

Decreased ability to identify odors may predict five-year mortality

October 1 2014



Jayant Pinto, M.D., is shown with one of the Sniffin' Sticks used to test a patient's ability to identify scents for his research on olfactory dysfunction and aging. Credit: Robert Kozloff/The University of Chicago

For older adults, being unable to identify scents is a strong predictor of death within five years, according to a study published October 1, 2014, in the journal *PLOS ONE*. Thirty-nine percent of study subjects who failed a simple smelling test died during that period, compared to 19

percent of those with moderate smell loss and just 10 percent of those with a healthy sense of smell.

The hazards of smell loss were "strikingly robust," the researchers note, above and beyond most chronic diseases. Olfactory dysfunction was better at predicting mortality than a diagnosis of heart failure, cancer or lung disease. Only severe liver damage was a more powerful predictor of death. For those already at high risk, lacking a sense of smell more than doubled the probability of death.

"We think loss of the [sense of smell](#) is like the canary in the coal mine," said the study's lead author Jayant M. Pinto, MD, an associate professor of surgery at the University of Chicago who specializes in the genetics and treatment of olfactory and sinus disease. "It doesn't directly cause death, but it's a harbinger, an early warning that something has gone badly wrong, that damage has been done. Our findings could provide a useful clinical test, a quick and inexpensive way to identify patients most at risk."

The study was part of the National Social Life, Health and Aging Project (NSHAP), the first in-home study of social relationships and health in a large, nationally representative sample of men and women ages 57 to 85.

In the first wave of NSHAP, conducted in 2005-06, professional survey teams from the National Opinion Research Center at the University of Chicago used a well-validated test—adapted by Martha K. McClintock, PhD, the study's senior author—for this field survey of 3,005 participants. It measured their ability to identify five distinct common odors.

The modified smell tests used "Sniffin'Sticks," odor-dispensing devices that resemble a felt-tip pen but are loaded with aromas rather than ink. Subjects were asked to identify each smell, one at a time, from a set of

four choices. The five odors, in order of increasing difficulty, were peppermint, fish, orange, rose and leather.

Measuring smell with this test, they learned that:

- Almost 78 percent of those tested were classified as "normosmic," having normal smelling; 45.5 percent correctly identified five out of five odors and 29 percent identified four out of five.
- Almost 20 percent were considered "hyposmic." They got two or three out of five correct.
- The remaining 3.5 percent were labelled "anosmic." They could identify just one of the five scents (2.4%), or none (1.1%).

The interviewers also assessed participants' age, physical and mental health, social and financial resources, education, and alcohol or substance abuse through structured interviews, testing and questionnaires. As expected, performance on the scent test declined steadily with age; 64 percent of 57-year-olds correctly identified all five smells. That fell to 25 percent of 85-year-olds.

In the second wave, during 2010-11, the survey team carefully confirmed which participants were still alive. During that five-year gap, 430 (12.5%) of the original 3005 study subjects had died; 2,565 were still alive.

When the researchers adjusted for demographic variables such as age, gender, socioeconomic status (as measured by education or assets), overall health, and race, those with greater smell loss when first tested were substantially more likely to have died five years later. Even mild smell loss was associated with greater risk.

"This evolutionarily ancient special sense may signal a key mechanism

that affects human longevity," noted McClintock, the David Lee Shillinglaw Distinguished Service Professor of Psychology, who has studied olfactory and pheromonal communication throughout her career.

Age-related smell loss can have a substantial impact on lifestyle and wellbeing, according to Pinto, a member of the university's otolaryngology-head and neck surgery team. "Smells impact how foods taste. Many people with smell deficits lose the joy of eating. They make poor food choices, get less nutrition. They can't tell when foods have spoiled or detect odors that signal danger, like a gas leak or smoke. They may not notice lapses in personal hygiene."

"Of all human senses," Pinto said, "smell is the most undervalued and underappreciated—until it's gone."

Precisely how [smell loss](#) contributes to mortality is unclear. "Obviously, people don't die just because their olfactory system is damaged," McClintock said.

The research team, which includes biopsychologists, physicians, sociologists and statisticians, is considering several hypotheses. The olfactory nerve, the only cranial nerve directly exposed to the environment, may serve as a conduit, they suggest, exposing the central nervous system to pollution, airborne toxins, pathogens or particulate matter.

McClintock noted that the olfactory system also has stem cells which self-regenerate, so "a decrease in the ability to smell may signal a decrease in the body's ability to rebuild key components that are declining with age and lead to all-cause mortality."

More information: Pinto JM, Wroblewski KE, Kern DW, Schumm LP, McClintock MK (2014) Olfactory Dysfunction Predicts 5-Year

Mortality in Older Adults. *PLoS ONE* 9(9):e107541. [DOI: 10.1371/journal.pone.0107541](https://doi.org/10.1371/journal.pone.0107541)

Provided by University of Chicago Medical Center

Citation: Decreased ability to identify odors may predict five-year mortality (2014, October 1) retrieved 19 April 2024 from https://medicalxpress.com/news/2014-10-decreased-ability-odors-five-year-mortality_1.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.