University of Victoria | Institute on Aging & Lifelong Health

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THE IALH UPDATE

In this issue:

Exploring Metal Hypersensitivity

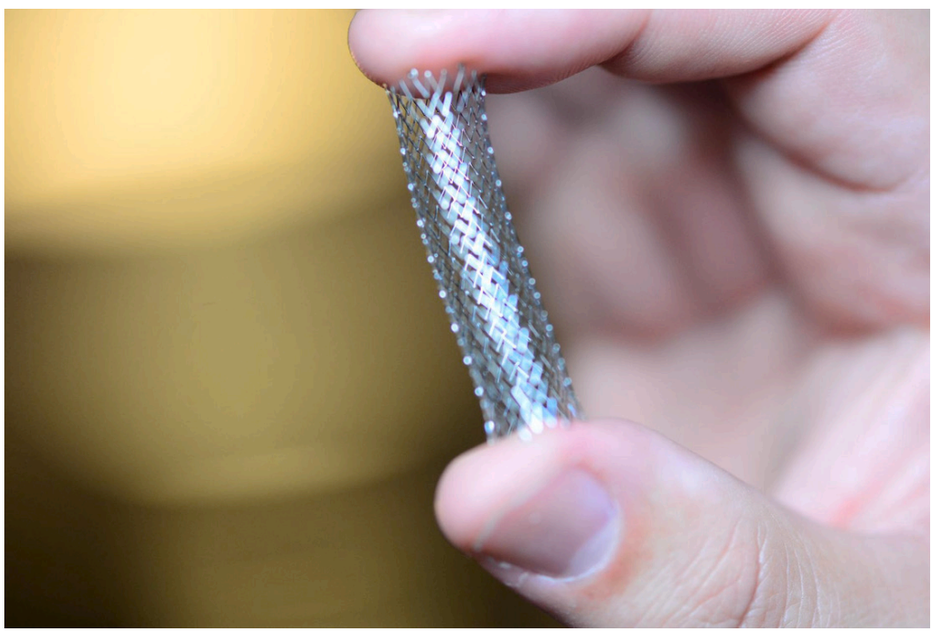

Photo credit: Getty images

Working with colleagues in Brazil, IALH Research Fellow Dzifa Dordunoo (Nursing) recently published a paper examining the scientific literature on metal hypersensitivity. Metals that can cause hypersensitivity reactions include chromium, cobalt, nickel, platinum, mercury, titanium, silver and gold. These metals are commonly found in coronary devices such as stents, in orthopedic devices such as surgical implants and joint prostheses, and in dental implants, fillings and crowns. Complications associated with metal-bearing devices include acute and chronic pain, unexplained skin rashes, eczema, delayed healing, and device failure. Metal hypersensitivity is believed to affect about 20% to 30% of the global population.

The goals of this project were to: a) assess peer-reviewed articles regarding metal hypersensitivity; and b) identify gaps requiring further exploration. The authors searched the Scopus database from 1946 to 2020 for publications written in English, Spanish or Portuguese. A total of 804 papers were retrieved. Of these, the majority came from American, European, and Asian countries with the largest number of papers being published in the US, Germany and Japan. Interest in metal hypersensitivity appears to have increased over time. For example, an average of 18.5 articles on metal hypersensitivity were published annually between 1946 and 1974. Between 2016 and 2020, the annual average was 32.6 articles.

Nurses have considerable contact with patients in clinical settings, play a vital role in the management of individuals undergoing medical procedures requiring implantable devices, and provide critical assessments that influence decision-making throughout pre-operative, intra-operative and post-operative phases. Despite this, the researchers noted that most papers regarding metal hypersensitivity were published in journals related to dermatology and orthopedics; publications regarding metal hypersensitivity were lacking in nursing journals.

The authors also noted that "identification of patients with a history of metal hypersensitivity is required to reduce the risk of complications and adverse events….however, this topic is still poorly studied/explored."

The authors concluded that "Metal hypersensitivity is a multifaceted problem that presents an opportunity to apply translational and multidisciplinary research teams and approaches…More investment is needed in studies to improve the knowledge of professionals, patients and researchers regarding hypersensitivity to metals as well as their risks, diagnostic tests, and prognosis following implant."

