

Imperial College London News Release

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Significant reductions in mortality and cardiovascular events shown using blood pressure-lowering treatment in those aged 80 and over

Lowering the blood pressure of elderly patients could cut their total mortality by a fifth and their rate of cardiovascular events by a third, according to a new study presented today at the American College of Cardiology in Chicago and published simultaneously in the *New England Journal of Medicine*.

The 3,845 patient Hypertension in the Very Elderly Trial (HYVET), which is co-ordinated by scientists from Imperial College London, is the largest ever clinical trial to look at the effects of lowering blood pressure solely in those aged 80 and over. Patients were given either a placebo or the diuretic indapamide slow release (SR) 1.5mg, with the addition of the ACE inhibitor perindopril in tablet form once a day.

The research shows that the benefits of treatment include a 21% ($p=0.02$) reduction in total mortality rate, a 39% ($p=0.05$) reduction in stroke mortality rate, a 64% ($p<0.001$) reduction in fatal and non-fatal heart failures and a 34% ($p<0.001$) reduction in cardiovascular events. The benefits were apparent within the first year of follow-up.

The reduction in overall mortality was a novel and unexpected result. Earlier trials had demonstrated that reducing blood pressure in the under-80s reduces stroke and cardiovascular events. However, previous smaller and inconclusive studies also suggested that whilst lowering blood pressure in those aged 80 or over reduced the number of strokes, it did not reduce, and even possibly increased, total mortality.

In July 2007 the trial was stopped early on the recommendation of an independent data monitoring committee after they observed significant reductions in overall mortality and stroke in those receiving treatment. The final results of the trial showed a significant reduction in stroke mortality rate, but the reduction in all strokes of 30% did not quite reach statistical significance ($p=0.06$). In those aged 80 and over, up to half of strokes are fatal and the reduction in fatal strokes is an important finding.

Emeritus Professor Christopher Bulpitt, the lead investigator on the study from the Care of the Elderly Group at Imperial College London, said: "Before our study, doctors were unsure about whether very elderly people with high blood pressure could see the same benefits from treatment to lower their blood pressure as those we see in younger people. Our results clearly show that many patients aged 80 and over could benefit greatly from treatment. Populations are living longer and we have growing numbers of people living well into their 80s and beyond, so this is good news. We are very pleased that cardiovascular events were reduced safely with a reduction in total mortality."

The researchers hope that their findings will clear up uncertainty amongst clinicians about the benefits of treating those aged 80 and over for high blood pressure.

Dr Nigel Beckett, the trial co-ordinator from the Care of the Elderly Group at Imperial College London, added: "Many very elderly people with high blood pressure are not being treated for it at the moment, because doctors are unsure about whether or not treatment will help them. We hope that following our study, doctors will be encouraged to treat such patients in accordance with our protocol."

As the trial was stopped early, an extension involving patients receiving active-treatment is now underway to assess the longer term benefits of treatment.

Patients with high blood pressure (defined here as a systolic blood pressure between 160-199 mmHg), from thirteen countries across the world, were randomised for the double-blind, placebo-controlled trial, which began in 2001. The mean age of participants was 83 years and 7 months.

Patients were given either placebo or indapamide slow release (SR) with the addition of perindopril, in tablet form once a day as required, to achieve a target blood pressure of 150/80 mmHg. The average follow-up of patients was just over 2 years by which time 20% of the placebo subjects and 48% of those taking medication had achieved the target blood pressure of 150/80 mmHg. In those patients who were followed up for longer, a larger number of patients receiving active treatment achieved the target blood pressure.

HYVET was co-ordinated by scientists from Imperial College London, working with colleagues around the world. The main trial was funded by both the British Heart Foundation and by Servier.

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Notes to editors

1. About high blood pressure and stroke

- Stroke is the third most common cause of death in England and Wales. In 2004, 11% of deaths amongst those aged 75-84, and 14% of deaths amongst those aged over 85 were due to stroke, according to the Office of National Statistics.
- In the UK about 150,000 people suffer a stroke each year, the equivalent of 1 every 4 minutes.
- About one third of stroke patients die within 6 months of the event, the majority occurring in the first month.
- Disability after stroke is the most important single cause of severe disability of people living in their own homes.
- There are 2 types of stroke:
 - a. Haemorrhagic - caused by blood leaking into brain tissue from a blood vessel within the brain.
 - b. Ischaemic - caused by a clot occluding a blood vessel, resulting in loss of blood supply to a part of the brain and subsequent damage to brain tissue.

High blood pressure increases the chance of both a blood vessel leaking or rupturing, and of a clot forming within a blood vessel. High blood pressure increases the likelihood of damage to the lining of the blood vessel, which in turn leads to an increased chance of spontaneous clot formation within the blood vessel.

- The over 80s are the fastest growing group in the population worldwide - in the UK currently they account for 4% of the total population and this is expected to rise to over 11% by 2050.
- The risk of stroke increases with age, with some estimates suggesting that the risk doubles every decade after a person reaches 55 years of age.

- In the UK approximately 4% of the total National Health Service budget is spent on stroke services each year.

2. About Imperial College London

Imperial College London - rated the world's fifth best university in the 2007 Times Higher Education Supplement University Rankings - is a science-based institution with a reputation for excellence in teaching and research that attracts 12,000 students and 6,000 staff of the highest international quality. Innovative research at the College explores the interface between science, medicine, engineering and business, delivering practical solutions that improve quality of life and the environment - underpinned by a dynamic enterprise culture.
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