



Medical Devices for Removing Blood Clots During Stroke Surgeries



Alexis Turjman, PHD
Chief Executive Officer, Founder
Cognition Medical Corp.

CEOCFO: *Mr. Turjman, according to your site, Cognition Medical is protecting your brain when you need it most. What are you working on?*

Mr. Turjman: We are developing medical devices for people who suffer from stroke. Strokes are caused by blood clots blocking the arteries in the brain, which can lead to extremely adverse effects, such as paralysis, speech issues or memory. We protect the brain because our device can remove blood clots from the brain and improve the procedures so that patients can recuperate fully and faster.

CEOCFO: *Would you give us an example of how you are going about this?*

Mr. Turjman: Patients experiencing a stroke have a variety of issues, such as motion coordination, speech or difficulties remembering what they just said. More and more people can recognize these symptoms and have the reflex to call 911. Once at the hospital, doctors use imaging such as MRI and angiography to confirm the obstruction of brain vessels. Then highly specialized physicians would insert a tube, called a catheter, from the groin area and navigate all the way to the brain. From there the physician can deploy a meshed basket, which is a little device that can capture the clot.

We have improved the procedure of pulling clots by allowing the doctors to control the blood flow during the intervention. That gives them peace of mind! This breakthrough is similar to the revolutionary stent and balloon devices developed in the heart. The brain is the next frontier! While dragging the clot outside the body through the meshed basket some particles can detach, escape with the flow and block small arteries that cannot be treated. Our device makes sure that it does not happen. It also helps with more technical aspects but I don't want to get in to too much detail.

We are also developing another line of products which use suction; a little bit like when you are vacuuming your floor, where a tube goes all the way to the location of the clot in the brain and will suction the clot inside. In this regard, also placing the balloon can be extremely interesting, because it will assist and improve this technique.

CEOCFO: *What has been the challenge in creating a balloon or some other device to do this?*

Mr. Turjman: It was very technical! You can imagine that any component that is operated from the groin area and enters the brain must be extremely reliable and easy to operate. Our catheters have very thin walls, two to three times the size of a human hair so we are under tight constraints. Therefore we had to think very creatively to add our balloons to the catheters and keep the good properties such as navigability and pushability that are essential to neurosurgeons and neurointerventionalists during the procedure.

CEOCFO: *How have you been able to achieve something that has not been done before or are you offering an improvement?*

Mr. Turjman: We have been able to achieve something very novel because the fields of neurology and neurovascular are relatively new. The new guidelines for treating stroke were published in mid-2015 after the publication of a succession of five positive clinical trials in the *New England Journal of Medicine*. For stroke, such an advance was unseen since the trials on drugs like tPA in 1995. I am also fortunate to be working hand in hand with brilliant people such as my former boss at MIT and Harvard, Prof. Elazer R. Edelman, MD, PHD, and many others. Together, we have been able to translate great innovations in cardiovascular to neurovascular.

CEOFO: *Where are you in the development and commercialization process?*

Mr. Turjman: We are finishing up the first phase of the project encompassing team building, proof of concept and *in vitro* testing. Mr. David Stern, MS, the former head of R&D at CardioMEMS has joined our team and will be helping to shape the future of Cognition Medical as we are gearing up for animal trials that will be done by Prof. Elad I. Levy, Chairman of Neurosurgery at the University of Buffalo. The following steps for us are CE Mark (the certification in Europe) and first in man.

CEOFO: *What has been the reaction so far from doctors who have looked at the device?*

Mr. Turjman: It has been very positive. We obviously keep our latest innovations to a tight group of trusted experts to stay relatively under the radar. Overall, we have a very influential scientific advisory board and everyone is extremely enthusiastic and excited about the idea.

CEOFO: *What is your funding situation right now? Do you have what you need to go forward? Will you be seeking additional financing?*

Mr. Turjman: We have secured angel seed funding and three awards. We won a grant from the Massachusetts Life Science Center and we are absolutely grateful to the MLSC as it has been pivotal in the development of our technology. We also won awards from Medtronic and Codman (Johnson & Johnson). With animal data in hands soon, we will seek to raise Series A. We obviously making ties with VCs but will probably also tap into our current investors and strategic partners.

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CEOFO: *What is the market opportunity?*

Mr. Turjman: The market opportunity is exceptionally vast. Stroke is the 2nd leading cause of mortality in the world. In the US it is the 3rd or 4th leading cause of mortality depending on the year, behind heart disease and cancer only. It is also the leading cause of acquired disability and paradoxically the tools available for the brain are several generations behind compared to devices for the heart. In the US, we estimate that the market opportunity is about \$1.3Bn for stroke devices only. The European market is substantially equivalent to the North American market; therefore just between the US and the EU the market opportunity breaks the \$2Bn ceiling. Asia is another phenomenal market for stroke. Not many people know that stroke is the leading cause of mortality in China, above heart attack.

To give you a couple of numbers, there are about 800,000 strokes in the US each year. Around 690,000 strokes are due to clots and 320,000 can be operated. It is estimated that about 50% of the patients get to a hospital with 8h of the onset of the symptoms, hence being able to be treated. Hence there are 160,000 treatable cases each year in the US, while the devices cost \$8,000.

CEOFO: *Why is Cognition Medical an important company?*

Mr. Turjman: It is an absolutely essential company, because it will improve the care of stroke patients by allowing the physician to better perform the intervention and avoid complications. The market for neurovascular devices is extremely dynamic and increasing at more than 30% year and needs solid innovation to sustain superior care and save lives.

Interview conducted by: Lynn Fosse, Senior Editor, CEOFO Magazine

For more information visit: www.cognitionmedical.com

Contact: Alex Turjman 617-682-6019 alex@cognitionmedical.com

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