The Oxygen Supply and Demand Framework: a Tool to Support Integrative Learning

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Figure 1 Oxygen Supply and Demand Framework

Introduction

The Oxygen Supply and Demand Framework

- is a curriculum construct in the British Columbia Institute of Technology (BCIT) Critical Care Specialty Nursing Program\(^1\).
- is an educational tool in all theory and clinical courses.
- supports learners’ understanding of physiologic concepts in an integrated, holistic and functional manner.
- assists learners to
  - link patient assessment data to physiologic contributors of oxygen supply and demand.
  - draw conclusions about oxygen supply and demand balance in critically ill patients.
  - make sense of patient presentation, interventions and management of critically ill patients.
- guides learners’ clinical decision-making.

1. BCIT Critical Care Nursing Program prepares Registered Nurses to begin practice in Critical Care Units.

Theoretical Foundation

*Integrative teaching and learning* assists learners to “to make, recognize and evaluate connections among disparate concepts, fields or contexts.” \(^1\)

*Concept maps* support integrative learning. \(^2\), \(^3\)

The Oxygen Supply and Demand framework supports integrative learning by:

- making explicit the composition and interrelationship of relevant concepts.
- assisting learners to recognize and understand the connections between respiratory, hematological, cardiovascular, and neuroendocrine concepts and relate them to cellular oxygenation in critically ill patients.
- assisting learners to integrate multiple sources of knowledge across the six courses that comprise the BCIT Critical Care Nursing Program.


Anecdotal Evidence

The utility of the Oxygen Supply and Demand Framework has been informally demonstrated in specialty nursing education for Registered Nurses in classroom, distance education, and clinical learning environments1.

**Program graduates** say that the Oxygen Supply and Demand framework:

- assists them “to think the way critical care nurses need to think.”
- “organizes and guides my thoughts about critically ill patients into a plan of action.”
- “is excellent!”
- “really helps me understand pathophysiology. I wish I’d learned this way in my other nursing courses!”

**Critical Care Nursing educators** say that the Oxygen Supply and Demand framework:

- “guides my analysis of learners’ understanding and learning needs related to oxygen supply and demand issues in critically ill patients.”
- “supports understanding of patient presentation and management regardless of the underlying pathophysiology and patient acuity. It focuses learners on the common thread of critical illness.”
- “has allowed me to illustrate to nurses how everything they do for their patients, from providing basic nursing care to performing CPR, is all related to assisting the patient to maintain physiological balance.”
- “provides me with a shared perspective and a common language to discuss the care of critically ill patients with learners.”

1. The BCIT Critical Care Nursing Program graduates 125 students/year.

**Current Initiatives (2010)**

- The Oxygen Supply and Demand Framework is being integrated into the British Columbia Institute of Technology undergraduate Nursing curriculum.
- Research is underway to explore the following questions:
  - Does the Oxygen Supply and Demand Framework guide patient assessment?
  - the formation of conclusions about what’s happening with patients?
  - the determination of an appropriate course of action?
  - the understanding of all interventions?
  - the evaluation of outcomes?
  - How do students perceive the oxygen supply/demand framework influences their clinical decision-making with critically ill patients in the clinical setting?