Published on *American Council on Science and Health* (https://www.acsh.org)

Why the 'War on Cancer' is Oversimplified

By Ruth Kava — May 11, 2016

Cancer cell under microscope
via Shutterstock [1]

In 1971, then-president Richard Nixon set in motion a national movement to, as he put it, cure cancer. Considering the state of our understanding at that time, he can be forgiven for what was an impossible task. But now our understanding of the processes leading to neoplastic disease — especially since the mapping of the human genome — has been greatly amplified, and we should be talking about curing "cancers," not "cancer." Take, for example, what we speak of as one disease — breast cancer.

Sure, we know that some breast cancers grow when stimulated by the female hormones estrogen and/or progesterone. Others may not respond to those, but are promoted by epidermal growth factor. These subtypes can be treated by targeted therapies (such as tamoxifen or Herceptin), and often with good results if they're caught early. But that just scratches the surface, as a recent report [2] from Great Britain demonstrates.

Researchers used tissue samples acquired in the METABRIC [3] study, which involved approximately 2,000 women in 2012. That study showed that breast cancer is really 10 different diseases. In the current research (titled "The somatic mutation profiles of 2,433 breast cancers refines their genomic and transcriptomic landscapes") senior author Dr. Carlos Caldas and a group of collaborators further analyzed these tissue samples, and the report was published in *Nature Communications.*

The findings: There were 40 mutated genes that cause breast cancer progression — most of which had not been previously identified. Importantly, one of the more common genes, known as PIK3CA was linked to poorer survival rates for three of the 10 sub-types of breast cancer, suggesting that a drug that targets that gene would work for some but not all of these sub-types.

The authors noted, "These results emphasize the importance of genome-based stratification of breast cancer, and have important implications for designing therapeutic strategies." As Dr. Caldas

noted, "[T]hese new results give us even more detail about which genetic faults could be linked to how different types of breast cancer develop and progress. ... The information could in the future help design clinical trials for breast cancer patients, or give researchers more flags to look out for in liquid biopsies, a type of test used to detect genetic material in the blood that is released by dying cancer cells."

So when people complain that the "war on cancer" has been fought for 45 years and we still haven't cured it, you can come back with the valid observation that cancer is a "them" not an "it," and also far more complicated than was previously believed. But we're much closer to controlling, if not curing, more types than we've ever been before. Next step — prevention (hint — it doesn't involve organic foods).
