

Table S1 Specific key words used for collecting research articles

| Section | Keywords |
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| Introduction | Dybiosis, alpha diversity, beta diversity |
| Gut microbiome alterations in PICU | Dybiosis, starvation, opioids, proton-pump inhibitors, antibiotics, pediatrics |
| Fasting, enteral feeding and gut microbiome | Feeding, nutrition, starvation, parenteral nutrition, pediatrics |
| Effect of carbohydrates | Carbohydrates, fructose, lactose, fructo-oligosaccharides, galacto-oligosaccharide, short chain fatty acids, butyrate, inflammatory bowel disease, pediatrics |
| Effects of protein | Protein, amino acid, digestion |
| Effects of lipids | Lipid, digestion, pediatrics, omega-3 |
| Changes in microbiome in sepsis | Sepsis, septic shock, intestinal mucosa, tight protein junction, mucosa barrier, gut-driven sepsis |
| Effect of enteral feeding on microbiome in sepsis | Feeding, enteral nutrition, sepsis, probiotics, trophic, intestinal mucosa, pediatrics |
| Pediatric acute respiratory distress syndrome (PARDS), enteral feeding and gut microbiome | Acute respiratory distress syndrome, pediatric acute respiratory distress syndrome, enteral nutrition |
| Intestinal crosstalk and gut-lymph theory | Acute respiratory distress syndrome, pediatric acute respiratory distress syndrome, gut-lymph theory |
| Effect of enteral feeding on PARDS | Acute respiratory distress syndrome, pediatric acute respiratory distress syndrome, enteral nutrition, immune, inflammation, omega-3 PUFA, glutamine, and arginine |
| Future directions and avenues for research | Synbiotic, fecal microbiota transplant, eubiosis, pediatrics |

The above key words were searched as MeSH terms in combination with AND Gut microbiome AND/OR critical care.