‘One size fits all’ approach may no longer be appropriate for controlling blood pressure in diabetics

Recent dramatic improvements seen in blood pressure control in diabetic patients are promising, but could indicate that many people are now being overtreated with blood pressure medications, wasting resources and potentially causing harm to patients.

The paper, published in the *Archives of Internal Medicine,* looked at 977,000 Veterans Affairs patients and suggests that as many as 82% of patients are now having their blood pressure controlled and 94% are receiving appropriate blood pressure treatment. This is very encouraging news, but the paper also suggests that as a consequence of this rise in control as many people may now be getting overtreated (8%) with blood pressure medications as are being undertreated (6%).

The ‘one size fits all’ approach to blood pressure lowering in diabetic patients began many years ago when blood pressure in diabetes was high across the board; however, now that the majority of diabetic patients have good control over their blood pressure, targets may need to be revisited.

“Appropriately treating blood pressure in people with diabetes is extremely important, and good blood pressure control should still be the goal to reduce risk of heart attack, stroke and other conditions,” explains Eve Kerr, from VA Ann Arbor Healthcare System and the University of Michigan Health System (both MI, USA), and lead author on the *Archives of Internal Medicine* paper.

“But just treating to a blood pressure target in all patients may result in overtreating and harming some patients because their blood pressures actually fall too low,” she continues. “We need to find better ways to measure and incentivize appropriate blood pressure management to make sure that patients who need aggressive treatment are getting it, and to decrease the rate of inappropriate overtreatment.”

The study used electronic records of people with diabetes and high blood pressure who were treated between 2009 and 2010. In this study, appropriate blood pressure management was defined as having either less than 140/90 or less than 150/65; or having appropriate management of elevated blood pressure and being on three or more blood pressure medications. Potential overtreatment was defined as receiving three or more blood pressure medicines or having recent medication increases and having blood pressure that was less than 130/65.

The blood pressure clinical action measure used in this study will be adopted by the Veteran Affaires healthcare system to motivate appropriate blood pressure management for patients based on their risks and treatment characteristics. It could also be rolled out to non-Veteran Affairs centers, but in the meantime diabetic patients are advised to talk to their doctors about appropriate blood pressure management.

Source: Kerr EA, Lucatorto MA, Holleman R *et al.* Monitoring performance for blood pressure management among patients with diabetes mellitus: too much of a good thing? Monitoring performance for BP management in diabetes. *Arch. Intern. Med.* 28, 1–8 (2012).

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Naturally produced protein shows promise as a potential new target for diabetes treatment

A potential target for a new diabetes treatment may have been found in apolipoprotein A-IV (apoA-IV), a protein secreted by the small intestine, which has the ability to reduce blood sugar levels and increase insulin secretion.

Earlier studies indicated that apoA-IV is elevated in individuals following gastric bypass surgery. After gastric bypass surgery, improvements in diabetes have been observed in some patients, which is why apoA-IV was studied in more detail.

In a study carried out in mice, Patrick Tso and colleagues from the University of Cincinnati Department of Pathology and Laboratory Medicine (OH, USA) discovered impaired glucose tolerance in mice that had an apoA-IV deficiency. When fed a continuously high-fat diet, the mice also developed diabetes. However, when injected with apoA-IV the mice displayed an improved insulin response to glucose.

"In a study carried out in mice ... impaired glucose tolerance [was discovered] in mice that had an apoA-IV deficiency."

The study suggests that apoA-IV behaves in a similar manner to incretin, a gastrointestinal hormone that induces a higher insulin release after eating to prevent the onset of high blood glucose levels. Contrary to incretins used in existing diabetes drugs, the apoA-IV protein has a longer half-life of between 7 and 8 h.

"We believe that apoA-IV may represent another approach in the treatment of Type II diabetes. Additionally, it should be emphasized that since apoA-IV only stimulates insulin secretion at high blood glucose, any therapy involving apoA-IV may not cause hypoglycemia." Tso told *Diabetes Management*.

"It should be emphasized that although the studies that we reported in *Proceedings of the National Acadamy of Science* are exciting and encouraging, it remains to be demonstrated in humans" Tso cautioned.

Cincinnati University has licensed the results to Apofore Corporation, who will conduct further studies of apoA-IV in humans, so this next step will soon be underway.

Source: Wang F, Kohan AB, Kindel TL *et al.* Apolipoprotein A-IV improves glucose homeostasis by enhancing insulin secretion. *Proc. Natl Acad. Sci. USA* doi:10.1073/pnas.1201433109 (2012) (Epub ahead of print).

UK-wide scheme set to raise awareness of diabetes in ethnic minority communities

A program recently introduced in the UK is aimed at raising awareness of diabetes risks and complications in high-risk ethnic minority communities.

