

# If you have an active vagus nerve, cancer stage may no longer be important

<https://pubmed.ncbi.nlm.nih.gov/25001652/>

Clinical Trial

[J Biol Regul Homeost Agents](#)

Apr-Jun 2014;28(2):195-201.

[Y Gidron](#)<sup>1</sup>, [M De Couck](#)<sup>1</sup>, [J De Greve](#)<sup>1</sup>

[Affiliations expand](#)

PMID: 25001652

## Abstract

The parasympathetic system, and primarily the vagus nerve, informs the brain about multiple signals and returns the body to homeostasis. Recent studies have shown that vagal nerve activity independently predicts prognosis in cancer. Here, we take this one step further and show that when vagal nerve activity is high, cancer stage no longer predicts tumor burden. We examined whether vagal nerve activity, indexed by Heart Rate Variability (HRV), moderated the effects of initial tumor stage on tumor burden at followup. Patients' HRVs were derived from ECGs near diagnosis in colorectal cancer (CRC) and in prostate cancer (PC) patients. Outcomes included the tumor markers carcinoembryonic antigen (CEA) at 12 months for CRC and prostate-specific antigen (PSA) at 6 months for PC. As would be expected, initially advanced tumor stages of CRC or PC predicted higher tumor marker levels at follow-up than did early stages. However, this occurred only in patients with low, not high, vagal activity (HRV). Furthermore, in patients with advanced tumor stage at diagnosis, high HRV predicted lower tumor marker levels than did low HRV, in both cancers. Estimating a cancer patient's prognosis by determining his tumor stage needs to also consider the vagal nerve activity. This activity is easily measurable, and it determines in which subjects the tumor stage is prognostic. Importantly, higher vagal activity may even protect against the adverse effects of advanced cancer stage. These findings, observed in two distinct cancers, support the hypothesized neuroimmunomodulatory effects of vagal nerve activity on tumors.

## Similar articles

[The relationship between vagal nerve activity and clinical outcomes in prostate and non-small cell lung cancer patients.](#)

De Couck M, van Brummelen D, Schallier D, De Grève J, Gidron Y.

Oncol Rep. 2013 Nov;30(5):2435-41. doi: 10.3892/or.2013.2725. Epub 2013 Sep 9.

PMID: 24026706

[Norms of vagal nerve activity, indexed by Heart Rate Variability, in cancer patients.](#)

De Couck M, Gidron Y.

Cancer Epidemiol. 2013 Oct;37(5):737-41. doi: 10.1016/j.canep.2013.04.016. Epub 2013 May 30.

PMID: 23725879

[The relationship between heart rate variability and time-course of carcinoembryonic antigen in colorectal cancer.](#)

Mouton C, Ronson A, Razavi D, Delhaye F, Kupper N, Paesmans M, Moreau M, Nogaret JM, Hendlisz A, Gidron Y.

Auton Neurosci. 2012 Jan 26;166(1-2):96-9. doi: 10.1016/j.autneu.2011.10.002. Epub 2011 Nov 9.

PMID: 22070982

[Tumor markers. Consensus Conference on Diagnosis and Prognostic Parameters in Localized Prostate Cancer. Stockholm, Sweden, May 12-13, 1993.](#)

Stamey TA, Ekman PE, Blankenstein MA, Cooper EH, Kontturi M, Lilja H, Oesterling JE, Stenman UH, Turkes A.

Scand J Urol Nephrol Suppl. 1994;162:73-87; discussion 115-27.

PMID: 7529430 Review.

[Is prostate-specific antigen still the best tumor marker for prostate cancer?](#)

Leewansangtong S, Soontrapa S, Tantiwong A.

J Med Assoc Thai. 1999 Oct;82(10):1034-40.

PMID: 10561969 Review.[See all similar articles](#)