

## Heidi the dog's sniffing leads to owner's cancer diagnosis



Enser W. Cole, M.D., sits with Anne Wills and her search/rescue dog, Heidi, at Saint Agnes Hospital Center. Photography by Karl Merton Ferron, Baltimore Sun



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Cancer stinks —and that might be a good thing.

Heidi finds things for a living. Lost pets, mostly. Sometimes drugs. The 125-pound black shepherd-lab mix is a trained search and rescue animal.

So one day in February when she began burying her snout into her owner's chest and pawing at her anxiously, and insistently, it was clear she thought she found something important. She did. It turned out to be cancerous tumors in Anne Wills' lungs.

"She was physically barricading me on the couch," said Wills, the 52-year-old owner of the Arbutus-based Dogs Finding Dogs tracking service. "She was drooling and scratching at my arms."

At first Wills thought the dog was sick, but when the vet cleared her, Wills decided a few weeks later to get herself checked. A CT scan revealed the spots in her chest.

Heidi isn't the first dog to appear to smell cancer in people. Anecdotes have been circulating for years, and the animals' super sniffers — many thousands of times stronger than human noses — also have been put to scientific scrutiny with promising results.

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Beginning in 2004, published studies reported dogs appearing to find bladder, lung and breast cancers with some reliability. In a study in 2014, dogs did even better in finding prostate cancer.

Few believe dogs will ever end up in doctors' offices for routine screenings, or in the labs with specimens, because of logistical and cost issues associated with constantly identifying and training armies of pooches. Scientists don't know exactly what chemicals the dogs are smelling and how early they can detect them, which makes creating a machine to do the job a distant dream, said Cindy Otto, a University of Pennsylvania veterinarian and founder and executive director of the Penn Vet Working Dog Center, which trains dogs and conducts research.

Otto said most scientists began looking into olfactory possibilities after patients like Wills swore their dogs found their cancer. They've run tests using everything from patients' urine and breath to blood.

"I don't think we should doubt dogs can do this, but how we translate it into practical use is the question," she said. "Maybe someday screening for ovarian cancer will be routine like a pap smear" where a few cells are scraped and tested for cervical cancer.

One of Otto's collaborators is Dr. Janos Tanyi, an assistant professor of obstetrics, gynecology and oncology at the University of Pennsylvania, who began participating in studies after his patients insisted their dogs identified their cancers.

Tanyi said he became a believer when research dogs, using his patients' tissue, found the cancer almost all the time. Some tumors were too small to show up in scans.

But he also believes it's only practical if scientists can develop an artificial nose that could "test all night long," he said.

"In the long run, technology will get there," Tanyi said. "It's just not as good as dogs yet."

Early detection tools would be most useful for ovarian and pancreatic cancers because there are no such tests now, said Dr. Len Lichtenfeld, the American Cancer Society's deputy chief medical officer.

They also could be useful in finding other cancers, such as breast, prostate and lung, for which early screening tools exist but are imperfect, he said.

And though he's impressed with the research and the abilities of animals, he said each time he's been asked over the years what he thinks of the canine research he hesitates a bit because advancement has been slow.

"I wouldn't say I'm skeptical," Lichtenfeld said. "I'm cautiously optimistic someday someone will find something able to be translated into clinical use that is based on high quality evidence."

In the meantime, Wills' doctor said he wouldn't turn away a patient who came in with a dog tale.

Three-quarters of lung cancer patients who come to Saint Agnes Hospital in Baltimore aren't diagnosed until their disease is so advanced that it's hard to treat, said Dr. Enser Cole, the hospital's chief of medical oncology.

That has grim consequences: More people die of lung cancer than any other kind of cancer, with almost 211,000 people diagnosed in the United States and more than 157,000 dying of lung cancer in 2012, according to the U.S. Centers for Disease Control and Prevention.

In an effort to find the cancers earlier, Saint Agnes has begun offering CT scans to patients at high risk principally because they were tobacco smokers.

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Without chemotherapy and radiation, Wills' cancer likely would have advanced within a few months, Cole said. The dog played an important role, he said, and so did Will's primary care doctor, who took Wills seriously when she described Heidi's behavior.

"You trusted the dog and the doctor trusted you," he said to Wills. "Good thing. Early detection really changes your odds."

Wills had the largest and most accessible of her three tumors surgically removed. Two others and any other diseased cells were targeted with chemotherapy and radiation. (Some of her narcotics — used for treating her pain and nausea — had to go in the freezer to keep Heidi from tracking them.)

Once Wills' treatment began, Heidi's anxious pawing at her stopped. Her cancer is now in remission, though she remains on maintenance chemotherapy.

At about 9 years old, Heidi may soon retire as a search and rescue dog, work she does for a ball and a scratch on her furry black ears.

On a recent day in the lobby to the Saint Agnes Cancer Institute, she was splayed at Wills' feet, trying mightily to keep her eyes open even as other patients and visitors fussed over her.

"I'm so thankful for her," Wills said. "But if she starts acting funny again, I'll be on Dr. Cole's doorstep and I don't care if it's midnight."

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