5.1: Introduction

Oxygen is essential for sustaining life. The cardiovascular and the respiratory systems are responsible for supplying the body's oxygen demands. Blood is oxygenated through the mechanisms of ventilation, perfusion, and the transport of respiratory gases (Potter, Perry, Ross-Kerr, & Wood, 2010).

Respiration is optimal when sufficient oxygenation occurs at the cellular level and when cellular waste and carbon dioxide are adequately removed via the bloodstream and lungs. If this system is interrupted — for example by lung tissue damage, inflammation or excess mucus in the airways, or impairment of ventilation — intervention is required to support the client and prevent the condition from worsening or, potentially, to prevent death from occurring (Perry, Potter, & Ostendorf, 2014).

Oxygen is the most frequently used medication in emergency medicine, and when used appropriately in the treatment of hypoxemia (an inadequate supply of oxygen in the arterial blood), it potentially saves lives (Kane, Decalmer, & O'Driscoll, 2013). This chapter describes the principles of oxygen therapy, the causes and management of hypoxia (the reduction of oxygen supply at the tissue level), and the optimal use of oxygen therapy and treatment modalities.

Learning Objectives

- Describe the principles of oxygenation
- Understand the functions and limitations of pulse oximetry
- Describe the causes of hypoxia
- Identify when oxygen therapy is needed
- Describe the management of hypoxia
- List hazards, precautions, and complications of oxygen therapy
• Describe how to perform oral suctioning