

# New breast cancer drug showing promise

Associated Press

Tamoxifen, the celebrated drug credited with slashing breast cancer death rates worldwide, could be eclipsed by a newer medicine that is even more effective at preventing a recurrence of the disease in women whose tumors were caught early and removed.

A large, international study of postmenopausal women with early-stage cancer found that those who took tamoxifen for 2 1/2 years and then switched to exemestane for another 2 1/2 years were one-third less likely to suffer a recurrence than those who took tamoxifen the whole time.

The women switching to exemestane also had less-serious side effects, were 56 percent less likely to get cancer in the other breast, and were half as likely to develop unrelated cancer in other parts of the body.

Lead researcher Dr. R.C. Coombes, professor of cancer medicine at Imperial College School of Medicine in London, predicted doctors will give exemestane to many women at high risk for recurrence, such as those whose breast cancer has spread to multiple lymph nodes.

Exemestane, which went on the market in 1999 for advanced breast cancer, is a hormonal drug sold under the brand Aromasin. It is part of a newer class of breast cancer drugs called aromatase inhibitors.

The findings were published in Thurs-

## ON THE NET

New England Journal of Medicine:

[www.nejm.org](http://www.nejm.org)

National Cancer Institute breast cancer site:

[www.cancer.gov/cancer—information/cancer—type/breast](http://www.cancer.gov/cancer—information/cancer—type/breast)

American Cancer Society breast cancer site:

[www.cancer.org/docroot/lrn/lrn—0.asp](http://www.cancer.org/docroot/lrn/lrn—0.asp)

day's New England Journal of Medicine. The research was partly funded by Pfizer Inc., the maker of Aromasin.

Dr. Jeff Abrams, the National Cancer Institute's associate chief of clinical research, said a recent study on exemestane "cousin" letrozole showed important advantages over tamoxifen for the class.

"I think with these two studies together, the strategy of switching from tamoxifen to these aromatase inhibitors will become a new standard," said Abrams, who was not involved in the study.

Several recent studies have shown that exemestane and other aromatase inhibitors also work longer, with less toxicity, than tamoxifen in women whose breast cancer had spread to other areas. Exemestane also has been shown to prolong the survival of women with advanced breast cancer after tamoxifen and other drugs fail.

"This whole class of drugs looks very promising, very active," said Dr. Julia

Smith, clinical associate professor of oncology at the NYU medical school and cancer institute.

The study, which involved 4,742 postmenopausal women in 37 countries, focused on women with breast cancer in which the hormone estrogen fuels tumor growth — the type responsible for about 70 percent of breast cancer. The results do not apply to premenopausal women or those with tough-to-treat breast cancer not driven by estrogen.

Early-stage breast cancer is often treated with surgery to remove the tumor, plus radiation. Then, if the cancer cells were found to have spread to the underarm lymph nodes, the patient is given cancer drugs for years.

Women suffering the type of cancer fueled by estrogen are given daily tamoxifen pills for five years to prevent any cancer cells lurking in the body from later triggering cancer in another spot.

However, cancer cells grow resistant to tamoxifen in many patients, sometimes

within 12 months, and prolonged use can cause uterine cancer and dangerous blood clots.

Those problems spurred interest in hormonal drugs such as aromatase inhibitors, which dramatically suppress estrogen production by blocking the effects of an enzyme called aromatase. Tamoxifen works differently; it binds to specific tumor cell sites to keep estrogen from attaching itself and directing the cancer cells to multiply.

In the study, exemestane caused more bone thinning, joint pain and diarrhea than tamoxifen but was less likely to cause blood clots, vaginal bleeding, muscle cramps and other gynecological symptoms. Rates of other side effects, including hot flashes, fatigue, insomnia, headaches and dizziness, were about the same for the two drugs.

Among the women switching to exemestane, 54 died of breast cancer, compared with 67 in the tamoxifen-only group. Overall, 91.5 percent of women in the exemestane group were cancer-free three years after switching drugs, compared with 86.8 percent for women who stayed on tamoxifen.

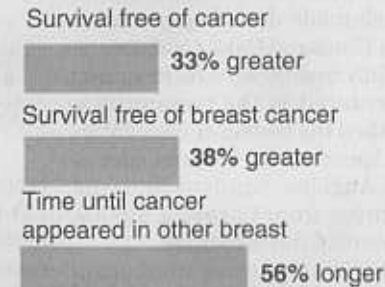
Aromatase inhibitors have been around since the 1970s, but high toxicity limited their use. Today's "third generation" aromatase inhibitors — including Aromasin, Femara and Arimidex — work better and are less toxic but still increase bone loss, a serious problem for elderly women, Coombes said.

## BREAST CANCER

### Drug switch improves survival

Switching to a newer breast cancer drug called exemestane after two-and-a-half years on the standard therapy, tamoxifen, appears to substantially improve patients' survival and to reduce side effects, a new study shows.

**Outcome for women who switched to exemestane compared to women who only took tamoxifen during five year preventative treatment after breast surgery**



SOURCE: New England Journal of Medicine

AP

Robotic legs could produce army of super troopers



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Time until cancer appeared in other breast

56% longer

SOURCE: New England Journal of Medicine

AP

## Robotic legs could produce army of super troopers

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BERKELEY, Calif. — Move over Bionic Man and make room for BLEEX — the Berkeley Lower Extremities Exoskeleton, with strap-on robotic legs designed to turn an ordinary human into a super strider.

