



# ROBOTS ARE SAVING LIVES AND MILLIONS OF HUMAN BRAIN CELLS.

Strokes are a leading cause of disability in adults and are the fifth leading cause of death in the U.S., according to the American Heart Association.

But NCH Healthcare System has employed an unlikely assistant in the urgent treatment of stroke in the form of robots that are capable of beaming in a neurologist, who then helps patients to receive the brain cell saving medicine they need within minutes.

The first hour after stroke symptoms begin, known as the golden hour, is critical for saving a patient's life and their brain cells. This means that a call to 9-1-1 at the onset of symptoms is just as critical for patient success as the new robots and technology NCH is using.

"We call these robots the doctor in a box," said Brenda Hartmann, NCH Stroke Program Coordinator. "When the doctor is beamed in, the patients forget the doctor isn't standing right there."

The In Touch Health Robot (iRobot) is a self-driving device that allows live, real-time video and audio interaction between a

patient and a neurologist, sitting in a remote location. The neurologist can communicate with on-site medical staff to perform any physical hands-on work needed and the neurologist has complete access to the patient's records right at their fingertips.

"The telecommunication saves having to wait for a neurologist to drive to the hospital, which can take a long time here, especially in season, depending on where the neurologist is located. It allows access to neurology 24/7," said Hartmann.

The iRobot decreased the average time it takes from the patient arriving at the hospital to receiving the clot-busting drug known as tPA, short for tissue plasminogen activator. At NCH, this timeframe, called door-to-needle time, dropped by a full hour since obtaining the robots and continues to decrease. Today drugs are administered in just 34 minutes instead of 94.

"This combination of new technology, drastically improved response times and excellent patient outcomes, led the NCH stroke program's presentation to win first place at a recent stroke and neurology symposium held in Miami," said Hartmann.

"If stroke patients receive tPA within the first hour, they have a much greater chance of surviving and avoiding long-term brain damage. Most strokes are caused when a clot disrupts blood flow to the brain. Each minute is equivalent to the life or death of 1.5 million brain cells," said Hartmann.

NCH response times are most helpful when combined with patients seeking care as soon as symptoms arise, she said.

By receiving tPA sooner, patient survival rates and long term quality of life increase, while brain damage, time in hospital, and medical costs decrease.



Brenda Hartmann with one of three In Touch Health Robots (iRobot) used in the NCH Emergency Departments.

## ACTING F.A.S.T. IS KEY:

- F - FACE:** Does one side of the face droop when smiling?
- A - ARMS:** Ask the person to raise both arms. Does one arm drift downward?
- S - SPEECH:** Say a phrase such as: "You can't teach an old dog new tricks." Is the speech slurred?
- T - TIME:** Call 9-1-1 immediately if you observe any of these signs.



## STROKE BY THE NUMBERS:

- ✓ Average time for a stroke patient to see a neurologist after arrival at the hospital, decreased from 39 minutes in 2014 to a current average of fewer than 6 minutes when NCH started using telecommunication robots.
- ✓ Door-to-needle times decreased from 94 minutes to 34 minutes, getting stroke patients the clot-busting, brain-cell-saving drug tPA an hour faster on average by using robots and telecommunications.
- ✓ Stroke kills nearly 130,000 Americans each year.
- ✓ Stroke is the fifth leading cause of death.
- ✓ Approximately 795,000 people experience a stroke each year.

## RISK FACTORS:

- ✓ Eating habits, physical activity, smoking and drinking are preventable lifestyle risk factors.
- ✓ Medical risk factors include high blood pressure, atrial fibrillation, high cholesterol, diabetes and circulation problems.
- ✓ Strokes occur at any age, but risk doubles after age 55.
- ✓ Women experience 60 percent of strokes, men 40 percent.
- ✓ African Americans have twice the risk of stroke, along with correlated risk factors of high blood pressure, diabetes and obesity.
- ✓ If a parent, grandparent or sibling had a stroke or heart attack at an early age, your risk increases.
- ✓ What some people call mini-strokes, transient ischemic attacks or TIAs, increase stroke risk factors, especially a week following the episode.
- ✓ A hole in the heart, which affects 1 in 5 Americans, often has no symptoms, but increases risk for stroke.
- ✓ Decreased blood flow through arteries caused by fibromuscular dysplasia, which is fibrous tissue on the walls of arteries that cause them to narrow, can lead to stroke.



## SIGNS OF STROKE

Signs of stroke can differ among men and women. Strokes do not always hurt and often include one or more of the following:

- ✓ Sudden numbness or weakness in the face, arm or leg, especially on one side of the body.
- ✓ Sudden confusion, trouble speaking or difficulty understanding speech.
- ✓ Sudden trouble walking, dizziness, loss of balance or coordination.
- ✓ Sudden severe headache with no known cause.

**For more information call Brenda Hartmann,  
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