To read the full article, go to https://journals.sagepub.com/doi/10.1177/23779608221132164

Regular Exercise and the Immune System

The following is adapted from an article that appeared in the September 2022 issue of **In the Loop**, *Self-Management BC's monthly newsletter.*

Health organizations such as the US Centers for Disease Control and the World Health Organization advise people to exercise regularly. Exercise immunology is a relatively new area of research with 90% of papers published within the last 30 years. Researchers define exercise immunology research as studying acute and chronic effects of various exercise workloads on the immune system and immunosurveillance. Immunosurveillance is a term used to describe the processes by which immune system cells look for and recognize foreign pathogens such as bacteria and viruses or pre-cancerous and cancerous cells in the body.

A 2019 review published in the *Journal of Sport and Health Science* concluded, "The immune system is very responsive to exercise, with the extent and duration reflecting the degree of physiological stress imposed by the workload." Highlights from the review included the following:

- Data support a clear inverse relationship between moderate exercise training and illness risk (the more exercise, the lower the risk of getting sick).
- Exercise training has an anti-inflammatory influence mediated through multiple pathways.
- Habitual exercise improves immune regulation, delaying the onset of age-related dysfunction.

Photo credit: Pille Kirsi, Pexels.com

The *MedlinePlus* website notes that at this time, experts have proposed several yet-to-be-proven theories on how exercise may help the immune system. David Nieman, a professor in the department of biology at Appalachian State University and director of the university's Human Performance Laboratory, has studied exercise and the immune system. One theory is that exercise increases blood and lymph flow as the muscles contract, increasing the rate and number of circulating immune cells. Neiman explains that exercise helps to recruit highly specialized immune cells to find pathogens such as viruses and wipe them out. He notes that researchers have found that immune cells increase for up to three hours after a 45-minute brisk walk. If you walk the next day, the process repeats. Another study by Neiman and colleagues found that people doing five or more days of aerobic exercise saw a 40% reduction in the frequency of upper respiratory tract infections such as the common cold over a 12-week period. Exercise is "a housekeeping activity, where it helps the immune system patrol the body and detect and evade bacteria and viruses." Regular movement better prepares the body to wipe out germs that cause illness.

Exercise can also indirectly support the immune system by improving sleep and mood and lowering stress. Being physically active has many other benefits, such as controlling appetite, improving mood and sleep, and reducing the risk of heart disease, stroke, diabetes, dementia, depression and many cancers.

What types of exercise increase immune function? Do something that increases your heart rate, meaning you push the pace a bit when you walk to recruit immune cells into circulation. The *MedlinePlus* website suggests doing the following activities:

- Take 20 to 30-minute walks daily
- Go to the gym every other day
- Play golf regularly

Dr. Christopher McMullen is a sports medicine doctor at Harborview Medical Center and The Sports Medicine Clinic at South Lake Union. He explains that any amount of exercise is better than none and promotes the national guidelines of 150 minutes of moderate intensity exercise or 75 minutes of vigorous intensity exercise weekly. Dr. Alex Wadley is a lecturer at the School of Sport, Exercise and Rehabilitation Science in Birmingham, UK. He states that, "Any increase in physical activity is of benefit." While 150 minutes is the goal,

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any burst of activity daily for a few minutes " can benefit immune function and general health." Examples include walking around the garden, jogging or marching in place, doing sit-to-stand exercises, or taking the stairs.

Dr. Julia Alleyne is an Associate Professor at the Dalla Lana School of Public Health. She promotes moderate exercise, that is, a light sweat and warm glow, with a 30-minute workout three times a week. She states:

- Our bodies crave movement. We need to move.
- Exercise and activity have wide-ranging benefits for all ages and stages.
- Moderate exercise strengthens our immune response.
- Start low, build slow, stay with it, and set goals.
- Have fun!

The bottom line is that movement is vital for the human body. It is never too late to start being active. Harvard Medical School states, "Exercising regularly, every day if possible, is the single most important thing you can do for your health."

Sources: Nature website, MedlinePlus website, Healthline website, Health website, Harvard Medical School website, Harvard Medical School website, Canadian Academy of Sport and Exercise Medicine Physical Activity Factsheets, University of Washington Medicine Right as Rain website, New York Times website, Cleveland Clinic website, Dr. Julia Alleyne PowerPoint presentation

Resources

Canadian Longitudinal Study on Aging (CLSA) Webinars

Chronic cough is a common condition that affects approximately 10% of the general population world-wide. It is one of the most common reasons for seeking medical attention and referral to a specialist. Individuals with chronic cough often cough hundreds of times a day. This is associated with substantial impairment in physical, social, and psychological quality of life, including urinary incontinence, chest pains, headaches, anxiety, and frustration. In the November 2022 CLSA webinar, Dr. Imran Satia, an Assistant Professor of Respiratory Medicine at McMaster University discusses risk factors for, and the impact of, chronic cough as well as potential neuro-physiological mechanisms of diseases. For more information on this and other presentations involving data from the CLSA, go to https://www.clsa-elcv.ca/webinar-videos

Dementia in Canada: Cross-Country Report

Data from the 2021 census indicates that the Canadian population is aging faster than ever with about 19% of working individuals nearing retirement. Seniors aged 85 and older are one of the fastest-growing segments of the population having increased as a group by 12% since the 2016 census.

