Vein Illumination to Vein Visualization

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There are over 2,700,000 needle sticks every day in the USA.

While vein illumination is important in every needle insertion, it is critically important when the patient is obese, very young, aged and/or has dark skin.

The average number of attempts to insert a needle in a vein of young children is three (3). The failure to stick a needle the first time causes pain to the child, the child’s family, and the medical practitioner or nurse.

The AVV–1 solves the two most common complaints of medical practitioners:

- Existing vein illumination devices are too expensive.
- Existing vein illumination devices only illuminate veins that can be seen.

Recent studies have shown that patients overwhelmingly prefer vein illumination when their veins are punctured.

The importance of these findings is even greater based on the 2012 Affordable Care Act. Medicare now takes into consideration a patient’s well being and level of satisfaction when reimbursing the hospital.
The technology is based upon patents assigned to the City University of New York (CUNY) and Lawrence Livermore National Laboratory. The technology uses near infrared wavelengths that are polarized.

The patented technology detects objects below the surface of a scattering medium. This medium could be human tissue, water, and smoke. The CUNY technology has been highlighted in over 250 research articles.

See a demonstration of the AVV–1 prototype:
http://www.youtube.com/watch?v=QbRJtTe9kKU&feature=youtu.be

NII will utilize profits from the sales of the AVV–1 to develop the AVV–2 and the Optical Ultrasound Tomography® (OUT) cameras. The AVV–2 will color code the veins according to depth and OUT will detect bleeding in the brain.

Our technology has the capability to be incorporated into devices to detect small objects, such as tumors, that are near the surface of the skin.

Although X-rays are used to detect tumors near the skin, there is a concern of overuse and safety of radiation. And, X-rays are limited in their ability to detect small tumors, i.e., tumors less than 1 mm in size.
In a recent head-to-head comparison against a leading selling vein illumination camera, the AVV-1 was clearly the better product. The images of the veins had much more clarity, and the AVV-1 imaged the entire vein which is necessary for IV placement.

The AVV-1 uses LEDs; the competitors use lasers. Lasers can cause damage to the eyes of the patient or medical practitioner.

The AVV-1 performed significantly better when the patient had hair on the hand or arm or had dark skin.

Small vessels didn't look complete (heterogeneous visualization) with the cameras from the competitors.

The MSRP of the leading selling vein illumination devices range from $4,300 to $25,000.

The AVV-1 will have an MSRP in the $999 range.

- The AVV-1 is a totally “hands-free” operation and easily portable.
The AVV–1 and AVV–2 will soon become the gold standard in vein illumination and vein visualization.

In Radiology and Oncology, there is always the fear of Infiltration and Extravasation, i.e., the leakage of the radiology dye or chemotherapy medication from the vein into the soft tissue around the vein.

The dye or chemo can burn the soft tissue around the source of the leakage, causing tremendous damage to the tissue and pain to the patient.

With our ability to see the entire vein, not just a small portion, we will be able to detect Infiltration and Extravasation earlier and easier.

The AVV cameras will be also be used in detecting and treating varicose veins, skin disorders, and illnesses that are near the surface of the skin.

NII will utilize the profits from the AVV line of products to develop additional and truly revolutionary cameras.

Optical Ultrasound Tomography® (OUT) is one of our soon-to-be developed patented technologies. OUT lights up the inside of the cranium and the recesses of thick tissue to detect bleeding in the brain, brain injuries, brain disorders, cardiovascular diseases and malignant tumors.
Management Team

Michael Feeney, President, has an M.S. from Northeastern University and is the Founder. He has over (ten) 10 years experience with optics in medicine.

Doctor Stavros G. Demos, Ph.D., is a scientist at Lawrence Livermore National Laboratory in the Physical and Life Sciences Directorate. He is also on the Scientific Staff at the National Science Foundation SF Center of Biophotonics Science and Technology at UC Davis.

http://cbst.ucdavis.edu/research/meet-the-researcher/dr-stavros-demos

Doctor Alexander Rubenchik, PhD, is presently a Staff Scientist at Lawrence Livermore National Labs.

http://math.arizona.edu/~nrw/FNW_2010/talks/rubenchik.pdf

Doctor Neel Madan, MD, is a practicing Neuroradiologist at Tufts University Medical Center, Boston, MA. Neel is also an Associate Professor of Radiology and Pediatrics at Tufts University School of Medicine, Boston, MA.
Near Infrared Imaging (NII), and the scientists at Lawrence Livermore National Laboratory, have developed Advanced Vein Visualization (AVV) cameras that are technically superior to competitive devices in the market and priced 60% to 80% less.

Near Infrared Imaging (NII) originally incorporated in 2009 as an LLC. In 2013, NII LLC merged into NII INC. We are a “Corporation In Good Standing” with the Commonwealth of Massachusetts and have annual reports and tax filings for every year of our business.

Near Infrared Imaging is owned in part by the Regents of the University of California, the City University of New York (CUNY), and Lawrence Livermore National Laboratory (LLNL).

The AVV cameras are Class 1 devices and exempt from the 510K for FDA approval. FDA approval will be completed by the end of September.

The Optical Ultrasound Tomography® (OUT) camera will not require clinical trials and will be eligible for the 510K.