

## Small Particles, Big Impact

In the last few years, there have been an increasing number of studies showing a link between exposure to air pollution and stroke. A person's stroke risk from air pollution is small compared with the impact of established cardiovascular risk factors such as smoking, obesity, or high blood pressure. However, Stroke and Heart associations worldwide seem united in their conviction that air pollution is a serious public health issue because an enormous number of people are exposed to air pollution over an entire lifetime. This recent study in Texas further identifies this probable link between stroke and particle pollution.

New research suggests current US exposure standards are not sufficient to protect the public from the impact of air pollution. The Texas study indicates short-term exposure to low levels of particulate air pollution seems to increase the risk of stroke or mini-stroke.

Particulate matter is made of tiny particles of solids or liquids that cause numerous health problems when inhaled. These particles can be man-made or from natural sources (see inset). Particulate pollution comes from such diverse sources as factory and utility smokestacks, vehicle exhaust, wood burning, mining, construction activity, and agriculture.

The study examined particulate air pollution in the southeast Texas community of Corpus Christi where there is a large petroleum and petrochemical industry presence. Despite the fossil fuel industry in the area, fine particulate matter exposures were low compared to other regions of the country, the researchers said, probably because of the proximity to the coast and prevailing wind patterns.

Researchers identified ischaemic strokes (when a blood vessel in the brain is blocked), and also transient ischaemic

attacks (or TIA - sometimes called mini strokes) that often lead to a stroke later. Findings suggest recent exposure to fine particulate matter may increase the risk of these types of stroke specifically. The majority of stroke and TIA cases were found to be located upwind of local chemical plants and refineries.

### What is Particle Pollution?

Air pollution is composed of many environmental factors which include: carbon monoxide, nitrates, sulphur dioxide, ozone, lead, second-hand tobacco smoke and particulate matter (also known as particle pollution).

Particle pollution is made up of solid and liquid particles in the air. It can be generated from vehicle emissions, tyre fragmentation and road dust, power generation and industrial combustion, smelting and other metal processing, construction and demolition activities, residential wood burning, windblown soil, pollens, moulds, forest fires, volcanic emissions and sea spray.

"The vast majority of the public are exposed to ambient air pollution at the levels observed in this community or greater every day, suggesting a potentially large public health impact," said Lynda Lisabeth, lead author and assistant professor in the University of Michigan School of Public Health, where the research is based. Some research has shown that particulate air pollution is associated with acute artery vasoconstriction and with increased thickening of the blood, which may enhance the potential for blood clots. Similar associations were also seen with ozone, another type of air pollution.

*The study, "Ambient Air Pollution and Risk of Ischemic Stroke and TIA," was published in the July 2008 issue of *Annals of Neurology* [www.interscience.wiley.com](http://www.interscience.wiley.com), the official journal of the American Neurological Association*



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If you have any questions about stroke or the Stroke Foundation please contact the National Office or your Regional Office.

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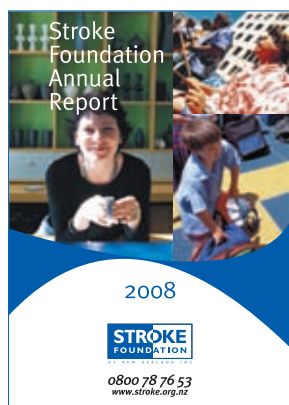
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## 2008 Annual Report now available



## The 2008 Blood Pressure Campaign

Blood Pressure contributes to at least a third of stroke deaths in New Zealand, yet this need not be the case.

This year, our annual Stroke Awareness Week focused on Blood Pressure. Thanks to our partnership with Lions, about 80 free blood pressure testing sites were active during a couple of weekends in early September. These provided hundreds of New Zealanders with an indication of their blood pressure.

A significant number discovered that their readings were above the normal range and were directed to their GPs. This underlines the importance of these events in raising awareness of high blood pressure, and how it can significantly increase stroke risk.

