Osteoarthritis patients set to benefit from new evidence for increasing the lifetime of joint implants

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Patients who have undergone knee or hip replacement surgery could potentially double the life of their implant by taking readily available osteoporosis drugs called bisphosphonates.  
  
Results from a study led by Professor Nigel Arden which was funded by a National Institute for Health Research (NIHR) Programme Grant for Applied Research, are published today in the British Medical Journal.  
  
The trial took place at the NIHR Musculoskeletal Biomedical Research Unit (BRU) at the Nuffield Orthopaedic Centre NHS Trust and the University of Oxford in collaboration with researchers at the Medical Research Council (MRC) Lifecourse Epidemiology Unit at the University of Southampton.   
  
This study has shown that bisphosphonate use in patients who have undergone joint replacements is related to an almost twofold increase in implant survival time.  
  
Osteoarthritis is the most common form of arthritis in the western world and affects at least eight million people in the UK.

Total joint replacement is the most effective therapy for patients suffering severe osteoarthritis and around 160,000 hip and knee replacement procedures took place last year.

However, joint replacements only last 10-15 years and almost 13,000 of these procedures were 'revision' surgeries to replace a patient's original implant.

These revision surgeries are expensive (costing around £34,000 compared to £7,000 for the initial joint replacement surgery) and the outcome is less effective than the original hip or knee replacement.  
  
The most common cause for revision surgery is implant loosening, which occurs when the bone surrounding the implant breaks down.

Bisphosphonates prevent this breakdown by impairing the function of cells in the body called osteoclasts, which digest bone.  
  
Using the General Practice Research Database (GPRD) – the world's largest computerised database of anonymous primary care medical records – the researchers identified 1,912 bisphosphonate users out of 41,995 patients who had undergone primary hip or knee replacement.

On analysing their data, they found that only 0.93 per cent of bisphosphonate users required revision surgery after five years compared to 1.96 per cent of non-users, and that the average time before revision surgery was required in bisphosphonate users was almost double that of non-users.  
  
Study lead, Professor Nigel Arden, senior researcher at the NIHR Musculoskeletal BRU says: "The prevalence of osteoarthritis is increasing significantly and with an ageing population and rising obesity, the need for joint replacements will increase dramatically over the next ten years.  
  
"Historically, research in this area has focused on the joint replacements themselves and the surgical techniques used to implant them.

This is the first time that a study on implant revision has focused on the patient and if this result is confirmed in clinical trials, bisphosphonate use would be a simple cost-effective intervention to improve the outcome of this increasingly common operation.

Based on this, more research should focus on the patient and the quality and metabolism of their bones."   
  
Professor Cyrus Cooper, Director of the MRC Lifecourse Epidemiology Unit at the University of Southampton says: "Joint replacements can offer a new lease of life for patients plagued by painful and debilitating osteoarthritis.

But failure of these replacement joints is a huge problem that can lead to further patient discomfort and expensive revision surgeries.  
  
"This study opens up an entirely new avenue for reducing replacement joint failure by using a relatively inexpensive class of drugs that is already licensed for use in a wide range of diseases.

It also demonstrates how marrying large national patient databases such as GPRD with active medical research can speed up translation of scientific discoveries to real improvements in human health."  
  
The researchers are now taking steps to gather more evidence to support the link between bisphosphonate use and increased implant survival in a full clinical trial.  
  
Health Secretary Andrew Lansley, says: "Thanks to Government funded research, we now know that patients with hip or knee implants can double the life of their implant by taking osteoarthritis drugs.  
  
"This is great news for patients as it means fewer painful operations.

It is also great for the NHS as it will save money and show it off to be a world class health service where the latest innovations benefit patients."   
  
Professor Dame Sally C. Davies, Chief Medical Officer and Chief Scientific Adviser at the Department of Health says: "I welcome the findings from this important study.

With such a high incidence of knee and hip replacement surgery, the possibility that the life of joint implants could be lengthened and reduce the number of complex revision surgeries means that these results have the potential to make significant improvements to the lives of many NHS patients."