

Implantology Workshop — Summary Report

Funding: Network for Canadian Oral Health Research (NCOHR): Team Connect Development Program

Workshop Title: Western Implantology Workshop

Team Leads:

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- Yolanda Hedberg PhD, Faculty of Science and Bone and Joint Institute, Western University

Dates: November 7–8, 2025

Location: Western Research Parks, Western University, London, Ontario

Purpose

This two-day workshop convened multidisciplinary experts across dentistry, orthopaedics, material science, science, engineering, and industry to strengthen cross-sector collaboration with the aim to identify design, material and patient factors that contribute to failed implants to inform future research and improve patient outcomes.

Background and Rationale

This past year, more than 400,000 Canadians received a knee, hip, shoulder, or dental implant. These procedures help reduce pain, restore mobility and function, and improve quality of life. But even with excellent care, some implants do not perform as expected. Approximately 1 in 20 orthopaedic implants and up to 1 in 5 dental implants fail earlier than expected, sometimes leading to serious complications, such as infection, severe tissue reactions, pain, impaired function and quality of life. Although dental and orthopaedic implants are made from many of the same materials, the two fields rarely collaborate or share data. To help address this gap, funding from the Network for Canadian Oral Health Research (NCOHR) supported a two-day Implantology Workshop at Western University to explore how to make implants safer and more reliable.

Participation

More than 50 leading experts from across Canada and US, representing six Canadian universities (Western University, University of Waterloo, University of Guelph, University of Calgary, University of Toronto, University of Manitoba), one US university (University of Illinois), two hospitals (London Health Sciences Centre, Ottawa Hospital), Middlesex London Health Unit and industry representatives from implant manufacturing and medical imaging companies.

Workshop Goals and Objectives

Objectives:

1. Team Building – Establish new collaborations across disciplines and sectors
2. Identify new research projects for future grant application development

Goals:

- Identify priority research questions and shared mechanisms driving implant failure across dental and orthopaedic contexts.

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- Determine opportunities to advance approaches to reduce failure, related to chronic infection (and related complications).
- Define opportunities to standardize implant retrieval, data capture, and analysis nationally.
- Identify ways to strengthen the pathway from research evidence to regulation and clinical practice.
- Identify training, infrastructure, and partnership needs (including industry and imaging partners).

Key Themes Discussed

- Causes and mechanisms of implant failure (dental and orthopaedic)
- Chronic infection as a shared challenge
- Data sharing and standardization (e.g., implant retrieval/analysis)
- Research-to-regulation pathway
- Implant/medical and dental tourism considerations
- Establishing a National Library for Implant Failures

Agenda overview

November 7, 2025 (Day 1)		
8:00 am	Breakfast	
8:45 am	Welcome and Workshop Goals	
9:00 am	Presentations	<ol style="list-style-type: none"> 1) <i>The Orthopaedic Implant Retrieval Lab</i>: Dr. Matt Teeter 2) <i>Dental Implants: the Good, the Bad, and the Ugly</i>: Dr. Les Kalman 3) <i>Material Research and Implants</i>: Dr. Rodrigo Franca 4) <i>Insights from Corrosion Science</i>: Dr. Yolanda Hedberg
10:00 am	Panel Discussion	<i>Industry, Clinician, and Researcher Insights into Implant Failures</i> Zachary Birch, Dr. Saman Nikpour, Dr. Madhu Bhattacharya, Dr. Les Kalman
11:30 am	Facilitated Group Discussions	<ul style="list-style-type: none"> • <i>Manufacturers, Materials, & Surface Factors</i> • <i>Surgeon & Procedural Factors</i> • <i>Local, Systemic, & Patient Factors</i>
12:30 pm	Lunch	
1:00 pm	Tours/Lunch	<i>Surface Science Western</i>
2:15 pm	Facilitated Group Discussions	<ul style="list-style-type: none"> • <i>How to Connect Regulators and Researchers</i> • <i>Medical and Dental Tourism</i> • <i>Establishing a National Library for Implant Failures</i>
3:30 pm	Networking	
November 8, 2025 (Day 2)		
9:30 am	Discussion Session 1	Infection and Implants
11:00 am	Discussion Session 2	Implant Retrieval Protocols and Data Collection
12:00 pm	Lunch	
1:00 pm	Discussion Session 3	Research Updates

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Immediate Outcomes from the workshop

- Documented cross-sector priorities and shared challenges.
- New connections among researchers/clinicians/Middlesex London Health Unit/industry partners.
- Commitment to develop a Canadian Implant Retrieval Program (proposed/endorsed)
 - Goal: Link the two largest implant retrieval labs (Western University; University of Manitoba) and to standardize collection and analysis of failed dental and orthopaedic implants.
 - Rationale: Improve understanding of failure mechanisms, particularly in cases involving chronic infection.
 - Initial scope: specimen types, participating sites, minimum dataset, governance, ethics/consent, data platform.

Next Steps and Future Plans

- Team Co-leads to present at 2026 Titanium Europe- International Titanium Conference (April 2026, France) and 2026 Titanium USA - International Titanium Conference (October 2026, USA)
- Prepare Opinion White Paper on implant cleaning and storage procedures of dental and orthopaedic implants
- Explore potential partnerships with local dental clinics to retrieve failed dental implants to Canadian Implant Retrieval Program
- Collect pilot data and develop research proposal for future grant funding opportunity (e.g. Fall 2026 Canadian Institutes of Health Research Project Grant)
- Meeting with local (London) MPP to discuss issues related to implant failure and insurance coverage
- Publish manuscripts with research based on Implant Retrieval

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