



# NMNEC Concept: Inflammation

**Mega-Concept:** Health and Illness

**Category:** Protection and Movement

**Concept Name:** Inflammation

**Concept Definition:**

"An immunological defense against tissue injury, infection, or allergy." (Sabo, 2017, p. 230) It is a non-specific by complex response to what the body perceives as harmful.

**Scope and Categories**

Scope: inflammation ranges from appropriate to out of proportion responses. Inflammation acts as a protective process that stimulates healing. The stimulus may be exogenous stimulus or directed against an inappropriate intrinsic target (McCance & Huether, 2009).

Categories:

- Acute
- Chronic or repair/restorative inflammation

**Risk Factors:**

All individuals regardless of age, gender, race, or socioeconomic status, geographic location, and prior health history are susceptible to acute or chronic inflammation.

**Populations at Risk:**

Age:

- Very young: Structural differences in anatomy and physiology plus undeveloped immune responses.
- Elderly: Immune responses decline with age

**Individual Risk Factors:**

- Individuals are susceptible to acute or chronic inflammation
- Autoimmune diseases
- Allergies and exposure to pathogens
- Genetic predisposition to chronic inflammation
- Ineffective hygiene



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## Physiological Processes and Consequences:

- Inflammatory response is directly linked to the immune system
- The inflammatory process has four primary functions:
  - To neutralize or destroy foreign material
  - To restrict tissue damage
  - To alert the individual of impending threat of tissue injury
  - To prepare the injured area for healing
- Inflammation is a process involving vascular, cellular, and chemical responses to cellular damage (McCance & Huether, 2009).
- Acute inflammation is a complex, sequential process that lasts minutes to days. Most activity takes place in the first 12 to 24 hours with healing occurring in 2 to 3 weeks (Venes & Taber, 2013).
- Chronic inflammation lasts for weeks, months, or even years and causes progressive tissue changes that negatively impact function. (Venes & Taber, 2013),

## Assessment/Attributes:

### Subjective:

History: Focus on onset and duration of inflammation. Include patient's response as well as symptoms, such as swelling, pain, redness, fatigue, and aggravating/alleviating factors.

### Objective:

Obvious trauma, heat, swelling, drainage, localized fever. In cases of severe inflammation symptoms can progress to significant systemic hyperthermia, seizure, coma, and even death.

### Diagnostic Tests:

Blood tests include white blood cell count with differential, (-reactive protein, erythrocyte sedimentation rate, serologic tests for viruses or antibodies against pathogens (Lewis, 2017). Imaging technologies, such as computer -assisted tomography (CAT), magnetic resonance imaging (MRI), and proton emission scans (PET) are often utilized to aid in diagnosis of inflammatory diseases. The test chosen depends on the type of suspected disease and the clinical presentation (Gotthardt, et al, 2010).

## Clinical Management - Interdisciplinary:

### Primary Prevention



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- Education regarding environmental allergens
- Awareness of food and environmental allergens

### **Secondary Prevention:** Screening

- Allergy testing

### **Tertiary Prevention:** Treatment

- Goals are to moderate the inflammatory process to promote repair and healing and to avoid an excessive inflammatory response
- Frequent follow up for clients with chronic conditions to minimize flares.
- Rest, ice, compression, elevation
- Immobilization devices
- Pharmacological agents
- Nonsteroidal anti-inflammatory agents
- Analgesics
- Steroidal agents
- Recombinant DNA and monoclonal antibodies
- Desensitization therapy
- Monitor chronic inflammatory responses to slow or prevent tissue damage and resulting organ failure as well as treatment of underlying disease

### **Interrelated Concepts:**

- Immunity: Inflammation is a component of the immune response.
- Infection: Inflammation is a common response to infection.
- Tissue integrity: Impaired tissue integrity can be a cause or response to inflammation.
- Thermoregulation: The inflammatory response often includes an increase in temperature.
- Gas Exchange: Inflammation can interfere with pulmonary and tissue gas exchange.
- Clotting: Inflammation triggers the intrinsic pathway of the clotting cascade.
- Stress and Coping: Cortisol, a hormonal component to the stress response, controls inflammation.
- Comfort: Inflammation can be painful.



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### **Exemplars:**

#### **New Mexico Nursing Education Consortium (NMNEC) Required Exemplars:**

- Acute Inflammation
- Inflammatory Bowel Disease



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### References:

- Gotthardt, M., Bleeker-Rovers, C. P., Boerman, O. C., & Oyen, W. J. (2013). Imaging of inflammation by PET, conventional scintigraphy, and other imaging techniques. *Journal of Nuclear Medicine Technology*, 41(3), 157-169. doi:10.2967/jnumed.110.076232
- McCance, K. & Huether, S. (2009). *Pathophysiology: The biologic basis for disease in adults and children* (6<sup>th</sup> Ed.) New York, NY: Mosby.
- Lewis, S., Dirksen, S., Heitkemper, M., Bucher, L., Camera, I.M. (2017). *Medical Surgical Nursing* (10<sup>th</sup> Ed.). St. Louis, MO: Mosby
- Sabo, C. (2017). Inflammation. In J.F. Giddens (2<sup>nd</sup> Ed.), *Concepts for Nursing Practice* (pp. 230-240). St. Louis, MO: Mosby Elsevier.
- Venes, D., & Taber, C. W. (2013). *Taber's cyclopedic medical dictionary* (22<sup>nd</sup> Ed.). Philadelphia: F.A. Davis.

### Resources:

- Inflammation. (2015). In K. Trakalo, L. Horowitz, & A. McCulloch (Eds.), *Nursing: A concept-based approach to learning*. (Vol. 1, pp. 633-685). Boston, MA: Pearson Education, Inc.