Why we’ll win the war on breast cancer

From groundbreaking research and cancer drug development to fundraising, education and treatment from world-class health organizations like the American Cancer Society and Emory University’s Winship Cancer Institute, Georgia is gaining ground in the war against breast cancer. In another 15 years, breast cancer mortality could be a thing of the past, says Cati Stone, executive director of Susan G. Komen Greater Atlanta.

There will be more than 7,000 new cases of breast cancer in Georgia in 2015 and more than 1,000 deaths, but this is an improvement over years past. Death rates from breast cancer in the United States have dropped 34 percent since 1990, according to the American Cancer Society (ACS). But incidence rates are another story. Although Komen Atlanta’s mortality rate for Georgia fell 1.4 percent between 2006 and 2010, Atlanta’s incidence rate remains steady. One reason for this is simply that women are living longer.

“Breast cancer is a disease of the aging, because as we age, things are being turned off or on at a molecular and a genetic level that shouldn’t be,” said Nancy Paris, president of Georgia Center for Oncology Research and Education (Georgia CORE).

Direct medical costs for cancer in the United States reached $86 billion this year, including $20 billion in hospitalization costs. According to a 2010 study, breast cancer alone cost the U.S. $16.5 billion annually. It also has an impact on the business world. While breast cancer- specific data was not available, Georgia lost $243 million in productivity because of all cancers in 2010. Because breast cancer is the No. 1 type Georgia’s women are diagnosed with, it is likely a big chunk of this lost productivity is due to breast cancer.

But Georgia is fighting back. The Atlanta-based U.S. Centers for Disease Control and Prevention’s main effort is its early detection program. And the state’s Komen Atlanta affiliate has raised over $41 million since its inception to provide diagnostics and support to lower-income women and fund national research. Another point in Georgia’s favor is the American Cancer Society, which has its national headquarters in downtown Atlanta and has played a role in nearly every recent breast cancer research breakthrough.

New diagnostics and treatments are also giving patients, scientists and supporters hope. Personalized medicine, in which
doctors examine the DNA of a breast cancer mass and prescribe the drug proven best at targeting it, is now an option at cancer centers like Emory Winship Cancer Institute. Winship and Northside Hospital’s Cancer Institute have also implemented 3D mammographies for its patients to be used in concert with traditional two-dimensional mammographies.

Another relatively new development is genetic risk assessment testing, which actress Angelina Jolie underwent two years ago. After finding out her chances of developing breast or ovarian cancer were very high, she had a double mastectomy, and the resulting media coverage surrounding this concept drove so many women to seek more information about or undergo genetic testing that the breast cancer community refers to the phenomenon as “the Angelina Jolie effect.”

“Genetic risk assessment profiling gives us an opportunity to identify cancer risk before there’s a diagnosis,” Paris said.

In the future, it’s also likely women with breast cancer that has metastasized or is likely to metastasize will receive aggressive treatments, and other cases will be treated more conservatively instead of assigning every case surgery, chemotherapy, radiation or a combination of the three. Physicians have realized that there are over 50 types of breast cancer, and a “one-size-fits-all” approach is not ideal.

“Somewhere between 20 and 30 percent, some say as high as 50 percent, of breast cancers, if never treated, would never ultimately kill the patient,” said Dr. Otis Brawley, chief medical officer for ACS.

Overtreatment is a problem because of the many side effects it can cause, including depression, lymphedema and leukemia. There is also a significant cost burden involved. Branded cancer treatments have more than doubled in cost over the last decade to more than $10,000 a month, with some reaching $40,000 a month in 2014 dollars, according to American Society of Clinical Oncology.

These breakthroughs wouldn’t be possible without the groundbreaking breast cancer research being conducted at universities like Emory, Georgia Regents University and Georgia Tech. There are currently 91 breast cancer clinical trials underway in the state, including one multi-institutional study at Winship on triple-negative breast cancer, a type of breast cancer that tests negative for estrogen receptors, progesterone receptors and HER2, which means it doesn’t respond to common treatments like hormonal therapy or HER2 receptors. Subjects’ tumors are sent away for DNA assessments, and if an actionable target is found, they are offered additional treatment specifically aimed at that target.

