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Acute Stress Orthomolecular Nutrition

Advancing Orthomolecular Medicine in Surgical Care - An Upcoming ICBI Keynote

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Adapted for public education from the author's scientific hypothesis article: ["Acute Stress Orthomolecular Nutrition \(ASON\): A Systems-Medicine Hypothesis and Framework for Dynamic Nutrient Requirements."](#) Prepared in conjunction with the [1st ICBI Global Congress 2026 in Zurich, Switzerland](#).

What Do Surgery, Trauma, Heart Attacks, and Intense Exercise Have in Common?

Orthomolecular Medicine (OM) has long emphasized the importance of nutrition in infections, chronic diseases, immune health, and healthy aging.

But what about a patient undergoing dental implant surgery?

Or someone recovering from major surgery, serious trauma, or extensive burns?

What about the biological challenges following a heart attack or stroke?

Or an athlete undergoing unusually intense physical training?

These conditions may seem unrelated, but they share a fundamental feature: they subject the body to acute stress.

Acute stress can rapidly alter metabolism, hormonal regulation, inflammatory activity, nutrient distribution, cellular energy production, circulation, and tissue repair.

The body that exists during an acute physiological crisis is not functioning under the same conditions as the body at rest.

This raises a question that deserves much greater attention in Orthomolecular Medicine:

When the body's biological demands suddenly change, should our approach to nutrition change as well?

A recently proposed scientific framework, Acute Stress Orthomolecular Nutrition (ASON), brings these conditions together within a systems-medicine perspective.

ASON proposes investigating how acute stress may temporarily alter the body's functional requirements for selected nutrients-and whether addressing meaningful nutritional limitations can improve clinical outcomes.

The concept builds upon two earlier OMNS publications:

The Nutrient Demand Principle of Disease: Why Illness and Aging Increase the Physiological Requirement for Optimal Nutrition.

<https://orthomolecular.org/resources/omns/v22n13.shtml>

Surgery Is Systemic: Why Nutrient Status, Redox Balance, and Microcirculation May Determine Healing Outcomes as Much as Surgical Technique.

<https://orthomolecular.org/resources/omns/v22n12.shtml>

Together, these articles introduce an expanding discussion: Orthomolecular Medicine may have important applications not only in disease prevention and treatment, but also in preparing the body for physiological stress and supporting recovery.

Readers interested in the wider systems-medicine discussion can explore OMNS Global, where related scientific concepts and educational discussions are organized.

From Scientific Hypothesis to International Surgical Discussion

The emerging application of Orthomolecular Medicine to surgery, tissue repair, and recovery will be featured at the 1st ICBI Global Congress, October 23-24, 2026, in Zurich, Switzerland.

The keynote presentation, "Optimizing Surgical Outcomes with I-OM Systems Medicine," will introduce Acute Stress Orthomolecular Nutrition (ASON) to an international audience of dental implantologists, surgeons, and healthcare professionals.

This represents an important opportunity to broaden the dialogue between Orthomolecular Medicine, biological dentistry, and surgical science-exploring how nutritional status, metabolic health, microcirculation, and the body's biological capacity for repair may influence surgical outcomes.

Official Congress Website: <https://icbi-foundation.org/>

Zurich ICBI 2026 - I-OM Conference Resource Hub:

<https://community.i-om.ai/t/zurich-icbi-2026-i-om-systems-medicine-conference-resource-hub/659>

The resource hub provides a continuing destination for scientific references, keynote materials as they become available, practical educational frameworks, and discussion through OMNS Global.

The Implant Is Local. Healing Is Systemic.

1. Surgery: A New Frontier for Orthomolecular Medicine

Consider two patients undergoing the same dental implant procedure.

Both receive excellent surgical care.

Both have appropriate implant placement and postoperative management.

Yet one heals rapidly, while the other experiences delayed wound healing, persistent inflammation, or impaired bone integration.

Why?

