

Breast Cancer: How Far Have We Come?

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An easy at-home test? Drugs that slash your risk? These aren't science fiction -- they're real advances that are revolutionizing the way we find, treat and defeat this disease.

Every October, we don pink ribbons, buy pink-hued products and support charity runs with pink logos. Has it made a difference? You bet. Thanks to the billions of dollars raised for research, we are starting to win the war against breast cancer. "The progress we've made over the last 20 years has changed the face of the disease for American women," says Freya Schnabel, M.D., director of breast surgery at NYU Langone Medical Center. "We can find it earlier, treat it more effectively, reduce recurrence and enhance survival." A nipple-fluid test, estrogen-blocking drugs and customized chemotherapy are just some of the breakthroughs that are helping doctors cure more women every day.

A Quick And Easy Breast-Cancer Test

Soon, a look at your breast fluids (including breast milk!) may reveal your chances of developing cancer -- alerting you if you need to go in for screenings earlier, and possibly helping you catch the disease sooner. Nipple fluid is especially telling because it contains cells from the mammary glands, where approximately 95 percent of all breast cancers originate. While a procedure called ductal lavage is already available to high-risk women, tests for the general population are in the works, including an at-home risk kit scientists at the Dr. Susan Love Research Foundation are developing, which captures fluid on a Band-Aid-like strip. The foundation's president, Susan Love, M.D., who's also a clinical professor of surgery at the David Geffen School of Medicine at UCLA, hopes to make the kit as accessible as a home pregnancy test. "If a woman sees a positive test result and it prompts her to get screened, that could be transformative," she says.

The Promise Of Radiation-Free Screening

"Nanotechnology" isn't just sci-fi mumbo-jumbo: It could be a way to spot cancer far earlier than ever before. A diagnostic test based on this technology uses zero radiation and, unlike mammography, has no risk of false positives, because the nanoparticles used in the test only bind to known cancer cells; magnetic sensors (which work like an MRI scan) pick up the location of the particles, giving an accurate picture of where the cancer lies. "It's 1,000 times more sensitive than a mammogram," says test pioneer Edward R. Flynn, Ph.D., chief scientist of the Senior Scientific Division, Manhattan Scientifics Inc. "I believe it has the potential to catch breast cancer an estimated two and a half years earlier than mammograms." The test is currently being studied at a number of major research hospitals and could be available within three to five years.

Risk-Reducing Drug

For the past 10 years, a drug called tamoxifen has been the gold standard for helping to prevent breast cancer from developing in women at high risk. Now there's another option: In findings presented in June, a drug called exemestane slashed the incidence of breast cancer by a whopping 65 percent in post-menopausal women at high risk for the disease. Exemestane works by decreasing the amount of estrogen produced by the body, and unlike tamoxifen, it doesn't seem to increase your likelihood of developing blood clots and uterine cancer. "For a woman who can't take tamoxifen because of a personal history of blood clots," says Dr. Schnabel, "there's now a prevention option."

Treatment That's Customized For YOU

No assembly-line regimens here: Therapies developed over the last decade (and being developed still) are more fine-tuned to patients' unique needs than ever before. Several new tests -- to see if cancer is estrogen-sensitive, which types of genes are involved and more -- are helping doctors match patients with the treatments that will work best for them. "Breast cancer is at least three, if not six or eight, different

diseases," says Laura J. Esserman, M.D., director of the Carol Franc Buck Breast Care Center at the University of California, San Francisco School of Medicine. "We have to treat patients according to their tumor type." For example, it's generally accepted among doctors that women whose test results show a low risk of cancer recurrence do not usually need chemo on top of hormone therapy; a National Cancer Institute study is now investigating whether women with a medium risk of recurrence might also be spared.

Scientists are also looking beyond the tumor cells to their environments. "If you do autopsy studies, it turns out that 30 percent of women have microscopic cancer cells that never become problematic," Dr. Love says. "So, what keeps them from going rogue?" She likens the situation to kids in a bad neighborhood exposed to drug pushers and gang violence. "One aspect of prevention is trying to clean up that neighborhood, whether it's through exercise, improving metabolism, changing the hormones -- whatever it takes."

Less Radiation, Better Living

Currently, many breast cancer patients get a fairly grueling five-to seven-week course of daily radiation. That process may soon be shorter and safer, causing fewer harsh side effects (which can include intense nausea and hair loss). Two recent trials, for instance, suggest that using half as many radiation treatments - - 15 or 16 instead of 30 -- is as effective as the full regimen. "Reducing treatments can make a big difference in women's quality of life," says Silvia Formenti, M.D., chair of the department of radiation oncology at NYU Langone Medical Center. Meanwhile, a new procedure offered in select hospitals around the country offers a full course of radiation in a single zap. Intra-operative radiation therapy delivers one focused blast to the tumor site during surgery, sparing underlying organs like the heart and lungs from radiation. Zero follow-up treatments post-surgery means women can get back to their lives sooner.

The Surprising Way You Can Make A Difference

Women diagnosed with breast cancer often participate in clinical trials to receive cutting-edge treatments that may up their odds of survival. But studies rely on healthy women, too -- perhaps like you. "Comparing healthy tissue with cancerous tissue will help unlock the secrets to how breast cancer develops," says Nancy G. Brinker, founder and CEO of Susan G. Komen for the Cure. What's more, volunteers are desperately needed. More than 90 percent of all clinical trials are delayed largely because of difficulty finding volunteers, according to 2008 statistics from the Center for Information and Study on Clinical Research Participation. Here's how you can pitch in for prevention:

Breastcancertrials.org pairs potential subjects with open studies; enter your zip code to find one near you. Join the Love/Avon Army of Women to help breast-cancer researchers find matches for their clinical trials. More than 45,000 women are currently participating in more than 40 breast-cancer studies. The Susan G. Komen Tissue Bank at the Indiana University Simon Cancer Center is the first and only healthy breast-tissue bank in the world. All the tissue collected -- they've got samples from more than 1,500 women so far -- will be put online for scientists worldwide to use in their research. Visit komentissuebank.iu.edu to donate yours, and be part of the cure.



About Manhattan Scientifics

Manhattan Scientifics Inc. (www.mhtx.com) is located in New Mexico, New York and Montreal. It is focused on technology transfer and commercialization of disruptive technologies in the nano medicine space. The company is presently developing commercial medical prosthetics applications for its ultra-fine grain metals and plans to commercialize the cancer research work and nano medical applications developed by Senior Scientific LLC, a unit of the Company.

Forward-looking statement

This press release contains forward-looking statements. Such forward-looking statements are subject to a number of risks, assumptions and uncertainties that could cause the Company's actual results to differ materially from those projected in such forward-looking statements. Forward-looking statements speak only as of the date made and are not guarantees of future performance. We undertake no obligation to publicly update or revise any forward-looking statements.

Contacts

Manhattan Scientifics, Inc.

Marvin Maslow, 917-923-3300

Email: marvin@mhtx.com

U.S. & Canada Investor Relations:

Hawk Associates Frank Hawkins, 305-451-1888

Email: f.hawkins@hawkassociates.com
