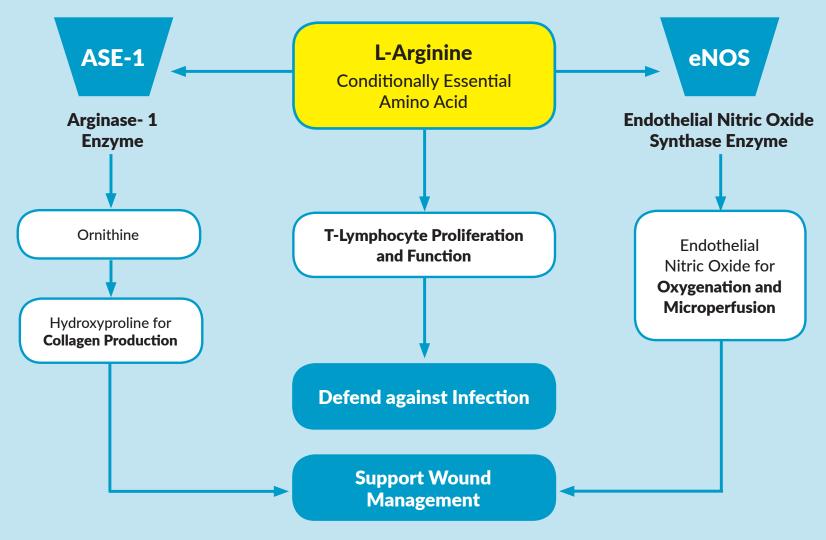
## **ARGININE METABOLISM** in Major Surgery and Trauma<sup>1-7</sup>



Depleted Arginine Impairs Immune Function and Wound Management in Major Elective Surgery and Trauma Patients

1. Morris CR et al. NCP 2017;32(1):30S-47S. 2. Zhu X et al. Ann Surg 2014; 259(1):171-8. 3. Hamilton-Reeves JM et al. Euro Urol 2016;69(3):389-392. 4. Ochoa Gautier JB 2014. Arginine in Crit Care: Preclinical Aspects. In: Diet and Nutrition in Crit Care. NY: Springer. 1-17. 5. Ochoa JB et al. Ann Surg 2001;233(3):393-9. 6. Forstermann U and Sessa WC. Euro Heart J 2012;33:829-837. 7. Chow O and Barbul A. Adv Wound Care 2014;3(1):46-53. 8. Wijnands KAP et al. Nutrients 2015;7:1426-1463. 9. Ochoa JB et al. Ann Surg 1991;214(5):621-6.

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# What about septic patients?8

**iNOS** 

Inducible Nitric Oxide Synthase Enzyme; Induced in Multiple Cell Types following Primary Sepsis

• This metabolic response is different from that following major elective surgery/trauma and also different from the occurrence of sepsis after major elective surgery/trauma.9



### **Critical Care Enteral Formula Considerations**

#### **NESTLÉ PRODUCT CLINICAL METABOLIC** CONDITION **ENVIRONMENT OPTIONS MAJOR SURGERY INDUCTION IMPACT®** and TRAUMA<sup>10</sup> **OF ARGINASE-1** or Supplemental **IMPACT® PEPTIDE 1.5** Examples: **Arginine Depletion** arginine and other **Formulas** Esophagectomy, immunonutrients CABG, TBI, Burn Decreased immune are suggested function increases risk to help address of infection. immunosuppression, Decreased wound decrease complications oxygenation increases and LOS. risk of complications.

#### **ACTIVE SEPSIS8-14**

 Life-threatening organ dysfunction caused by a dysregulated inflammatory response to infection

# INDUCTION OF INDUCIBLE NITRIC OXIDE SYNTHASE

Inducible nitric oxide production may be increased and may be associated with hemodynamic instability.

Supplemental arginine not suggested for routine use

PEPTAMEN® AF or PEPTAMEN® INTENSE VHP Formulas



<sup>12.</sup> Luiking YC et al. Clin Sc 2015;128:57-67. 13. Klek S. J Clin Med 2016;5(34):1-16.