Editorial Note
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Hemova Port: Device that Decrease Dialysis Risk

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Description

Kidneys filter the blood, eliminating toxins, by-products and excess fluids by transforming into urine to get eliminated from the body.

If kidneys are not functioning appropriately due to chronic kidney failure, the kidneys will be unable to clean the blood appropriately. By-products and excess liquid levels gets increases and acts as toxins for the body. Left untreated, this can cause various disagreeable indications and in the end may lead to death. To prevent this, dialysis is used for those patients.

Dialysis is a technique to eliminate byproducts and excess of fluid from the blood when the kidneys stop the appropriately. It regularly includes redirecting blood to a machine to get cleaned. The dialysis machine is comprised of a progression of membranes that act as filters and an extraordinary fluid called dialysate. Some of the dialysis machines include nipro surplus dialysis machine, nipro diamax dialysis machine, and so on. There are 2 types of dialysis specifically, haemodialysis and peritoneal dialysis.

Haemodialysis is the most well-known sort of dialysis. During the system, a tube is attached to a needle in the arm. Blood passes along the tube and into an outer machine that filters it, before it gets passed back into the arm. As dialysis focuses on, this is normally completed within 3 days every week, with every meeting going on around 4 hours. Peritoneal dialysis utilizes abdominal lining called peritoneum as the filter, rather than a machine. Like the kidneys, the peritoneum contains huge number of tiny blood vessels, which acts as filtering device. Before treatment, a cut is made on the abdomen and a thin tube called a catheter is embedded through the cut. This is left in a place for some time. Fluid is drained into the peritoneal cavity through the catheter. As blood goes through the veins lining the peritoneal cavity, waste products and excess fluid are drained out from the blood into the dialysis liquid.

Students have invented a device to reduce the risk of infection, clotting and narrowing of the blood vessels in patients who need blood cleansing dialysis because of kidney failure. The device, designed to be implanted under the skin in a patient's leg, would give a technician easy access to the patient's bloodstream and could be easily opened and closed at the beginning and end of a dialysis procedure. The prototype has not yet been used in human patients, but testing in animals has begun. The students learned about the need for such a device while accompanying physicians on hospital rounds as part of their academic program. They watched as one doctor performed a procedure to open a narrowed blood vessel at a kidney patient's dialysis access site. They learned that this narrowing was a common complication facing kidney patients. The students discovered that kidney failure each year requires 1.5 million people globally and 350,000 in the United States alone to undergo regular hemodialysis to prevent a fatal buildup of toxins in the bloodstream. The students also learned that the three most common ways to connect the machine to a patient's bloodstream work only for a limited time because of problems with infection, blood clots and narrowing of the blood vessels. Current dialysis access options are grossly inadequate, contributing to increased healthcare expenses and, in some cases, patient deaths.

To address these problems, the students developed an access port that can be implanted in the leg beneath the skin, reducing the risk of infection. The Hemova Port's two valves can be opened by a dialysis technician with a syringe from outside the skin. The technician can similarly close the valves when the procedure is over, an approach that helps avoid infection and clotting. The device also includes a simple cleaning system, serving as yet another way to deter infections.

Currently, most dialysis access sites are in the arm or the heart. The Hemova device instead is sutured to the leg's femoral vein, avoiding the unnaturally high blood flows that cause vessel narrowing when dialysis machines are connected to veins and arteries in the arm. The students found that the Hemova Port's leg connection should allow the site to remain in use for a significantly longer period of time. The recognition will go a long way toward helping to continue further research, and hope it will bring us closer to the day when our device is available to help dialysis patients. The Hemova team has applied to conduct more animal testing in the coming months. Clinical trials involving human patients could begin as soon as 2013.

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