Another Emory researcher, radiation oncologist Dr. Mylin Torres, is studying subjects from diagnosis through chemotherapy, surgery and/or radiation and beyond to figure out what is causing a malady called cancer fatigue.

“Thirty percent in the long run will be so fatigued that they can’t work, and some go on permanent disability,” Torres said. “A lot of women are being impacted by this very common symptom.”

Stanislav Emelianov, Georgia Research Alliance (GRA) and Joseph M. Pettit Chair in Microelectronics and professor of Biomedical Engineering at Georgia Tech and Emory, recently received a $240,000 grant from the Breast Cancer Research Foundation for his work in ultrasound-guided photoacoustic imaging, which combines light and sound to determine whether a breast cancer tumor has metastasized. And Dr. Shou-Ching Tang, professor of medicine at Georgia Regents University Cancer Center, is conducting a breast cancer immunotherapy trial, which is testing a homegrown molecule that suppresses the inhibition of a person’s immune system to better attack tumors.

“Immunotherapy is the buzzword nowadays in oncology,” Tang said. “Many drugs were recently approved to treat melanoma and lung cancer, and now we’re testing this type of molecule in breast cancer.”

Georgia also has a handful of startup companies seeking better breast cancer treatments, many of which are also focused on immunotherapy. Many of these are supported by the GRA, which is instrumental leveraging state funding into the research and commercialization of promising technologies.

Metaclipse, a startup out of Emory, is developing patient- and tumor-specific immunotherapies, and it is also focused on triple-negative breast cancer. ViaMune, a startup out of UGA, is a cancer immunotherapy company working on a vaccine candidate that teaches the immune system to recognize a sugar-protein structure found exclusively on the
surface of cancer cells as a danger signal, which results in the killing of the cancer cells.

Atlanta-based MedAmp Electronic LLC is employing a different approach, a method that uses software and amplifier technology to heat a tumor mass in three dimensions without surgery, which atrophies the mass down into scar tissue. MedAmp’s technology is already patented, and it is in the process of raising capital to go through regulatory approval and clinical trials.

“This system has multiple approaches but number one and two targeted therapies would be prostate and breast cancer because there’s no radiation, fast healing time and no limit to the number of times you touch up the area,” said Rick Ruse, president and CEO of MedAmp. “The idea is to not even touch the mass, so you don’t induce some kind of metastasis.”

The other key factor in winning the war against breast cancer is raising awareness about the reality of the disease. It wasn’t too long ago that breast cancer was treated as something that should be kept under wraps. During Komen’s first race back in 1982, The Dallas Morning News aired footage of the race, but omitted any use of the words “breast cancer.”

And in the early 2000s, when Hala Moddelmog, now president and CEO of the Metro Atlanta Chamber, was diagnosed, she kept the disease a secret from all but her closest friends, partially because of her job as president of Church’s Chicken.

“When you are running a public company, you just don’t want the word to get out that someone has cancer,” Moddelmog said. “I wish that the business world were a little less reactive to all cancers.”

But because of attention brought to breast cancer in recent years by organizations like Komen and ACS, as well as declining mortality rates and increasing treatment options, people are beginning to view breast cancer differently. On the five-year anniversary of Moddelmog’s cancer surgery, she was asked to be president and CEO for Komen’s headquarters and she realized she needed to speak up.

“One thing I quickly learned is that it’s really important for women... to hear from people who have had breast cancer, who have survived and are thriving,” Moddelmog said. “Cancer doesn’t have to be a death sentence, and in the past it was kind of viewed that way. But I do think that business people, if they choose, should be able to talk about it with an emphasis on the cure.”