During the week, the blood pressure issue received extensive coverage throughout New Zealand thanks to a combination of television, radio and print journalism. Amongst the many activities that took place, a Beehive reception, hosted by Hon Ruth Dyson, enabled public servants to have an opportunity to check on their stress levels. Ms Dyson spoke of the need for New Zealanders to take positive action and reduce the possibility of having a stroke.

The Stroke Foundation intends to build on this Blood Pressure Awareness campaign for 2009. Thank you to all those who helped make this year's Awareness Week so successful. The dedication and hard work of many Lions volunteers, Stroke supporters and staff helped ensure a successful beginning to what is hoped to be an ongoing awareness campaign.



## Auckland City Hospital first to join AVERT Trial in New Zealand

Auckland City Hospital is the first in New Zealand to trial Avert (A very early rehabilitation trial). This stroke rehabilitation research programme, is expected to be just as successful in Auckland as in Australia. The establishment of a stroke unit at ACH, which has streamlined care for stroke patients, has helped make this Avert trial possible for the Auckland DHB.

Avert provides early exercise therapy within 24 hours of a stroke. According to Avert programme director, Dr Julie Bernhardt: "In the past, people believed stroke patients could not exercise immediately after a stroke - they thought it might be dangerous. We now recognize that exercise therapy, with a focus on mobilization, can start very early."

In New Zealand, there have been no high quality trials looking at the results of very early rehabilitation and whether that might result in fewer deaths and less disability. This trial is expected to eventually involve over 2000 stroke patients from more than 20 hospitals, drawn from both genders and a broad range of ages, races, and both rural and urban environments.

According to Stroke Foundation CEO, Mark Vivian: "There is a huge need for improved stroke rehabilitation in New Zealand. We are encouraged by the Avert initiative as there is still currently just one DHB nationally who provides stroke rehabilitation in accordance with the Stroke Guidelines approved in 2003."

## Improvement to Speech to Speech service

NZ Relay Speech to Speech service now has pre-introduction email which can be sent directly to the NZ Relay operator. This will give users the opportunity to be connected faster and more effectively.

The idea is that the user simply emails the Relay Assistant at [sts@nzrelay.co.nz](mailto:sts@nzrelay.co.nz) anytime from 15 minutes to 24 hours before the user wants to make their call.

The email may include:

- The telephone number the Relay Assistant (RA) is to call
- Who you want to speak to
- Any special instructions for the RA. For example, 'Repeat everything I say' or

'Repeat only what is not understood'

- If you think it will help, give some details of the subject of the call or anything else you believe will make the call easier for you
- You can tell the RA in advance the message you wish to leave in case that call goes straight to an answering machine.

NZ Relay STS is available: Mon to Fri 7.30am to 9pm, and Sat 9am to 5pm.

If you have speech impairment and have not used NZ Relay before, check out their website for more information:  
[www.nzrelay.co.nz](http://www.nzrelay.co.nz)

# World Watch

## Burden of Stroke in Nigeria

Stroke is predicted to worsen as a major cause of death and morbidity in developing countries based on projections by WHO (World Health Organisation). WHO's projections by year 2030 indicate that four of every five strokes will occur in people living in low and middle-income countries similar to Nigeria.

With a population of 140 million, Nigeria is the most populous black nation in the world. It stands to risk further straining of its resources as a result of an increase in stroke and other cardiovascular diseases. Stroke is just one of a number of other major causes of morbidity in Nigeria, including HIV/AIDS, and multi-drug resistant malaria and tuberculosis.

Nigeria currently has nearly 160,000 strokes annually (1.14 in 1000), while the 30-day case fatality rate is as high as 40%. Management of the disease is largely conservative while there is little or no

funding for high-quality research. Primary prevention is the key to reducing the burden of the disease in a country with such poor resources.

## Stroke in Pakistan

Stroke is emerging as an epidemic in the Indian subcontinent. At 165 million, Pakistan has the world's sixth largest population. The burden of stroke is high, but there is little statistical evidence of the incidence and prevalence of stroke as there are no large population based studies available. Several hospital based case studies compared with Western profiles suggest important differences in the patterns and risk factors of stroke, indicating 350,000 new cases each year.

