



## RESEARCH UPDATES JUNE/JULY 2015

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### FOR THE LATEST IN WORLDWIDE INTEGRATIVE CANCER CARE

**IN THIS ISSUE:** Turner and colleagues compare fatty acid profiles between conventionally-organically-, and naturally-fed beef. A paper by Hammer’s team reviews self-management techniques for adult cancer survivors. Panahi and colleagues look at curcuminoid supplementation for quality of life and anti-inflammatory effects. Chaoul and colleagues look at the role of mind-body practices in cancer care. Phillips et al. review the influence of exercise on health-related quality of life in men with prostate cancer. The Into the Vault Study reviews comorbidities which cancer survivors may be at higher risk for following cancer treatment.

### FATTY ACIDS

Turner, T. D., Jensen, J., Pilfold, J. L., et al.

#### **Comparison of fatty acids in beef tissues from conventional, organic and natural feeding systems in Western Canada.**

*Canadian Journal of Animal Science* (2015), 95, 49-58.

**ABSTRACT:** The effect of production system on intramuscular and associated trim fatty acid (FA) profiles of retail ribeye steaks from conventional and niche market organic and natural (grain- or grass-fed) beef were compared. Meat from organic grain- and grass-fed systems was leaner, containing greater proportions of polyunsaturated FA, i.e., 18:3n-3, 20:5n-3, 22:5n-3, 22:6n-3. Correspondingly, the n-6/n-3 ratios of organic grain- and grass-fed systems were 3:1, while conventional and natural grain systems had ratios of 8:1. High forage-to-grain ratio production systems increased proportions of desirable biohydrogenation intermediates (BI), including t11-18:1 and c9,t11-18:2, whereas conventional and natural grain systems elevated t10-18:1. Trim fat was similarly affected by production system, and was a relatively richer source of BI. Overall, proportions of desirable FAs, including n-3 and BI, were greater for organic grain and grass-fed systems, emphasizing the importance of a high forage-to-grain ratio to enhance the healthfulness of beef, whereas conventional and natural grain-fed systems were largely equivalent.

**INSPIREHEALTH’S INTERPRETATION:** For health, food quality, environmental, and animal welfare reasons there is a growing interest in choosing meats from pasture-raised and/or organically-fed animals. These Alberta and British Columbia researchers examined the fatty acid (fat) content and composition in beef ribeye steaks from conventionally-raised, natural grain-fed, certified organic grain-fed, natural grass-fed, and forage-fed organic grass production systems. Most Canadian beef is conventionally raised. Hormones and antibiotics are often used and it is typically finished on barley grain which represents 70-90% of the diet. Organic grain-fed cattle eat up to 40% organic grain while organic grass-fed animals forage strictly on natural pasture and grass. All organic beef production requires adherence to specific guidelines for feed as well as for animal health and welfare, including not allowing growth promoters or antibiotics.

The newer term “natural” is not clearly defined or regulated so it’s important to read the label for information about the specifics of how the animal was raised and fed. Many natural beef producers follow organic practices but without using strictly organic feeds. Beef from 16 grocery stores in Western Canada representing these five production systems was analyzed for its fatty acid content in both lean meat and trim fat components. Total lean meat fat content was similar for the conventionally-raised and natural grain-fed animals, and was greater than in the organic grain, organic grass and natural grass fed animals. The polyunsaturated fatty acids (PUFA’s) in the lean meat also differed by food source. The organic and natural grass fed meat had the greatest proportion of healthful omega-3 fatty acids, followed by organic grain fed, while conventional and natural grain fed had the lowest proportions. These increased omega-3 fatty acids resulted in a 3:1 omega-6/omega-3 ratio in the organic grass,

natural grass, and organic grain-fed animals, compared to an 8:1 omega-6/omega-3 ratio found in conventionally-raised and natural grain fed meat.

The authors site research stating an omega-6/omega-3 ratio below 4:1 as best for an optimal inflammatory/anti-inflammatory response. Similar fatty acid profiles were also noted in the trim fat thus rendering even ground beef from forage-fed animals more healthful than from conventionally-raised animals. Forage grass intake also favours the production of specific compounds (biohydrogenation intermediates) and the growth of specific microbes during and for the metabolism of the forage grass. There is some evidence that the production of these particular biohydrogenation intermediates, which are also deposited into the animals' tissues, may help to reduce the risk of cancer, diabetes and cardiovascular disease. The authors concluded that while meat from organic and natural grass fed beef was leaner, with greater omega-3 PUFA concentrations and a lower omega-6/omega-3 ratio, organic grain meat was largely comparable to grass-fed with respect to its fatty acid content and profile. This study would suggest that choosing beef that is organic grass fed, organic grain fed, or natural grass fed will provide the eater with a more optimal fatty acid profile. This will help to balance inflammation in the body more appropriately, especially if the diet is low in fish. Like with humans, cows are made of what they eat, and have those properties to pass along to us through our meals.

