**Supplementary Document**

**Supplementary Table 1: Search Strategy**

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| --- |
| * “Preoperative Period”, * “Preoperative Care” * “Preoperative” * “preop” * “perioperative”   Combined with   * “immunonutrition” * “pharmacononutrition” * “immune nutrients” * “immune modulating nutrients” * “dietary supplements” * “oral supplement” * “enteral nutrition” * “nutritional support” * “arginine” * “omega-3 fatty acid” * “glutamine” * “enteric feeding” * “diet therapy” * “Nutrition(al) feed(s)” * “Nutrition Disorders”, * “Nutrition Surveys”, * “Home/ or nutrition”, * “Total/Nutrition Therapy”   combined with   * “gastrointestinal surgery”, * “surgeries” * “post-operative outcomes”. |

*Detailed search strategy available on request*

# **Supplementary Table 2: Excluded studies**

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| --- | --- | --- | --- | --- | --- |
| **Study & Year** | **Cancer** | **IMN** | **Control** | **Reason for exclusion** | **Notes** |
| Wachtler *et al.* 19951 | Upper GI surgery for cancer | Impact, Sandoz-Nutrition, Bern, Switzerland | Isocaloric isonitrogenous supplements | Pre-2000 so not recent enough. |  |
| McCarter *et al.* 19982 | Upper Gastrointestinal cancer | 1. Arginine alone  2. Arginine combined with ω-3 fatty acids | Isocaloric isonitrogenous supplements | Pre-2000 so not recent enough. |  |
| Hubner *et al.* 20123 | Major abdominal surgery – benign and cancer | Impact, Novartis/ Nestlé Nutrition, Vevey, Switzerland | Isocaloric isonitrogenous supplements | Mixed population of cancer and benign patients. No availability to data on cancer patients alone. | *Contact to obtain data on cancer patients alone failed.* |
| Barker *et al.* 20134 | Mixed upper and lower GI surgery (not only cancer) | Impact Advanced recovery (Nestle Medical Nutrition, MN, USA) | No supplements | Mixed population of cancer and benign patients. No availability to data on cancer patients alone. | *Contact to obtain data on cancer patients alone failed.* |
| Martin *et al.* 20175 | Pancreatic cancer  (electroporation of unresectable tumours) | Impact | No supplements | Pseudo-randomization, based on affordability and availability of supplement. |  |
| Ashida *et al.* 20186 | Pancreatic cancer - pancreaticoduodenectomy | Oral supplement containing eicosapentaenoic acid | Isocaloric isonitrogenous supplements | IMN product only contained a single component of immunonutrient and not a combination. So not comparable with the other studies. |  |

**References**

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4. Barker LA, Gray C, Wilson L, Thomson BN, Shedda S, Crowe TC. Preoperative immunonutrition and its effect on postoperative outcomes in well-nourished and malnourished gastrointestinal surgery patients: a randomised controlled trial. *Eur J Clin Nutr.* 2013; 67: 802-807.
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6. Ashida R, Okamura Y, Wakabayashi-Nakao K, Mizuno T, Aoki S, Uesaka K. The impact of preoperative enteral nutrition enriched with eicosapentaenoic acid on postoperative hypercytokinemia after pancreatoduodenectomy: the results of a double-blinded randomized controlled trial. *Dig Surg.* 2018 [Epub ahead of print].

**Supplementary Table 3: The composition of IMPACT (Nestlé Health Science)**

Oral Impact® is powder nutrients for oral feeding that provides 1.0 kcal/ml when reconstituted with water. And contains the following additional nutrients - ω-3 fatty acids, arginine, nucleotides and soluble fibre. For use under medical supervision. (Downloaded from <https://www.nestlehealthscience.co.uk/brands/impact/impact>).



**Supplementary Figure 1: Funnel plot for infectious complications.** The points correspond to the treatment effects (log weighted OR) from 14 individual studies, and the diagonal lines show the expected 95% confidence intervals around the pooled fixed effect log OR estimate.

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