Although dementia is not a normal part of aging, the risk of developing dementia increases substantially with age. For example, after age 65, the risk of developing Alzheimer's disease (the most common form of dementia) doubles about every five years. It is estimated that about 25% of individuals 85 years of age and older have Alzheimer's disease. But dementia is not restricted to those over 65. The Alzheimer Society of Canada has estimated that between 2% and 8% of all dementia cases affect individuals less than 65 years of age. Currently, about 600,000 Canadians are living with dementia. It is estimated that by 2050, that number will increase to 1.7 million.

A recent report from CanAge examines what each Canadian province and territory is currently doing to address the prevalence of dementia. Highlights from the report include the following:

- The percentage of Canadians 65 years of age and old ranges from 4.4% in Nunavut to 23.6% in Newfoundland and Labrador.
- The percentage of primary care physicians who have sufficient skills and experience to manage dementia ranges from 19% (in Yukon, Northwest Territories and Nunavut) to 50% in New Brunswick and 52% in Nova Scotia.
- Four jurisdictions (PEI, Newfoundland and Labrador, Northwest Territories and Yukon) currently have a dementia strategy in place.

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- Three jurisdictions (Alberta, Nova Scotia and Nunavut) publish resources for individuals (and their families) who suspect they may have dementia encouraging them to contact a health care provider for assessment.
- Six jurisdictions (Alberta, Saskatchewan, Manitoba, New Brunswick, Yukon and Northwest Territories) publish resources for caregivers of individuals with dementia.

The authors concluded "[Canada] is not adequately prepared to support the number of people with dementia now – let alone the [projected] growth in the future."

The CanAge report provides an opportunity to assess where Canada currently stands as well as where there is room for improvement. To read the full report, go to https://www.canage.ca/advocacy/dementia-report-2022/

Congratulations

IALH Student Award Recipients

Congratulations to all of the 2022-2023 IALH Student Award Recipients:

Neena Chappell Scholarship - Cynthia McDowell (Psychology)
Project Title: *Longitudinal Patterns and Predictors of Cognitive Impairment Classification Stability*

Ferguson Graduate Award in Digital Health - Taylor Snowden-Richardson (Division of Medical Sciences)
Project Title: *Brain Gain: Identifying Candidate Dementia-Related Biomarkers and Early Intervention Strategies for Adults Aged 50+ with a History of Mild Traumatic Brain Injury*

Elaine Gallagher Award - Faria Athar (Biology)
Project Title: *Understanding the Nutritional Regulation of Aging and Reproductive Health*

Elaine Gallagher Award - Jessica Percy Campbell (Political Science)
Project Title: *Aging in Place with Google and Amazon*

David Chuenyan Lai Scholarship - Audrey Tung (Geography)
Project Title: *A Room of One's Own: Holding Space for Women Who Are Underhoused*

Alice Lou-Poy Graduate Scholarship - Brady Reive (Division of Medical Sciences)
Project Title: *Cognitive Outcomes Following Chronic Stress and Reelin Treatment and Development of a Novel Blood-Based Biomarker for Alzheimer's Dementia*

UVic Retirees Association Award - Ashleigh Parker (Psychology)
Project Title: *Earlier Detection of Alzheimer's Disease: Investigating Brain-Based Changes in Older Adults with Subjective Cognitive Decline*

UVic Retirees Association Award - Sanjit Roy (Social Dimensions of Health)
Project Title: *Elder Abuse Among Canadian Veterans: A Comprehensive Examination Using the Canadian Longitudinal Study on Aging*

Early Career Researcher Award

Congratulations to IALH Research Fellow Jae-Yung Kwon (Nursing) on receiving an Early Career Researcher Award from the Canadian Frailty Network and AgeWell for a project entitled *Journey Mapping Patient-Reported Data for Older Adult Patients with Cancer*.

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