

How the kidneys are involved with every breath we take

Lungs and kidneys are directly involved with one another to maintain blood at 7.4 pH. There is a very narrow window of safety. It is critical for blood pH to stay within the limits of 7.35-7.45

Even the slightest deviation from this normal range can severely affect many organs.

When we breathe in air, it is 21% oxygen, our alveoli within our lungs, is where perfusion (O₂ & CO₂ gas exchange) takes place.

We know that our heart and lungs work together to oxygenate the blood and remove toxins and CO₂ build up in system, but what we forget is that the kidneys are also directly involved. Every breath we take is monitored if you will, by these three organs, and all work together to maintain blood pH balance. When the lungs and heart are not able to keep up to the task...for example, when the body is under attack, as in the case of when a bacterial or viral infection hits the lungs, the kidneys kick into high gear, and through metabolic pathways, compensate to balance blood pH of 7.4 This is an automatic compensatory mechanism.

Things that alter our blood pH include; environmental toxins in the air we breathe, chemicals in the food we eat, toxins that arise from the everyday metabolic bodily functions.

So, you can see the constant effort the lungs, heart and kidneys make to keep the blood in homeostasis.

In short, the cardiopulmonary system (lungs and heart) compensates for metabolic disturbances in pH, while the metabolic mechanisms (kidney etc.) compensate for respiratory disturbances, such as in respiratory infections. This means the kidneys must work harder to balance blood pH.

Best explained with this example.....If there is an infection, specifically attacking the lungs, making the lungs less efficient ridding CO₂, the kidneys must compensate and remove the serum CO₂ (acid) in the blood, by filtering it and neutralizing it. When the kidneys must work overtime, to balance blood pH, they are taxed and are in need of supporting. Now, when the body must compensate for too long, these organs wear out and begin to fail. When a patient is in metabolic acidosis or respiratory acidosis for too long, organs begin to fail. It is wise to support kidneys as well as cardiopulmonary system to maintain homeostasis of the blood pH.

Body systems fail when the blood pH can no longer be maintained for example respiratory distress, kidney failure can occur.

Let's look at the technical information closer

Acid/Base Balance

When carbon dioxide is in solution, as it is in blood, it is an acid. It must be balanced or neutralized by a bicarbonate ion. Kidneys are directly involved with this process.



Acid-base homeostasis involves chemical and physiologic processes responsible for the maintenance of the pH of body fluids. The chemical processes represent the first line of defense to an acid or alkali load and include the extracellular and intracellular buffers, whereas the physiologic processes aid to maintain acid-base homeostasis, by changes in cellular metabolism. In short, the lungs deal with volatile acids (the toxins we breathe in) and kidneys deal with the fixed acids (the toxins in our bloodstream).

The kidneys ensure acid-base homeostasis, which maintain the equilibrium, whereby excess acids are excreted via urine. The kidneys also regenerate bicarbonate ions, which neutralizes the CO₂ acids in the blood. The kidney is not the sole organ in charge of maintaining blood pH in a very narrow range; lungs are also involved since they allow a large amount of volatile acid generated by cellular respiration to be eliminated.



This demonstrates the importance of healthy kidneys when the lungs are under attack by a virus, fungus, bacteria, etc....and vice versa.

In the world we live in, with environmental pollution, food toxins, and stress, which all cause acids for the body to expel off daily, we must support not only the heart and lungs, but also the kidneys in effort to maintain overall good health.



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