Overview of Acid–Base Balance By James L. Lewis III, MD, Brookwood Baptist Health and Saint Vincent's Ascension Health, Birmingham Last full review/revision Jul 2021|Blood acidity increases when the Level of acidic compounds in the body rises (through increased intake or production, or decreased elimination) Level of basic (alkaline) compounds in the body falls (through decreased intake or production, or increased elimination) Blood alkalinity increases when the level of acid in the body decreases or when the level of base increases.Types of acidosis and alkalosis Acidosis and alkalosis are categorized depending on their primary cause as Metabolic Respiratory Metabolic acidosis and metabolic alkalosis are caused by an imbalance in the production of acids or bases and their excretion by the kidneys.The most important pH buffer system in the blood involves carbonic acid (a weak acid formed from the carbon dioxide dissolved in blood) and bicarbonate ions (the corresponding weak base).Types of Acid–Base Disorders There are two abnormalities of acid–base balance: Acidosis: The blood has too much acid (or too little base), resulting in a decrease in blood pH. Alkalosis: The blood has too much base (or too little acid), resulting in an increase in blood pH. Acidosis and alkalosis are not diseases but rather are the result of a wide variety of disorders.These mechanisms involve the Lungs Kidneys Buffer systems Role of the lungs One mechanism the body uses to control blood pH involves the release of carbon dioxide from the lungs.Carbon dioxide, which is mildly acidic, is a waste product of the processing (metabolism) of oxygen and nutrients (which all cells need) and, as such, is constantly produced by cells.Buffer systems Yet another mechanism for controlling blood pH involves the use of chemical buffer systems, which guard against sudden shifts in acidity and alkalinity.Respiratory acidosis and respiratory alkalosis are caused by changes in carbon dioxide exhalation due to lung or breathing disorders.A doctor evaluates a person's acid–base balance by measuring the pH and levels of carbon dioxide (an acid) and bicarbonate (a base) in the blood.As carbon dioxide accumulates in the blood, the pH of the blood decreases (acidity increases).The brain regulates the amount of carbon dioxide that is exhaled by controlling the speed and depth of breathing (ventilation).Compensation for acid–base disorders Each acid–base disturbance provokes automatic compensatory mechanisms that push the blood pH back toward normal.