**APPENDIX 3. PICO search results, queries and search progress**

**Table 1. PICO group screening results**

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| --- | --- | --- | --- | --- | --- | --- |
| **Initial search result** | **Title screening results** | **Abstract screening results** | **PICO group** | **Abstracts** | **Full text** | **GRADE evaluation** |
|  |  |  | **A** | **428** | **20** | **7** |
|  |  |  | **B** | **428** | **43** | **43** |
| **42 000** | **28 239** | **1200** | **C** | **428** | **118** | **22** |
|  |  |  | **D** | **400** | **27** | **19** |
|  | 13 697 duplicates |  | **E** | **447** | **39** | **22** |
|  |  |  | **F** | **407** | **12** | **12** |

**Table 2. PICO group search queries and search results**

**PICO group A**

**Query: which are the risks and benefits associated with a change from the current European Society of Anaesthesiology preoperative fasting recommendations to more liberal regimens regarding clear fluids, cow´s milk or solid food in the form of a light meal?**

The literature search and screening yielded seven relevant articles that were evaluated for GRADE Three were randomised controlled trials, and four retrospective or prospective observational studies.

Clear fluid fasting: Of the 7 articles,

* 6 reported the incidence of pulmonary aspiration
* 2 studied hypoglycaemia or ketosis
* 0 studied the incidence of hypotension
* 2 reported the incidence of hunger, thirst or discomfort
* 3 studied gastric content volume
* 6 studied real fasting time

Solids and non-clear fluid fasting: Of the 7 articles,

* 1 included cohorts with different regimens for solids

Based on the available literature, the panel identified the following potential risks and benefits that should be considered before changing to more liberal regimens:

* Risk of pulmonary aspiration
* Risk of hypoglycaemia or ketosis
* Risk of hypotension
* Risk of discomfort or behavioural changes
* Gastric content volume after fasting (surrogate risk factor for pulmonary aspiration)
* Real fasting time (surrogate marker for metabolic, haemodynamic and behavioural changes)

**PICO group B**

**Query: what is the impact of co-morbidity, medication, and other environmental factors in a clinical or simulated fasting setting**

The search and screening yielded 43 relevant articles for data extraction and assessment of quality of evidence. Of the 43 included articles, 8 were randomised controlled trials and 34 were retrospective or observational studies.

Coexisting Disease: Of the 43 articles,

* 9 studied children with GERD
* 7 studied preterm infants
* 5 studied children with functional/non-ulcer dyspepsia
* 2 studied children with congenital cardiac disease presenting for cardiac surgery
* 2 studied obese children
* 2 studied children with repaired esophageal atresia/TEF
* 2 studied children with type 1 diabetes

There was 1 article reporting on each of the following populations:

* Coeliac disease
* Cerebral palsy
* Chronic constipation/foecal retention
* Critically ill receiving parenteral nutrition
* Functional abdominal pain
* Irritable bowel syndrome
* Infants with milk protein allergy and recurrent vomiting/regurgitation
* Muscular dystrophy
* Neurologic impairment
* Portal hypertension

Medications or Other Environmental Factors: Of the 43 articles,

* 4 studied cisapride
* 1 studied acetaminophen
* 1 studied baclofen
* 1 studied erythromycin and metoclopramide
* 1 studied nizatidine

**PICO group C**

**Query: What is the impact of composition, amount and consistency of food or fluid on gastric emptying in a clinical or simulated fasting setting?**

The screening and full text review yielded 22 papers evaluated according to GRADE.

Based on the available literature we were able to assess the following topics:

* carbohydrate-containing liquids (4 studies)
* breast milk (9 studies)
* milk fortifier (5 studies)
* formula or non-human milk (3 studies)
* solids (4 studies)

Based on available literature, the panel identified the following impact of composition, amount and consistency on gastric emptying:

* High volumes of ingested liquids (>10 mL/kg) demonstrate longer gastric emptying times
* Intake of higher osmolarity fluids increases gastric emptying times
* High casein content or intact protein structure prolongs gastric emptying.

**PICO group D**

**Query: can gastric ultrasound (GUS) in children be validated as a diagnostic tool to determine gastric content and/or half-life of gastric content, using established methods for correlation in order to give evidence for possible treatment decisions?**

The search, screening and subsequent full text review resulted in 19 relevant articles for data extraction and assessment of quality of evidence. Based on the available literature the following topics were assessed:

* Correlations between sonographic measurements and MRI (3 studies)
* Correlations between sonographic measurements and suctioned content (4 studies)
* Correlations between sonographic measurements and scintigraphy (3 studies)
* Correlations between sonographic measurements and SPECT (1 study)
* Correlations between sonographic measurements and CT (1 study)
* Grading systems on stomach content (6 studies)
* Predictions on stomachs at risk for causing aspiration (6 studies)

Of the 27 included articles, 4 were randomised controlled trials and 23 were retrospective or observational studies.

**PICO group E**

**Query: can gastric ultrasound be used as a clinical decision-making tool to evaluate the risk of pulmonary aspiration?**

The abstract screening resulted in a total of 447 possibly relevant studies, of which 39 were chosen for full text screening. 17 studies did not fulfil the criteria, resulting in 22 papers evaluated according to GRADE. The following topics were identified as relevant:

* The definition of an ‘empty’ versus a ‘full’ stomach
* In which setting should gastric ultrasound be performed?
* Can gastric ultrasound be used to modify the anaesthesia plan?

**PICO group F**

**Query: What are the risks and benefits of early and liberal postoperative oral fluid intake in children compared to delayed oral fluid intake or even withholding fluids to a certain point of time?**

We conducted a secondary screening of 407 abstracts for relevance to our PICO question and considered 12 abstracts to be relevant. After the following full text reading we included 8 studies for the assessment of quality of evidence (7 randomised controlled trials (RCT), 1 cohort study). Each paper was reviewed and graded independently by two researchers using the UpToDate Grading Guide and SBU checklists for the evaluation of RCT or observational studies, each consisting of 6 domains. All cases of disagreement were solved by a consensus discussion between three researchers.