For meat eaters, choosing healthier meats can provide important protein, fat, vitamin, and mineral needs. Though organic and pasture-raised beef can be more expensive, limiting portion-size and frequency of consumption, and having as an accessory to a plant based diet, will benefit your overall health and wellness.

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## SELF MANAGEMENT

Hammer, M.J., Ercolano, E.A., Wright, F., et al.

### Self-management for adult patients with cancer: An integrative review.

*Cancer Nursing* (2015), 38(2), E10-E26

**BACKGROUND:** Individuals with cancer are surviving long term, categorizing cancer as a chronic condition, and with it, numerous healthcare challenges. Symptoms, in particular, can be burdensome and occur from prediagnosis through many years after treatment. Symptom severity is inversely associated with functional status and quality of life. **OBJECTIVE:** Management of these millions of survivors of cancer in a stressed healthcare system necessitates effective self-care strategies. The purpose of this integrative review is to evaluate intervention studies led by nurse principal investigators for self-care management in patients with cancer. **METHODS:** PubMed, CINAHL (Cumulative Index to Nursing and Allied health Literature), and the Cochrane Database were searched from January 2000 through August 2012. Search terms included "symptom management and cancer," "self-management and cancer," and "self-care and cancer." All articles for consideration included intervention studies with a nurse as the primary principal investigator. **RESULTS:** Forty-six articles were included yielding 3 intervention areas of educational and/or counseling sessions, exercise, and complementary and alternative therapies. Outcomes were predominately symptom focused and often included functional status and quality of life. Few studies had objective measures. Overarching themes were mitigation, but not prevention or elimination of symptoms, and improved quality of life related to functional status. No one intervention was superior to another for any given outcome. **CONCLUSIONS:** Current interventions that direct patients in self-care management of symptoms and associated challenges with cancer/survivorship are helpful, but incomplete. No one intervention can be recommended over another. Implications for Practice: Guiding patients with cancer in self-care management is important for overall functional status and quality of life. Further investigation and tailored interventions are warranted.

**INSPIREHEALTH'S INTERPRETATION:** Reasons like early detection and targeted treatments mean that many people with cancer are now living longer and managing their cancer as a long-term chronic condition. Becoming an active participant in one's care can be an effective and empowering way to mitigate symptoms and improve quality of life (QOL). This paper reviewed 46 intervention studies led by nurse principal investigators. Three intervention areas were examined: educational and/or counseling, exercise, and complementary and alternative therapies (CAM). Most studies evaluated these interventions for the management of pain, nausea and vomiting, fatigue, sleep disturbance, physical functioning, and QOL. Though a variety of cancers were included, most studies were conducted only on women with breast cancer perhaps limiting the widespread applicability of the findings. Educational and/or counseling interventions typically utilized cognitive behavioural-type therapies to help shift patients' perceptions, behaviours, and beliefs to better self-manage cancer-related challenges. Both in-person and telephone sessions were evaluated.

Overall patients reported benefit in a variety of symptoms including QOL. Exercise has been widely studied as an effective way to mitigate or even counteract a myriad of cancer/treatment-related symptoms, including perhaps counterintuitively, cancer-related fatigue. This review supports exercise's many benefits. Easily done, simple walking was the most commonly utilized exercise modality in these studies. Complementary and alternative therapies cover a wide range of possibilities from herbal remedies and acupuncture to virtual reality (VR) distraction. VR distraction uses an interactive computer-based technology that allows patients to hear and feel stimuli corresponding to a screen image. Several senses are simultaneously engaged allowing people to become immersed in the distraction.

Evaluating the broad category of CAM therapies is very difficult due to the tremendous variety of therapies available. Though these authors only included a few CAM studies utilizing different modalities and measuring different outcomes, they reported “an underlying theme of benefit”. A review of this type is a large undertaking and the variety of interventions and outcomes examined means robust conclusions cannot be drawn. However, most findings were positive, indicating the importance of seeking out and implementing effective strategies for self-care. Walking, education, cognitive restructuring and a variety of safe CAM therapies are readily available and accessible to help optimize your overall wellbeing.

## CIRCUMINOIDS

Panahi, Y., Saadat, A., Beiraghdar, F., et al.

### Adjuvant therapy with bioavailability-boosted curcuminoids suppresses systemic inflammation and improves quality of life in patients with solid tumors: A Randomized Double-Blind Placebo-Controlled Trial.

*Physiotherapy Research* (2014), 28, 1461-1467.