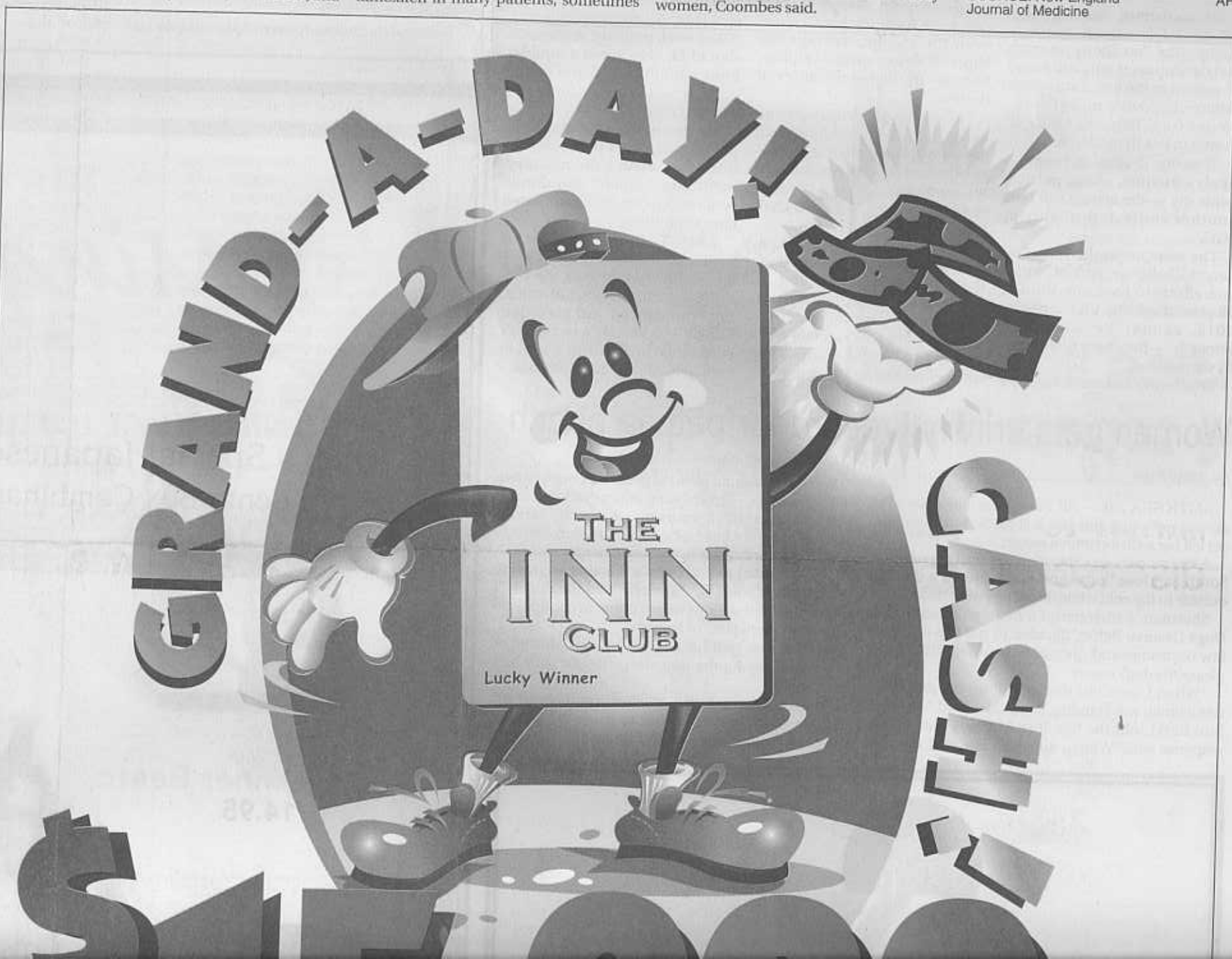
Ultimately intended to help people like soldiers or firefighters carry heavy loads for long distances, these boots are made for marching.

"The design of this exoskeleton really benefits from human intellect and the strength of the machine," says Homayoon Kazerooni, who directs the Robotics and Human Engineering Laboratory at the University of California-Berkeley.

The exoskeleton consists of a pair of mechanical metal leg braces that include a power unit and a backpack-like frame. The braces are attached to a modified pair of Army boots and are also connected, although less rigidly, to the user's legs.

More than 40 sensors and hydraulic mechanisms function like a human nervous system, constantly calculating how to distribute the weight being borne and create a minimal load for the wearer.

"There is no joystick, no keyboard, no push button to drive the device," says Kazerooni, a professor of mechanical engineering. "The pilot becomes an integral



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"There is no joystick, no keyboard, no push button to drive the device," says Kazerooni, a professor of mechanical engineering. "The pilot becomes an integral part of the exoskeleton."

In lab experiments, says Kazerooni, testers have walked around in the 100-pound exoskeleton plus a 70-pound backpack and felt as if they were carrying just five pounds.

Eventually, the device could help rescuers haul heavy equipment up high-rise buildings or turn tired troops into striding super soldiers.

What it won't do is turn you into a Borg, the gadget-happy gladiators of "Star Trek" fame.

"The exoskeleton is not going to magically transform people into killing machines," says Kazerooni, known to his students as Professor Kaz. "They're really good, it turns out, at enabling firefighters, soldiers, post-disaster rescue crews to carry heavy loads over great distances for hours."

So, no cyborg cops. But at least you get Terminator togs.

Video of the BLEEX in action, which can be viewed at <http://www.me.berkeley.edu/hel/bleex.htm>, shows a steel-spiked symbiosis of man and machine, marching about to the techno-industrial drone of grinding motors. The next step for the BLEEX team is making the power source quieter and stronger and miniaturizing components.

BLEEX is funded by the Defense Advanced Research Projects Agency, the Pentagon research and development arm, and was among the projects being showcased at a DARPA tech symposium this week in Anaheim.



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