The Pakistan Stroke society was established in 2002, to improve public awareness and continuing medical education for physicians. According to a report published in 2003, there were only 80 CT scanners and 20 MRI



the burden of stroke in low and middle income countries continues to rise dramatically

units in the whole country. Cardiovascular risk factors are extremely prevalent across the country, and at the same time under-recognised and poorly treated. Haemorrhagic stroke and lacunar ischaemic strokes are common in Pakistan. Human resources are lacking and stroke facilities even more scarce. Hence, there is a dire need to improve the infrastructure to create awareness, and provide adequate training in prevention and management of this disease.

# Cholesterol: the good, the bad and the deadly

Cholesterol is a waxy, fat like substance that is present in every cell in your body. It helps to build cell walls and is used in the manufacture of some hormones.

The liver produces approximately 70-80% of the cholesterol circulating in your blood. The remainder comes from the food we eat. While some cholesterol in your blood is essential to your health, too much can be harmful, increasing your risk of heart disease and stroke. Some cholesterol is "good" (High Density Lipoprotein - HDL), and some is "bad" (Low Density Lipoprotein - LDL and Triglycerides) (see image).

High cholesterol is a significant health risk. Healthy arteries have a smooth, even surface. When too much cholesterol builds

up in the bloodstream, thick deposits called "plaque" form on the artery walls. Plaque build-up narrows the width of the arteries, causing the heart to pump harder to force blood through. Plaque can also break off, forming clots and reducing the volume of blood and oxygen flow. This can result in a heart attack or stroke.




Cholesterol levels can be tested with a simple blood test. Your cholesterol blood results are broken down into four types: Total cholesterol, Low Density Lipoprotein, High Density Lipoprotein, and

Triglycerides. Ask your GP about getting your levels checked.

Bad Cholesterol or low density lipoprotein cholesterol (LDL-C) is the strongest indicator of your heart disease risk. LDL's carry the majority of cholesterol in the bloodstream, and it can build up on the artery walls. This can lead to blockage of the arteries which feed the heart and brain, increasing the risk of having a heart attack or stroke.

It is important for you to know your LDL-C level if you have a history of heart disease. The optimal level of LDL-C for you will depend on your risk profile. It is important for your cardiovascular health to reach your optimal LDL-C target so check with your doctor to see how you are tracking towards your goal.

*Original Copy from ACT-NOW Newsletter 1 (May 2007) R&A150507A; TAPS: NZ2173*  
*References: 1. LaRosa JC et al. N Eng J Med 2005; 352: 1425-1435. 2. New Zealand Guidelines Group. The Assessment and Management of Cardiovascular Risk Evidence-based Best Practice Guideline, December 2003. Information provided by Pfizer New Zealand Limited, Auckland, 0800 736 363. DA84AC*

• THE GOOD • HIGH DENSITY LIPOPROTEINS (HDL)	• THE BAD • LOW DENSITY LIPOPROTEINS (LDL)	• THE UGLY • TRIGLYCERIDES
 <p>HDL is good; it takes cholesterol out of the artery wall. Components in HDL also help to reduce blood clotting and blood-vessel constriction. People with low levels of HDL are more likely to form blood clots in their arteries.</p>	 <p>LDL is bad; it tends to stick in places where the artery walls have been damaged, which can lead to blockage and heart attack. The microscopic damage can be caused by things like high blood pressure and cigarette smoke.</p>	 <p>Triglycerides are a combination of all fats and sugars, however a high level of triglycerides can often be associated with a low level of "good" cholesterol (HDL) and increase the risk of heart disease and stroke.</p>



Mark Vivian – CEO, Stroke Foundation of NZ

## Learning from Churchill

*“Ending a sentence with a preposition is something up with which I will not put.”*

No it is not a typo. It’s a quote from Winston Churchill and in it we glimpse some of the endearing features of the great man – he was variously prickly, objectionable, proper, humorous, precise and determined. He was many things: a journalist, politician,

author and painter. And also a multiple stroke survivor.