Diabetes UK charity initiative, the "Diabetes Community Champions Programme" will provide training to health workers and community leaders from a variety of ethnic backgrounds, to improve their understanding of risk factors and symptoms as well as the common misconceptions that surround diabetes in some cultures.

Following training, the 'Community Champions' will give talks and hold other events in their local communities in order to encourage people at high risk for Type 2 diabetes to go to their doctors or pharmacists and get tested.

"The scheme has been running successfully in London for 2 years, but is now set to roll out across the country..."

The scheme is aimed at ethnic minority populations as people originating from South Asia have a six-times higher risk of developing Type 2 diabetes than those of white European origin. People of African–Caribbean descent have a three-times higher risk of developing Type 2 diabetes and are also more likely to see first symptoms at a much younger age than white European descendants. Therefore it is vital that knowledge of diabetes is encouraged within these populations and educating within the community seems to be a good strategy.

The scheme has been running successfully in London for 2 years, but is now set to roll out across the country following a grant from the UK Department of Health.

Source: Diabetes UK Press Release: www.diabetes.org.uk/About_us/News_Landing_Page/National-scheme-launched-to-reduce-risk-of-diabetes-in-minority-ethnic-communities

About the News

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Study suggests that life expectancy gap between diabetics and nondiabetics is narrowing

A new study from the CDC and the NIH indicates an encouraging drop in diabetes-related deaths.

The recent study, published in *Diabetes Care*, looked at death rates in the US diabetic population between 1997 and 2006 and found a substantial decline.

The researchers compared 3-year death rates of four samples of approximately 250,000 US adults aged 18 years and older (from the years 1997–1998, 1999–2000, 2001–2002 and 2003–2004) using data derived from the National Death Index.

It was found that the cardiovascular disease death rate in diabetic patients had declined by 40% and all-cause mortality had declined by 23% between the earliest and latest samples evaluated. The authors found no difference in the rates of decline in mortality between the genders.

The authors suggest that the decline in deaths among people with diabetes could in part be attributed to improved treatment for cardiovascular disease as well as better management of diabetes. They also indicate that diabetics may make more effort to lead healthy lifestyles; they found evidence that people with diabetes were less likely to smoke and more likely to be physically active than they had previously been.

Although the gap in life expectancy between diabetics and nondiabetics is getting smaller, American adults with diabetes are still more likely to die younger than adults without diabetes. Also, despite the fall in death rate, the rates of newly diagnosed cases are still rising, so overall it is expected that the number of Americans living with diabetes will also continue to rise.

The CDC estimates that at present there are 25.8 million Americans living with diabetes, including 7 million who are unaware they have the disease.

Source: Gregg EW, Cheng YJ, Saydah S *et al.* Trends in death rates among U.S. adults with and without diabetes between 1997 and 2006. Findings from the National Health Interview Survey. *Diabetes Care* 35(6), 1252–1257 (2012).

Identification of potential source of diabetic neuropathic pain may impact treatment

Neuropathic pain is common in diabetic patients, but until now the cause of the condition has remained elusive. Researchers may have identified an unexpected source of the pain and this knowledge could lead to potential therapies for the previously lifelong condition.

Researchers from Yale University and West Haven VA Medical Center (CT, USA) studying diabetic rats have found tiny projections on nerve cells that could be related to pain.

"The findings of our work were unexpected because of the observation of post-synaptic dendritic spine changes on neurons in the spinal cord pain pathway in diabetes. While many studies have focused on peripheral sources of pain in diabetes, we've shown a role for CNS changes. Dendritic spines are of great interest to us because they represent sites of synaptic contact in the nervous system. Our previous studies thus far provide strong evidence that knowledge of dendritic spine behavior in the spinal cord is important for understanding sensory dysfunction (i.e., pain) in chronic diseases, such as that occurs in diabetes" lead author Andrew Tan from Yale University explains to *Diabetes Management.*

"One of our findings was interesting, demonstrating that before the development of neuropathic pain in diabetic animals, dendritic spines appeared similar to normal animals. This suggests that there may be a therapeutic window in the early stages of diabetes for preventing the establishment of intractable neuropathic pain, by targeting dendritic spine remodeling."

However, he went on to caution, "We are at the very first stages of understanding diabetic-induced dendritic spine remodeling, so much more work needs to be done."

Source: Tan AN, Samad OA, Fischer TZ, Zhao P, Persson AK, Waxman SG. Maladaptive dendritic spine remodeling contributes to diabetic neuropathic pain. *J. Neurosci.* 32(20), 6795–6807 (2012).

– All stories written by Laura McGuinness