The answer may involve many factors, including surgical technique, infection, smoking, diabetes, vascular health, medications, and baseline nutritional status.

But another question deserves attention:

Was the patient's body biologically prepared to heal?

Surgery is not simply a mechanical intervention. It initiates a coordinated physiological response.

Stress hormones increase. Inflammatory pathways become activated. Metabolic activity changes. Immune cells respond. Injured tissues require reconstruction.

Healing depends on adequate energy production, nutrient availability, oxygen delivery, blood circulation, and cellular signaling.

Vitamin C is required for collagen formation. Zinc participates in wound healing and protein synthesis. Magnesium supports energy-related biochemical reactions. Protein supplies essential building blocks for tissue repair. Vitamin D contributes to skeletal physiology.

These are established physiological functions.

What remains uncertain is whether a given surgical stress creates a temporary functional limitation in one or more nutrients, and whether correcting that limitation improves outcomes beyond appropriate standard care.

This distinction is the foundation of ASON.

A technically successful operation is not the same as successful biological healing.

Orthomolecular Medicine can contribute to this discussion by examining the patient's nutritional and metabolic preparation, not merely the procedure itself.

2. Acute Stress Extends Far Beyond Infection

OMNS readers are familiar with the relationship between infections and nutritional physiology.

ASON expands that discussion to a broader spectrum of acute stress.

Surgery and dental procedures

Surgery produces controlled tissue injury and activates endocrine, immune, inflammatory, and repair pathways.

Dental extractions, periodontal operations, bone grafting, and implant placement offer opportunities to study nutrient physiology alongside measurable healing outcomes.

Major trauma and burns

Severe injury can cause extensive tissue destruction, protein catabolism, metabolic changes, and nutrient losses.

Major burns are particularly important because they can combine substantial energy requirements with external losses through damaged tissues.

Heart attacks and strokes

Acute interruption of blood flow deprives tissues of oxygen and energy substrates.

Restoration of circulation may add reperfusion-related inflammation and oxidative injury.

These mechanisms suggest possible roles for nutritional research, although no validated ASON regimen for heart attack or stroke is established. Emergency treatment and timely reperfusion remain essential.

Intense exercise and physical recovery

Strenuous exercise changes energy metabolism, substrate utilization, and redox signaling.

The body must balance recovery with the adaptive responses that improve physical performance.

This distinction matters because some oxidative signals contribute to beneficial exercise adaptations.

Acute infections

Infections can change nutrient intake, distribution, utilization, and losses.

The orthomolecular literature has addressed this area extensively. ASON incorporates that experience while emphasizing the need to distinguish physiological changes from demonstrated treatment benefits.

Acute psychological stress

Severe psychological stress activates the autonomic nervous system and stress-related hormonal pathways.

Its relevance to short-term functional nutrient requirements remains preliminary and requires further

investigation.

These different forms of stress should not be treated as interchangeable.

Rather, ASON proposes a common research question:

How does the nature, severity, and timing of acute stress influence nutrient physiology and the body's capacity to recover?

3. The Nutrient Demand Principle: Nutritional Requirements Are Dynamic

Traditional nutritional reference values provide important guidance for maintaining adequate nutrition in generally healthy populations.

However, illness and injury can alter the conditions under which nutrients are absorbed, distributed, utilized, and eliminated.

The Nutrient Demand Principle of Disease, introduced in an earlier OMNS article, provides a conceptual foundation for investigating such changes.

ASON focuses specifically on acute stress and its progression over time.

Four overlapping phases are particularly relevant.

Before stress: The body enters surgery or illness with existing nutritional reserves, metabolic health, and organ function.

During acute stress: Hormonal, inflammatory, metabolic, and circulatory changes may alter nutrient utilization, distribution, or losses.

During repair: Tissue reconstruction requires coordinated collagen formation, protein synthesis, immune regulation, cellular energy production, and vascular support.