One of the extraordinary features of his story is that by the time he began the most influential part of his life, and the period for which he is most well known, he was widely regarded as “passed it” and a failed politician. No-one would have predicted in 1935 that Churchill would play such a significant role in world history covering the next decade. Despite being thought a “has been” and known for his mistakes and failings, he took charge and inspired a nation.

In 1949, he suffered his first known stroke, but was still re-elected Prime Minister in 1951. He suffered further strokes in 1953 and 1955, before passing away aged 90 from a stroke in 1965. While none of us might achieve the success or status of Churchill, we can all display some of Churchill’s positive attributes in our own context. We

all face significant challenges. Over and over I hear from stroke survivors or their family members, what it is like to have a stroke. At first the fear of the immediate and long term future, and the very real immediate challenges loom large. Subsequently, the effort required to pick up a new life and all the necessary adjustments can sometimes seem too tough. Knowing this, I particularly like Churchill’s understanding that:

*“Continuous effort – not strength or intelligence – is the key to unlocking our potential.”*

Churchill certainly understood perseverance. This Christmas I ask you to remember those focussing on their own challenges as stroke survivors. But I also invite you to reflect on what sort of Churchill you might be. Are you grumpy, determined, passed it, or an inspiration to others? I wish you and yours a very happy Christmas and leave you with a final Churchillian moment:

*“A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty”.*

## My Stroke of Insight

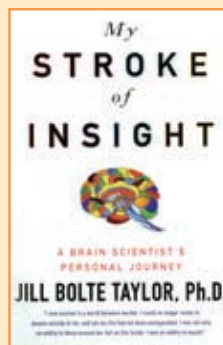
Jill Bolte Taylor, a neuroanatomist, was in the rare position of being able to observe her own mind deteriorate when she suffered a disabling stroke aged 37, when a blood vessel in her brain burst. Over the next eight years she recovered progressively until she regained full use of her mental and physical functions. She also believes she obtained a most valuable degree of spiritual insight as a result of the experience. In this book, she describes the process of recovery and the new way of thinking she has arrived at now. Jill seems to have had two motives in writing this account: to record and come to terms with her experience for herself, and to help other stroke victims and those who care for them.

According to past President of the NZ Stroke Foundation, Dr Jonathan Baskett:

“This book is an important addition to libraries, including health professional schools. Jill expresses her experience of stroke in her way and who is the reader to argue? But the reader should note that Jill’s stroke was unusual, and therefore the presentation and recovery not necessarily typical of most. Therefore it could give false hope and information to people with a ‘typical’ stroke.

Despite a couple of inaccuracies in the first four chapters (for instance, she says twice that strokes occur four times more commonly in the left cerebral hemisphere), the book rewards perseverance. There are ideas and observations in this book which will help a stroke professional wanting to stay on the cutting edge, and in particular understand what is going through the mind of their patient. While it is not an easy read in places, there are some engrossing parts and issues for professionals to think about carefully.

Her messages for family and caregivers (including professionals) are important and in some instances novel. Her knowledge of the workings of the brain will be useful to students and to professionals new to the area.”



*The first three emails to [martin\\_robinson@stroke.org.nz](mailto:martin_robinson@stroke.org.nz) correctly naming the book and author will receive a free copy of this book*

## 11 key lessons for Jill

- I desperately needed people to treat me as though I would completely recover
- I needed the people around me to believe in the plasticity of my brain and its ability to grow, learn and recover
- My brain needed to be protected, and isolated from obnoxious sensory stimulation, which it perceived as noise
- I needed people to honour the healing power of sleep
- I needed people to love me – not for the person I had been, but for who I might become
- I needed those around me to be encouraging, and to know I still had value, and to have dreams to work towards
- It was essential to challenge my brain systems immediately – to be offered multiple choice questions and never ask yes/no questions
- I needed to prioritise what I wanted to get back the most and not waste energy on other things
- For a successful recovery, it was important to focus on my ability, not my disability
- I needed to be completely dependent on my ability to break every task down to smaller and simpler action steps
- I needed everyone to assume I knew nothing so I could relearn everything from the beginning.

Stroke Foundation of New Zealand Inc is grateful for the support of the following organisations:

