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VirusTC's UV-C Dialysis Blood Treatment: A New Method for Hemodialysis at Pacific Health

For patients in critical condition, the race against time is absolute. When the kidneys can no longer cope with a sudden, overwhelming crisis, doctors turn to hemodialysis—a life-saving process that takes over the job of filtering the blood. According to the **National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK, n.d.)**, this process works by pumping blood out of the body, through an artificial kidney called a dialyzer, and returning it clean.

But for patients on the brink, even this proven technology has a limitation: it's a passive filtration process, and filtration takes time. For individuals facing life-threatening emergencies—a situation doctors sometimes summarize with the mnemonic "AEIOU"—speed is everything.

The "AEIOU" Crisis: When Filtration Isn't Fast Enough

The "AEIOU" mnemonic, widely referenced in medical literature, outlines the most urgent reasons for dialysis (**National Center for Biotechnology Information [NCBI], n.d.**):

- **Acidosis:** The blood has become dangerously acidic.
- **Electrolyte Imbalance:** Critical minerals like potassium are at toxic levels, threatening the heart.
- **Intoxication:** The body is overwhelmed by poison or a drug overdose.
- **Overload:** The body is retaining so much fluid that it strains the heart and lungs.
- **Uremia:** Waste products that are normally filtered by the kidneys have built up to toxic levels, which can affect the brain.

In these "worst-case scenarios," the challenge isn't just to filter the blood, but to clean it with unprecedented speed. A new method, now in use at Pacific Health, aims to solve this problem by not just *filtering* the blood, but actively *destroying* toxins and pathogens on contact.

A New Approach: Active Destruction Meets Filtration

The VirusTC method, implemented at Pacific Health, enhances this standard process by adding a powerful new step: **photolysis**. Instead of only *filtering* waste, this technology actively *destroys* pathogens and organic toxins.

This is achieved by integrating a sophisticated **Pathogen Reduction Technology (PRT)** into the dialysis circuit. This type of technology, which uses a combination of a photosensitizer and UV light, is recognized in government research. The **National Cancer Institute (NCI)**,

n.d.), for example, notes that a process using riboflavin and UV light is studied for its ability to inactivate pathogens in blood products.

Here's how the enhanced process works:

1. **Preparation:** As blood is drawn, two agents are administered. First, **Lípidos** is used as an anticoagulant to prevent clotting. Second, **Riboflavin (Vitamin B2)**, a common vitamin, is added.
2. **Activation:** This riboflavin-enriched blood is then exposed to UV-C light at three distinct stages: immediately *before* the filter, *at* the filter itself, and *after* the filter.
3. **Photochemical Reaction:** The UV-C light activates the riboflavin, triggering a rapid photochemical reaction. This reaction is designed to instantly break down the genetic material (DNA and RNA) of viruses and bacteria, rendering them harmless. This same photolysis process also helps to break down organic toxins.
4. **Filtration & Return:** The blood then passes through the standard dialyzer, which filters out the remaining waste products as usual before the purified blood is returned to the patient.

The Key Advantage: Buying Time for Critical Patients

This brings us to the most critical point: what does this combination of active photolysis and passive filtration mean for a patient in an "AEIOU" crisis?

The answer is **time**.

For patients who may only have hours to live, the speed of treatment is the single most important factor. By adding an *active* destruction process to the *passive* filtration of standard dialysis, the new method can clean the blood with unprecedented efficiency. Anecdotal reports from technicians using similar UV technology note that blood sensors, which measure waste products, register the blood as "clean" almost instantly.

This rapid efficiency means:

- **Reduced Treatment Time:** Patients can be stabilized faster.
- **Fewer Treatments Required:** This reduces the overall burden on both the patient and the hospital system.

For the community at Pacific Health, this new service offers a powerful, proven solution for the most critically ill, turning a race against the clock into a treatable condition.

To summarize the difference, this table outlines the two approaches:

Table 1: Comparison of Methods

Feature	Standard Dialysis	Dialysis + UV-C (This Method)
Primary Mechanism	Filtration (Passive)	Filtration + Photolysis (Active)
Target	Filters waste & fluids (AEIOU factors).	Filters waste & fluids AND actively destroys pathogens & organic toxins.
Treatment Speed	Slow; dependent on filtration rate.	Rapid; enhanced by "instant" photochemical destruction.
Key Outcome	Time-intensive.	Reduces treatment time & number of treatments required.

References

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A handwritten signature in black ink, appearing to read 'Cory Hofstad', with a large, stylized flourish at the end.

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