During recovery: Nutrient physiology may change again as the acute response resolves.

These phases are not fixed therapeutic windows.

Some nutrient requirements may rise, some may remain stable, and others may change in more complicated ways.

An important distinction is that a low measured nutrient concentration during inflammation does not necessarily prove deficiency. Redistribution, dilution, altered carrier proteins, and organ dysfunction can also affect blood measurements.

Therefore, ASON distinguishes changes in nutrient concentrations from functional limitations and clinical responses to treatment.

The goal is not simply to provide more nutrients. It is to understand which nutrients may become limiting, when, and in whom.

4. Why Metabolically and Nutritionally Impaired Patients Deserve Special Attention

Not every patient enters acute stress with the same biological reserves.

Consider a patient with diabetes undergoing dental implant surgery.

Even before the procedure, the patient may have impaired glucose regulation, insulin resistance, microvascular dysfunction, altered immune responses, or chronic inflammation.

The operation then introduces additional hormonal, metabolic, and inflammatory demands.

A patient with poor nutritional intake, frailty, or established micronutrient deficiencies may face different limitations.

This is particularly relevant to the Insulin-Cortisol-Vitamin C (I-C-V) framework, an emerging conceptual component of I-OM Systems Medicine.

Acute stress commonly activates cortisol and catecholamine signaling. These responses interact with glucose metabolism and insulin regulation.

Vitamin C participates in collagen synthesis and redox biology-processes directly relevant to tissue repair.

Studying these interacting pathways may help identify metabolically vulnerable populations.

However, the I-C-V framework should be understood as a proposed explanatory and research model, not an established clinical treatment algorithm.

The important questions are whether pre-existing vulnerabilities predict poor healing and whether correcting identifiable abnormalities improves outcomes.

This approach shifts attention from supplement selection alone toward individual biological readiness for stress and recovery.

For broader discussion of host resilience and the biological environment in which disease develops, readers can explore the Disease-Host Dual-System Framework on OMNS Global.

5. Fuel, Energy, and Repair: A Simple Way to Understand Healing

The body's response to surgery or injury can be understood through three interconnected functions:

Fuel. Energy. Repair.

Fuel: Providing the biological resources

Healing requires sufficient energy substrates, protein, essential fatty acids, vitamins, minerals, and other physiological nutrients.

Without adequate substrates and cofactors, essential metabolic and repair processes may become impaired.

Energy: Supporting cellular function

Mitochondria and other metabolic systems generate and utilize the energy required for immune activity, tissue reconstruction, and normal cellular operation.

Insulin regulation, oxygen delivery, blood circulation, and nutrient availability can influence these processes.

Repair: Rebuilding damaged tissues

Repair involves inflammation, immune regulation, collagen synthesis, angiogenesis, bone formation, and tissue remodeling.

These processes depend on the coordination of numerous biological pathways.

A nutritional deficiency may impair one part of this system.

But other limitations-poor circulation, uncontrolled glucose, infection, organ dysfunction, or inadequate surgical stability-may remain important even when nutrient intake is sufficient.

This is why I-OM Systems Medicine emphasizes the biological environment as a whole.

The central clinical question becomes:

What is limiting this patient's ability to heal?

That question may offer a more productive direction for future orthomolecular research than assuming that one nutrient or one dose is appropriate for every patient.

6. What Does Clinical Evidence Already Show?

Modern clinical nutrition provides important precedents for ASON.

The European Society for Clinical Nutrition and Metabolism (ESPEN) recognizes nutritional risk assessment and appropriate nutritional therapy as important components of surgical care.

Selected trials of perioperative immunonutrition formulas, including combinations containing arginine, omega-3 fatty acids, and nucleotides, have reported reductions in infectious complications in particular surgical populations.

However, systematic reviews have identified differences among studies and uncertainty about the magnitude and generalizability of benefit.

Evidence from major gastrointestinal surgery cannot automatically establish a benefit in routine dental procedures.