**ABSTRACT:** Curcuminoids are bioactive polyphenolics with potent anti-inflammatory properties. Although several lines of in vitro and preclinical evidence suggest potent anticancer effects of curcuminoids, clinical findings have not been conclusive. The present randomized double-blind placebo-controlled trial aimed to evaluate the efficacy of curcuminoids as adjuvant therapy in cancer patients. Eighty subjects with solid tumors who were under standard chemotherapy regimens were randomly assigned to a bioavailability-boosted curcuminoids preparation (180 mg/ day; n = 40) or matched placebo (n = 40) for a period of 8 weeks. Efficacy measures were changes in the health-related quality of life (QoL) score (evaluated using the University of Washington index) and serum levels of a panel of mediators implicated in systemic inflammation including interleukins 6 (IL-6) and 8 (IL-8), TNF- $\alpha$ , transforming growth factor- $\beta$  (TGF $\beta$ ), high-sensitivity C-reactive protein (hs-CRP), calcitonin gene-related peptide (CGRP), substance P and monocyte chemoattractant protein-1 (MCP-1). Curcuminoid supplementation was associated with a significantly greater improvement in QoL compared with placebo ( $p < 0.001$ ). Consistently, the magnitude of reductions in TNF- $\alpha$  ( $p < 0.001$ ), TGF $\beta$  ( $p < 0.001$ ), IL-6 ( $p = 0.061$ ), substance P ( $p = 0.005$ ), hs-CRP ( $p < 0.001$ ), CGRP ( $p < 0.001$ ) and MCP-1 ( $p < 0.001$ ) were all significantly greater in the curcuminoids versus placebo group. In contrast, the extent of reduction in serum IL-8 was significantly greater with placebo versus curcuminoids ( $p = 0.012$ ). Quality of life variations were associated with changes in serum TGF $\beta$  levels in both correlation and regression analyses. Adjuvant therapy with a bioavailable curcuminoid preparation can significantly improve QoL and suppress systemic inflammation in patients with solid tumors who are under treatment with standard chemotherapy protocols.

**INSPIREHEALTH'S INTERPRETATION:** Curcuminoids are naturally found in turmeric, a popular spice, and have anti-inflammatory and anti-metastatic properties. These phytochemicals have remarkable anti-tumor properties in preclinical studies for a variety of cancers. However, clinical trials with curcuminoids and cancer patients typically only have a mild-to-modest effect. Researchers believe that this is because only a small amount of natural curcuminoids consumed actually enter the bloodstream. Most curcuminoids consumed move right through the digestive tract and are not available for use in the body. Therefore, although curcuminoids have potential health benefits, their ‘bioavailability’ is quite low.

This study looked at the effects of a bioavailability-enhanced curcumin supplement on inflammation and quality of life in cancer patients undergoing chemotherapy. The curcuminoid supplement that the patients took contained a type of fat (phosphatidylcholine) that increased the absorption of the curcuminoids. Study participants had various types of cancers and received standard chemotherapy throughout the duration of the study. This study was placebo-controlled, meaning one group of participants took a curcuminoid supplement while the other group took a placebo (a ‘sham’ pill that looked the same as the curcuminoid supplement but contained no active components); double-blind, meaning both participants and researchers did not know who was taking a curcuminoid supplement and who was taking a placebo (this controls for bias); and randomized, meaning participants were randomly assigned to either the curcuminoid or placebo group.

The curcuminoid group received 180mg of curcuminoids per day for eight weeks. Prior to the study as well as at the end of the eight weeks, a health-related quality of life assessment was performed in addition to a blood test that measured eight markers for inflammation (interleukin-6, interleukin-8, C-reactive protein, TNF- $\alpha$ , monocyte chemoattractant protein-1, calcitonin gene-related peptide, monocyte chemoattractant protein-1, transforming growth factor- $\beta$ , and substance P). Following the eight weeks, both groups exhibited a significant improvement in quality of life; however, the increase was significantly higher for the curcuminoid than the placebo. The group that took the curcuminoids had a significantly greater decrease in seven of the eight inflammation biomarkers compared to the placebo group (from 3 to 28 times more).

Although this study has limitations (i.e., small number of participants, baseline measurements not matched between groups), the use of bioavailability-boosted curcuminoids during chemotherapy seems promising and warrants further investigation.

## MIND-BODY PRACTICES

Chaoul, A., Milbury, K., Sood, A.K., et al.

