



Information Sheet

The Canadian Joint Replacement Registry (CJRR) is a pan-Canadian information system held by CIHI that collects data on hip and knee replacement procedures performed across the country. CJRR was developed through a joint effort between CIHI and the orthopedic surgeons of Canada. The goal of CJRR is to provide information that will lead to improvements in the quality of care and clinical outcomes of joint replacement recipients.

Our Vision

Better data. Better decisions.
Healthier Canadians.

Our Mandate

To lead the development and maintenance of comprehensive and integrated health information that enables sound policy and effective health system management that improve health and health care.

Our Values

Respect, Integrity, Collaboration,
Excellence, Innovation

The Effect of Implant Materials on the Risk of Having a Repeat Surgery After Total Hip Replacement

Study at a Glance

Every year, more than 40,000 Canadians have a hip replacement surgery to improve mobility and reduce pain. Typically, the hip implants used in these replacements will work well for 10 to 15 years or more, but in some cases there is a need for an earlier repeat surgery to replace the original implant—referred to as a revision surgery.

The Canadian Institute for Health Information (CIHI) assessed a number of factors, including the effect of different implant materials on a patient's risk of needing to have an artificial hip replaced earlier than expected. This study looked at the need for repeat replacements within five years of the first hip replacement surgery. Based on data from almost 60,000 total hip replacements, the most common types of hip implants in Canada (excluding Quebec) were

- Metal-on-plastic (73%);
- Metal-on-metal (9%);
- Ceramic-on-ceramic (8%); and
- Ceramic-on-plastic (5%).

Patients were at a higher risk of having a repeat hip replacement surgery within five years of their first hip replacement if they met any of the following criteria:

- Were younger than age 55
- Had pre-existing health problems at the time of the first surgery
- Had their first surgery performed in the Atlantic region of Canada
- Had a large-diameter modular metal-on-metal hip implant, a specific type of metal-on-metal implant

What Is a Total Hip Replacement?

A total hip replacement involves removing a hip that has become diseased or broken and implanting an artificial joint. This consists of a ball—which can be metal or ceramic—that replaces the top of the leg bone, and a metal cup—which can include a plastic, ceramic or metal lining that touches the ball—that replaces the natural socket. A metal-on-plastic hip means the ball is made of metal and the socket is lined with a plastic surface (the metal moves against the plastic).

Surgeons carefully choose which materials to use for a joint replacement surgery. They consider a patient's age, sex and level of physical activity. Some doctors may also prefer to use one type of material over another based on previous experience.

Sometimes hip implants may become painful or not work as they were intended and therefore need to be replaced. Reasons for this include an infection in the joint or complications that cause the implant to stop working properly. Patients may then need another surgery to revise the original implant, which affects their quality of life and increases costs to the health care system.

Reference

Canadian Institute for Health Information.
The Effect of Bearing Surface on Early Revisions Following Total Hip Arthroplasty. Ottawa, ON: CIHI; 2013.
www.cihi.ca/cjrr.

CIHI's finding that large-diameter modular metal-on-metal hip implants have a higher rate of early replacement is consistent with studies conducted in the United Kingdom and Australia.

Why Do These Findings Matter?

Patients whose hip implants need early replacement undergo an additional surgery sooner and have longer recovery and rehabilitation periods. These repeat procedures are also costly to the health care system.

People who have had the large-diameter modular type of metal-on-metal artificial hip implants or who have other risk factors—such as a pre-existing long-term medical condition—may not necessarily require an early replacement; they may just be at a higher risk of needing one.

Background

CIHI specifically looked at the risk of needing an early replacement within five years of the first surgery and also at other factors, including the age and sex of the patient, the region of the country the first surgery took place in, the year the first surgery occurred and whether the patient had any pre-existing long-term medical conditions during the first surgery.

CIHI used data from the Canadian Joint Replacement Registry and the Discharge Abstract Database to conduct what is currently the largest-scale study in Canada on this topic. Data in this study was based on voluntarily submitted data on surgical procedures that occurred between 2003–2004 and 2010–2011; these records represent between 37% and 41% of the total hip replacements—outside of Quebec—that were performed in Canada. Quebec elected to not participate in this study.

Visit www.cihi.ca for more information on this study and on joint replacement in Canada. If you have any questions, please contact us at communications@cihi.ca.