIRWAY-RELATED DEATHS IN ANAESTHESIA WERE AS A CONSEQUENCE OF ASPIRATION, OUTWEIGHING THE MUCH FEARED CAN’T INTUBATE CAN’T VENTILATE (CICV) SCENARIO
IN CASE OF BOREDOM
WHO’S AT RISK OF ASPIRATION?

PATIENT FACTORS:
A. FULL STOMACH
   . EMERGENCY SURGERY
   . INADEQUATE FASTING TIME
   . GASTROINTESTINAL OBSTRUCTION

B. DELAYED GASTRIC EMPTYING
   . SYSTEMIC DISEASES, INCLUDING DIABETES MELLITUS AND CHRONIC KIDNEY DISEASE
   . RECENT TRAUMA
   . OPIOIDS
   . RAISED INTRA-CRANIAL PRESSURE
   . PREVIOUS GASTROINTESTINAL SURGERY
   . PREGNANCY (INCLUDING ACTIVE LABOUR)
PATIENT FACTORS CONTINUED

C. INCOMPETENT LOWER OESOPHAGEAL SPHINCTER
   - HIATUS HERNIA
   - RECURRENT REGURGITATION
   - DYSPEPSIA
   - PREVIOUS UPPER GASTROINTESTINAL SURGERY
   - PREGNANCY

D. OESOPHAGEAL DISEASES
   - PREVIOUS GASTROINTESTINAL SURGERY
   - MORBID OBESITY
ASPIRATION RISK

SURGICAL FACTORS

. UPPER GASTROINTESTINAL SURGERY
. LITHOTOMY OR HEAD DOWN POSITION
. LAPAROSCOPY
. CHOLECYSTECTOMY
ASPIRATION RISK

ANAESTHETIC FACTORS

- LIGHT ANAESTHESIA
- SUPRA-GLOTTIC AIRWAYS: FIRST GENERATION DEVICES
- POSITIVE PRESSURE VENTILATION
- LENGTH OF SURGERY > 2 H
- DIFFICULT AIRWAY
| Patient factors | Increased gastric content | Intestinal obstruction  
 | | | Non-fasted  
 | | | Drugs  
 | | | Delayed gastric emptying  
 | Lower oesophageal sphincter incompetence | Hiatus hernia  
 | | | Gastro-oesophageal reflux  
 | | | Pregnancy  
 | | | Morbid obesity  
 | | | Neuromuscular disease  
 | Decreased laryngeal reflexes | Head injury  
 | | | Bulbar palsy  
 | Gender | Male  
 | Age | Elderly  
 | Operation factors | Procedure | Emergency  
 | | Laparoscopic  
 | Position | Lithotomy  
 | Anaesthetic factors | Airway | Difficult intubation  
 | | Gas insufflation  
 | Maintenance | Inadequate depth of anaesthesia  

WHAT’S THE BIG DEAL?!

• NAP4 FOUND THE FAILURE OF RISK ASSESSMENT TO BE A COMMON THEME
• OF THE 23 CASES OF PRIMARY ANAESTHESIA-RELATED ASPIRATION, ONLY 10 (43.4%) WERE THOUGHT AT THE TIME OF SURGERY TO HAVE HAD ANY RISK FACTORS FOR ASPIRATION
• HOWEVER, RETROSPECTIVELY 9 OF THE 11 PATIENTS INITIALLY DESCRIBED AS HAVING NO RISK FACTORS HAD AT LEAST ONE RISK FACTOR FOR ASPIRATION
• INDEED OF ALL THE PATIENTS WHO ASPIRATED, 27 OF 29 PATIENTS HAD IDENTIFIABLE RISK FACTORS (93.1%)
PRE-OPERATIVE FASTING

- MARKED DIFFERENCE IN THE PASSAGE OF SOLIDS VS LIQUIDS

*Figure 2*. Gastric emptying curves for a solid ($^{99m}$Tc-labelled omelette, ▼) and liquid ($^{111}$In-labelled soft drink, ▼) meal in a healthy volunteer. Liquid emptying begins instantly in an exponential fashion, while the linear solid emptying begins after the lag phase.
CURRENT FASTING GUIDELINES