Likewise, some pharmacological nutrient interventions in critical illness have produced disappointing or concerning findings.

The REDOXS trial found increased mortality associated with glutamine in patients with multiorgan failure.

The LOVIT trial reported an increased composite risk of death or persistent organ dysfunction among patients with vasopressor-dependent sepsis receiving the tested intravenous vitamin C regimen.

Other studies have reported favorable signals for selected nutritional interventions, but those findings require careful interpretation according to the patient population, route, dose, timing, and clinical outcomes.

These results reinforce an essential scientific distinction.

A nutrient may be physiologically necessary without additional administration being beneficial.

ASON therefore separates four questions:

Does acute stress alter a nutrient's circulating concentration?

Does it alter nutrient turnover, distribution, utilization, or loss?

Does this create a functional limitation relevant to the patient?

Does a specific intervention correct that limitation and improve outcomes safely?

Each step requires appropriate evidence.

This framework is intended to strengthen the scientific investigation of orthomolecular strategies-not to assume their effectiveness in advance.

Readers can explore additional scientific discussion, emerging research frameworks, and related educational resources through OMNS Global.

7. Dental Implantology: An Opportunity to Advance Orthomolecular Research

Dental implant surgery offers an unusually practical setting for studying acute-stress physiology.

Unlike unpredictable emergencies, elective dental procedures often allow baseline assessment before a defined physiological stressor.

Investigators can examine nutritional status, metabolic health, inflammation, and selected physiological variables before and after surgery.

They can also measure relevant outcomes, including wound healing, infection, pain, implant stability, and longer-term osseointegration.

Vitamin D has attracted particular interest because of its role in skeletal physiology.

However, evidence linking vitamin D supplementation to improved dental implant outcomes remains insufficient to justify a universal supplementation protocol.

Similarly, biological plausibility involving vitamin C, zinc, magnesium, or other nutrients cannot by itself establish effective perioperative doses.

A more promising research strategy would identify patients with documented deficiencies or metabolic vulnerabilities, evaluate how stress affects them, and then test appropriately targeted interventions against standard care.

Such studies could help determine whether nutritional and metabolic optimization meaningfully improves surgical outcomes.

This represents an opportunity to bring Orthomolecular Medicine into closer collaboration with biological dentistry, surgical science, and clinical nutrition.

8. Orthomolecular Medicine at the ICBI Global Congress 2026

The emerging role of Orthomolecular Medicine in surgery and tissue repair will be highlighted at the 1st ICBI Global Congress, October 23-24, 2026, at The Circle, Zurich Airport, Switzerland.

A keynote presentation titled "Optimizing Surgical Outcomes with I-OM Systems Medicine" will explore the relationship among nutritional status, redox regulation, microcirculation, and biological healing capacity.

Keynote speaker: Richard Z. Cheng, MD, PhD

Date: Friday, October 23, 2026

Time: 11:00 AM

Conference website: <https://icbi-foundation.org/>

ASON will be one of the scientific concepts discussed, particularly in relation to surgical preparation, dental implants, tissue repair, and recovery.

For the orthomolecular community, this is an opportunity to engage with surgical and dental professionals and encourage interdisciplinary investigation of nutritional and metabolic factors influencing healing.

OMNS has previously highlighted the significance of this international meeting:

<https://www.orthomolecular.org/resources/omns/v22n25.shtml>

The broader conversation can continue through OMNS Global, where readers and clinicians can explore systems-medicine research, discuss emerging ideas, and connect with related educational resources.

9. A New Chapter for Orthomolecular Medicine

For decades, Orthomolecular Medicine has investigated the importance of nutrients in health, infections, chronic disease, and aging.

Acute stress opens another important dimension.

Surgery. Trauma. Burns. Heart attacks. Strokes. Intense physical exertion.

These conditions introduce rapidly changing physiological demands that may influence nutrient availability, metabolism, cellular energy, inflammation, microcirculation, and tissue repair.