Breast cancer accounts for nearly 1 in 3 cancers diagnosed in women

- According to Georgia’s Department of Public Health, breast cancer was the No. 1 diagnosed cancer in women between 2005 and 2009 and the No. 2 cause of cancer deaths in women between 2004 and 2008, the last years for which data is available.
- Women in the United States die of breast cancer more than any other cancer, other than lung cancer. In 2015, it’s estimated that just under 30 percent of newly diagnosed cancers in women will be breast cancers.

Startups against breast cancer

- Georgia has a handful of startup companies researching and developing better breast cancer treatments.
- *MedAmp Electronic LLC: Working on a treatment that uses software and amplifier technology to heat a tumor mass in three dimensions without surgery, which atrophies the mass down into scar tissue. Its technology is patented. It is raising capital to go through regulatory approval and clinical trials.
- Metaclipse: A startup out of Emory University, it is developing patient- and tumor-specific immunotherapies.
- ViaMune: This startup out of the University of Georgia is an immunotherapy company working on a vaccine candidate that teaches the immune system to recognize a sugar-protein structure found exclusively on the surface of cancer cells as a danger signal, which kills cancer cells.
Georgia’s top breast cancer researchers

Stanislav Emelianov

Joseph M. Pettit Chair in Microelectronics, Georgia Tech; Professor of Biomedical Engineering, Georgia Tech and Emory University Emelianov’s work centers around ultrasound-guided photoacoustic imaging, combining light and sound to determine whether a breast cancer tumor has metastasized.

Dr. Shou-Ching Tang

Professor of Medicine, Georgia Regents University; Co-Leader, Breast Cancer Interdisciplinary Translational Research Team Tang is conducting an immunotherapy trial that is testing a homegrown molecule that suppresses the inhibition of a person’s immune system to better attack tumors.

Deborah Watkins Bruner

Winship Cancer Institute Associate Director for Outcomes Research Bruner’s research focuses on quality of life and symptom management for breast and other cancer sites and decision making, preferences and utilities for cancer care.

Dr. Sheryl Gabram-Mendola

Surgeon-in-Chief, Grady Memorial Hospital; Program director, Winship Breast Surgical Oncology Fellowship; Director, Winship High Risk Assessment Program As principal investigator on Winship’s AVON Foundation grant, she focuses on decreasing disparities in breast cancer care through a community education outreach program and providing access to quality care for breast cancer patients at Grady. She is also principal investigator on a statewide genomics grant identifying women at high risk for breast and ovarian cancer with referrals to genetic counseling and testing.

Dr. Keerthi Gogineni

Winship medical oncologist; assistant professor in the Department of Hematology and Medical Oncology, Emory School of Medicine Gogineni’s study focuses on triple-negative breast cancer tumors, which are subjected to DNA testing to see if there is an actionable target that can be treated with a corresponding drug.

Dr. Mylin Torres

Winship radiation oncologist; Associate professor, Department of Radiation Oncology at Emory’s School of Medicine Torres studies breast cancer patients from diagnosis through chemotherapy, surgery and/or radiation and beyond to figure out what is causing cancer fatigue.

Paula Vertino

Leader, Winship Cancer Genetics and Epigenetics Research Program Vertino’s research interests focus on the areas of cancer epigenetics, or the turning off or on of genes that isn’t based on changes in a DNA sequence, and novel mechanisms of gene silencing in cancer.

Georgia by the numbers

- 7,000 - New cases of breast cancer in Georgia in 2015
- 1,000 - Deaths from breast cancer in 2015
- -1.4% - Declining mortality rate in Georgia, 2006-2010
- 0.0% - change in incidence rate in Atlanta, 2006-2010
- $243 million - Lost productivity at work from cancer in Georgia, 2010
**Direct medical costs for cancer in the United States**

- $86 billion - Annual cancer cost in the U.S. in 2015
- $16.5 billion - Annual breast cancer cost in the U.S. annually

Ellie Hensley is an entertainment, health care and general assignment reporter.