



Science News

Share Blog Ci

How Low Doses Of Radiation Can Cause Heart Disease And Stroke

ScienceDaily (Oct. 23, 2009) — A mathematical model constructed by researchers at Imperial College London predicts the risk of cardiovascular disease (heart attacks, stroke) associated with low background levels of radiation. The model shows that the risk would vary almost in proportion with dose.

See Also:

Health & Medicine

- [Heart Disease](#)
- [Cholesterol](#)

Matter & Energy

- [Medical Technology](#)
- [Weapons Technology](#)

Computers & Math

- [Computer Modeling](#)
- [Mathematical Modeling](#)

Reference

- [High density lipoprotein](#)
- [Hormone replacement therapy](#)
- [Low density lipoprotein](#)
- [COX-2 inhibitor](#)

Results, published October 23 in the open-access journal *PLoS Computational Biology*, are consistent with risk levels reported in previous studies involving nuclear workers.

Cardiovascular disease is the leading cause of death and one of the leading causes of disability in developed countries, as reported in the paper and also by the World Health Organization. For some time, scientists have understood how high-dose radiotherapy (RT) causes inflammation in the heart and large arteries and how this results in the increased levels of cardiovascular disease observed in many groups of patients who receive RT. However, in the last few years, studies have shown that there may also be cardiovascular risks associated with the much lower fractionated doses of radiation received by groups such as nuclear workers, but it is not clear

what biological mechanisms are responsible.

The Imperial College London team, led by Dr. Mark Little, has explored a novel mechanism that suggests that radiation kills monocytes (a type of white blood cell) in the arterial wall, which would otherwise bind to monocyte chemo-attractant protein 1 (MCP-1). The resultant higher levels of MCP-1 cause inflammation which leads to cardiovascular disease. As well as being consistent with what is seen in nuclear workers, the

Ads by Google

Nitric Oxide Breakthrough — Lower blood pressure FAST L-arginine plus L-citrulline
www.L-argininePlus.com

Heart Attacks Happen. — Test your Heart Online Take test now.
www.simplehearttest.com

Treatment for C.O.P.D — C.O.P.D Stem Cell Treatment Performed by Specialist Doctors
AngelesHealth.com/copd

The Wall Street Journal — Official Site. Subscrib Today for Home Delivery & Get 4 Weeks Free!
www.WallStreetJournal.com

Diabetes? Paid Studies — Participants needed for a research study in San Ramon, CA
westcoastresearch.com

Related Stories

Inflammation Markers Linked More With Fatal Than Nonfatal Cardiovascular Events In Elderly (June 29, 2009) — For elderly people at risk of cardiovascular disease, the presence of inflammatory markers in the blood can identify that an individual is at a higher risk of a fatal rather than a nonfatal heart ... > [read more](#)

Ibuprofen May Boost Chance Of Heart Problem In High Risk Patients With Osteoarthritis (Apr. 4, 2007) — The common painkiller, ibuprofen, may boost the likelihood of heart problems in high risk patients who have osteoarthritis, suggests recent research. Previous studies have suggested that ibuprofen ... > [read more](#)

Best Heart Disease And Stroke Treatments For Patients With Diabetes Found With New Tool (July 26, 2009) — Researchers have developed a computer model that medical doctors can use to

changes in MCP-1 caused by dietary cholesterol that are predicted by the model are also consistent with experimental and epidemiologic data.

If the mechanism is valid it implies that risks from low dose radiation exposures (e.g., medical and dental X-rays), which until now have been assumed to result only from cancer, may have been substantially underestimated, say the authors.

The biological mechanism has yet to be experimentally tested. Further research is planned to investigate this.

Email or share this story:

| [More](#)

Story Source:

The above story is reprinted (with editorial adaptations by ScienceDaily staff) from materials provided by [Public Library of Science](#), via [EurekAlert!](#), a service of AAAS.

Journal Reference:

1. Little MP, Gola A, Tzoulaki I. **A Model of Cardiovascular Disease Giving a Plausible Mechanism for the Effect of Fractionated Low-Dose Ionizing Radiation Exposure.** *PLoS Computational Biology*, 2009; 5 (10): e1000539 DOI: [10.1371/journal.pcbi.1000539](https://doi.org/10.1371/journal.pcbi.1000539)

Need to cite this story in your essay, paper, or report? Use one of the following formats:

- APA Public Library of Science (2009, October 23). How Low Doses Of Radiation Can Cause Heart Disease And Stroke. *ScienceDaily*. Retrieved June 8, 2011, from <http://www.sciencedaily.com/releases/2009/10/091022202710.htm>
- MLA

Note: If no author is given, the source is cited instead.

Disclaimer: This article is not intended to provide medical advice, diagnosis or treatment. Views expressed here do not necessarily reflect those of ScienceDaily or its staff.

determine the best time to begin using statin therapy in diabetes patients to help prevent heart disease and ... > [read more](#)

Blood-Pressure-Lowering Drugs Should Not Be Limited To People With High Blood Pressure

(May 26, 2009) — Blood-pressure-lowering drugs should be offered to anyone old enough to be at risk of a heart attack or stroke (or who is otherwise known to be at risk), regardless of their blood pressure, according ... > [read more](#)

Ads by Google

Fluke Radiation Safety — A Complete Line of Radiation Detection Products. Learn More! FlukeBiomedical.com/Testing

Lung cancer? — Compensation trust fund information Find out if you qualify www.calldavid.com

I Had High Blood Pressure — Now it's down to 120/75. Find out how I did it without drugs RESPeRATE.com

Golden Gate Cancer Center — We are dedicated to helping men with prostate cancer GoldenGateCancerCenter.com

Laser for nail fungus now — get rid off embarrassing nail fungus latest technology in laser here www.blastthatbug.com

Search ScienceDaily

Number of stories archives: 103,81

Find with keyword(s):

Enter a keyword or phrase to search ScienceDaily's archives for related news topics, the latest news stories, reference articles, science videos, images, and books.

[About ScienceDaily®](#) | [Editorial Staff](#) | [Awards & Reviews](#) | [Contribute News](#) | [Advertise With Us](#) | [Privacy Policy](#) | [Terms of Use](#)

Copyright © 1995-2010 ScienceDaily LLC — All rights reserved — Contact: editor@sciencedaily.com

*Note: This web site is not intended to provide medical advice, diagnosis or treatment.
Part of the **iVillage Your Total Health Network***

News

[Health & Medicine](#)

Articles

[Mind & Brain](#)

Videos

[Plants & Animals](#)

Images

[Earth & Climate](#)

Books

[Space & Time](#)

[Matte](#)