• THE ½ LIFE OF CLEAR FLUIDS IN THE STOMACH IS 10 – 20 MINUTES

• RESIDUAL GASTRIC VOLUME AFTER 2 HOURS IS LESS IN PATIENTS INGESTING SMALL AMOUNT OF CLEAR FLUIDS THAN PATIENTS FASTING

• 3 HOURS IS RECOMMENDED IN OUR LOCAL GUIDELINE TO ALLOW SOME FLEXIBILITY WITH THEATRE SCHEDULING, ALTHOUGH TWO HOURS IS AN ACCEPTABLE FASTING TIME
JHH_JHCH_BH_0057: Fasting prior to anaesthesia / sedation

GUIDELINE
This guideline does not replace the need for the application of clinical judgment in respect to each individual patient.

**Adults**
- 6 hours for food
- 3 hours for water (water is stipulated for simplicity)*

Note: Patient may take a small amount of water less than 2 hours pre-procedure to swallow medication

**Infants- 6 months to Children 14 years of age**
- 6 hours for food/breast milk/formula
- 2 hours for clear fluids

**Infants- Less than 6 months old**
- 4 hours solids
- 4 hours formula
- 3 hours breast milk
- 2 hours clear fluids

**Examples of Clear Fluids**
Water, apple juice (no other fruit juices), electrolyte supplements, non-carbonated clear fluids, black tea, black coffee.
The new machine improved theatre productivity by 30%, so long as the milk and propofol didn’t get confused.
FASTING VOCABULARY: LOST IN TRANSLATION?

• “NPO”
• ”NBM”
• MEDICATIONS?? (F)
• “CLEAR FLUIDS”
• FASTING ≠ STARVATION
EFFECTS OF STARVATION

• 6-8 HOURS IS OUR NORMAL OVERNIGHT FAST
• BEYOND THAT = STARVATION = PATIENT DISCOMFORT
• 10 - 15 HOURS IS THE AVERAGE “FASTING” TIME OF OUR SEMI-URGENT (MOSTLY ORTHOPAEDIC) PATIENTS
• INDUCES A STRESS RESPONSE: NET BREAKDOWN OF GLYCOGEN, FAT & PROTEIN
• ANABOLIC ⇢ CATABOLIC
• HYPERGLYCAEMIA IN PRESENCE OF INCREASED INSULIN LEVELS = INSULIN RESISTANCE (MARKER OF STRESS)
CURRENT TRENDS (FUTURE DIRECTIONS)

- PRE-OP CARBOHYDRATE LOADING REDUCES INSULIN RESISTANCE
- IMPORTANTLY COMPLETE GASTRIC EMPTYING OCCURS WITHIN 2 HOURS OF INGESTION
- MOST IMPORTANTLY, NO INCREASED RISK OF ASPIRATION WHEN COMPARED WITH STANDARD 8-HOUR FAST (NBM FROM MIDNIGHT)
THE BOTTOM LINE

• ASPIRATION IS A RARE BUT POTENTIALLY CATASTROPHIC EVENT, SO RECOGNITION OF RISK FACTORS IS VITAL

• FASTING GUIDELINES: 6 HOURS FOR SOLIDS & 2 HOURS FOR CLEAR FLUIDS SHOULD BE ADHERED TO, BUT THESE ARE ONLY RELEVANT IN THE ELECTIVE SETTING & IN THOSE PATIENTS WITHOUT RISK FACTORS

• ANY DOUBT = RAPID SEQUENCE + ETT & AWAKE EXTUBATION

• PRE-OP ORAL CARBOHYDRATES HAVE AN IMPORTANT ROLE IN REDUCING STRESS RESPONSE ASSOCIATED WITH SURGERY & ARE ASSOCIATED WITH IMPROVED OUTCOMES
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• LOCAL GUIDELINE: JHH_JHCH_BH_0057: FASTING PRIOR TO ANAESTHESIA / SEDATION

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QUESTIONS?
Position of the Proseal LMA with oesophageal drainage channel providing a conduit for regurgitated stomach contents or passage of a nasogastric tube

- Cervical spine
- Pharynx
- Epiglottis
- Vallecula
- Distal airway orifice
- Trachea
- Drain tube tip
- Oesophagus