

CLINICAL SUMMARY

Immune-Modulating Enteral Formula Can Reduce Infectious Complications and Decrease Hospital Length of Stay in Post-Operative Cardiac Surgery Patients

This study demonstrates that compared to a standard formula, use of an immune-modulating formula in post-operative cardiac surgery patients is associated with fewer infectious complications and decreased hospital length of stay.

Enteral nutrition formulations containing immune-modulating nutrients such as arginine, omega-3 fatty acids and antioxidants have been shown to reduce the risk of acquired infections, wound complications, and length of stay in high-risk surgical patients.¹

Post-surgical patients who are not able to resume an oral diet are at risk for malnutrition. Malnutrition increases the risk of post-operative complications, such as infections and poor wound healing.

An abstract published in *JPEN J Parenter Enteral Nutr** and presented at Clinical Nutrition Week in Vancouver, BC, Canada, in January 2011, described interim findings of a non-randomized, prospective, historical control study that evaluated the impact of an immune-modulating enteral formula on infection rates in patients following cardiac surgery. Prospective data were collected on patients who required tube feeding following cardiac surgery between March 2008 and June 2010. These data were compared to data from the historical cohort recorded between October 2004 and March 2008.

The immune-modulating formula (Pivot® 1.5 Cal) used in the study is a high-protein, peptide-based formula containing:

- Fish oil/MCT structured lipid
- Added arginine (13 g/L, 3.5% of calories)
- Elevated levels of the antioxidant vitamins A, C, and E
- Short-chain fructooligosaccharide (scFOS®)

Post-cardiac surgery patients who cannot progress to an oral diet after surgery are at high risk for post-operative complications.

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Patients were started on tube feeding post-operatively when medically indicated. The historical control group received standard enteral formulas without added arginine or fish oils.

Outcomes measured included:

- Deep sternal wound infection
- Sepsis
- Leg infections
- *Clostridium difficile* (*C. diff*) infection
- Multi-system organ failure

The abstract reported findings at two-thirds of enrollment; 265 patients were identified in the historical period and were compared to 172 patients in the immune-modulating formula group.

Post-operative length of stay was significantly shorter in the immune-modulating formula group compared to controls (median 27 days vs 31 days, $P=0.002$). The overall incidence of infectious complications was also less in the immune-modulating formula group (18.0% vs 26.4%, $P=0.048$). Additionally, there were significant differences between the groups in the development of sepsis and *C. difficile* infection in favor of the immune-modulating formula group.

	Historical	Immune-modulating formula	$P \leq$
Post-op length of stay, median days	31	27	0.002
Any infectious complication, % (n)	26.4 (70)	18.0 (31)	0.048
Sepsis, % (n)	17.4 (46)	10.5 (18)	0.053
<i>C. diff</i> positive culture, % (n)	9.1 (24)	4.1 (7)	0.056

NUTRITION CONCLUSION

These interim findings suggest a beneficial role of immune-modulating formulas over standard formulas in decreasing post-operative infections in cardiac surgery patients. These findings are in line with the results of the meta-analysis conducted by Marik and Zaloga supporting immunonutrition in high-risk surgical patients.¹

Reference 1. Marik PE, Zaloga GP. Immunonutrition in high-risk surgical patients: a systematic review and analysis of the literature. *JPEN J Parenter Enteral Nutr.* 2010;34:378-386.

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