ASON proposes bringing these diverse situations together within a coherent and testable research framework.

Its central objective is not to establish a universal supplementation formula.

Rather, it is to understand how biological requirements change during stress, identify clinically meaningful limitations, and investigate whether individualized nutritional interventions can improve recovery safely.

The future of Orthomolecular Medicine is not only about preventing and managing disease. It is also about understanding how to support the body's capacity to withstand stress, repair damage, and recover.

Successful surgery requires surgical expertise.

Successful healing requires the participation of the entire body.

That is an important frontier for Orthomolecular Medicine-and a scientific conversation worth pursuing.

Continue the Journey: From Acute Stress Nutrition to Better Surgical Healing

The Implant Is Local. Healing Is Systemic.

The discussion does not end with this article.

For readers interested in exploring how Acute Stress Orthomolecular Nutrition (ASON) and I-OM Systems Medicine may contribute to surgical preparation, tissue repair, dental implant healing, and long-term health, we invite you to visit our dedicated Zurich ICBI 2026 Conference Resource Hub on OMNS Global's I-OM Discourse platform.

Explore the Zurich ICBI 2026 Conference Resource Hub

The hub brings together developing educational and scientific resources, including:

Zurich keynote presentation: Optimizing Surgical Outcomes with I-OM Systems Medicine, including presentation materials and scientific references when released.

I-OM Preoperative Optimization Framework: A proposed individualized approach to metabolic assessment, nutritional readiness, perioperative support, and recovery.

Sports, Muscle, and Bone Nutrition: Exploring the connections among metabolic health, exercise, skeletal resilience, and recovery.

Public Education Resources: Practical explanations of nutrition, healthy aging, tissue repair, and the body's capacity to withstand physiological stress.

Interactive Discussion and Education: Opportunities to explore scientific questions through Ask I-OM.ai, I-OM Academy, and the broader community.

The resources are intended to support scientific discussion and continuing education. Some downloads and educational materials are still being prepared and will become available following final review.

Our guiding principle: FUEL → ENERGY → REPAIR.

Understanding the body's nutritional and metabolic needs before, during, and after physiological stress may open new opportunities for more individualized care.

Continue Learning - Visit the Zurich ICBI Resource Hub

Better preparation. Better recovery. Better lifelong health.

References and Further Reading

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Orthomolecular Medicine News Service. OMNS Highlights the 1st ICBI Global Congress 2026 in Zurich. June 21, 2026. <https://www.orthomolecular.org/resources/omns/v22n25.shtml>

About OMNS Global

OMNS Global - Orthomolecular Medicine for the AI Age

OMNS Global is the multilingual, AI-enhanced educational and scientific exchange platform extending the mission of the Orthomolecular Medicine News Service.

Built on the I-OM Systems Medicine Discourse platform, it connects readers, healthcare professionals, researchers, educators, and students worldwide.

OMNS Global offers access to orthomolecular and systems-medicine discussions, searchable scientific content, multilingual reading, reader Q&A, educational resources, and developing certificate training programs.

The official OMNS website at Orthomolecular.org remains the authoritative publication archive. OMNS Global extends that mission by making orthomolecular knowledge easier to explore, discuss, and share internationally.

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About the Author

Richard Z. Cheng, MD, PhD, is Editor-in-Chief of the Orthomolecular Medicine News Service. His work focuses on advancing evidence-informed Integrative Orthomolecular Systems Medicine, clinical nutrition, metabolic health, disease prevention, and healthy aging.

Scientific and Clinical Disclaimer

ASON is a scientific hypothesis and research framework, not an established treatment protocol. Nutrient needs and responses vary by patient, clinical condition, organ function, formulation, dose, route, and timing. High-dose or pharmacological supplementation is not automatically indicated by acute stress and can carry risks. Nutritional interventions should complement, not replace, established medical, surgical, emergency, and critical-care treatments.