### Mind-body practices in cancer care.

*Journal of Cancer Survivorship* (2015), DOI 10.1007/s11764-015-0426-2

**ABSTRACT:** Being diagnosed with a life-threatening disease such as cancer and undergoing treatment can cause unwanted distress and interferes with quality of life. Uncontrolled stress can have a negative effect on a number of biological systems and processes leading to negative health outcomes. While some distress is normal, it is not benign and must be addressed, as failure to do so may compromise health and QOL outcomes. We present the evidence for the role of stress in cancer biology and mechanisms demonstrating how distress is associated with worse clinical outcomes. The National Comprehensive Cancer Network states that all patients be screened with the single-item distress thermometer and to also indicate the source of distress and to get appropriate referral. In addition to the many conventional approaches for managing distress from the fields of psychology and psychiatry, many patients are seeking strategies to manage their distress that are outside conventional medicine such as mind-body techniques. Mind-body techniques such as meditation, yoga, tai chi, and qigong have been found to lower distress and lead to improvements in different aspects of quality of life. It is essential that the standard of care in oncology include distress screening and the delivery of different techniques to help patients manage the psychosocial challenges of diagnosis and treatment of cancer.

**INSPIREHEALTH'S INTERPRETATION:** Mind-body practices aim to unionize thoughts, emotions, feelings, and spirituality in the mind to behaviours and physiological processes in the body. This article serves as an overview of how mind-body practices may affect health, largely related to stress and quality of life of cancer survivors. The authors note that scientific studies have found little evidence that stress may initiate cancer, but there is extensive evidence that shows that stress may facilitate cancer growth. Mind-body practices may reduce chronic stress, which in turn may reduce tumor growth and progression. Many types of mind-body practices exist but research studies are typically specific to one type of practice.

For example, mindfulness-based stress reduction is the most commonly studied type of meditation. Mindfulness-based stress reduction has been found to reduce levels of anxiety, depression, and long-term emotional and physical adverse effects of medical treatments. Other forms of meditation have been found to improve mental health, spirituality, and decrease fear of the future in cancer survivors. Movement-based mind-body practices include yoga, tai chi, and qigong, which focus on the harmonic synchronization of body, breath, and mind. Yoga among cancer survivors is now widely researched and studies have shown improvements in sleep quality, cancer-related fatigue, quality of life, and a reduction in inflammatory signals. There is evidence highlighting that the postures, breath-work, and meditation involved in yoga produces beneficial effects beyond simply being attentive and stretching. When choosing a yoga class, it is important to remember that there are many types of yoga and not all may be appropriate for cancer survivors. Tai chi and qigong have been studied less frequently than yoga but some studies have found that these practices improve fatigue, distress, circulation, and immune function.

Overall, the article concludes that mind-body practices have the ability to influence the body as a whole. These practices are generally safe for cancer patients and may only require a minimum of 10-20 minutes per day for effects. The authors state that the best mind-body practice to reduce stress and increase quality of life is the one that a person will make a part of their life and do every day. InspireHealth offers mind-body practices such as yoga, meditation, and visual relaxation.

## PROSTATE CANCER

Phillips, S.M., Stampfer, K.J., Chan, J.M.

### Physical activity, sedentary behavior, and health-related quality of life in prostate cancer survivors in the health professionals follow-up study.

*Journal of Cancer Survivorship* (2015), DOI 10.1007/s11764-015-0426-2

**PURPOSE:** Many prostate cancer survivors experience compromised health-related quality of life (HRQOL) as a result of prostate cancer. We examined relationships between types and intensities of activity and sedentary behavior and prostate cancer-related HRQOL, overall, and by demographic, disease, and treatment characteristics. **METHODS:** Associations between post-diagnosis activity and sedentary behavior and HRQOL domains (urinary incontinence, urinary irritation/obstruction, bowel, sexual, and vitality/hormonal) were prospectively examined in men diagnosed with nonmetastatic prostate cancer in the Health Professionals Followup Study (n=1917) using generalized linear models. **RESULTS:** After adjusting for potential confounders, higher duration of total, non-vigorous, and walking activity was associated with higher vitality/hormonal functioning scores (p-trends, <0.0001). Effects were small (d=0.16–0.20) but approached clinical significance for men in the highest vs. lowest activity categories. Survivors who walked  $\geq 90$  min/week at a normal pace, or faster, reported higher hormone/vitality scores (p=0.001) than men walking <90 min at an easy pace. Weightlifting was associated with increased urinary incontinence (p-trend, 0.02). Total activity was associated with higher hormone/vitality functioning in men who were  $\geq 5$  years posttreatment, had more advanced disease (Gleason score  $\geq 7$ ), and had  $\geq 1$  comorbid condition. No relationships were observed between vigorous activity or sedentary

behavior and HRQOL. **CONCLUSIONS:** Increased duration of non-vigorous activity and walking post-diagnosis was positively associated with better hormone/vitality functioning. Specifically, engaging in  $\geq 5$  h of non-vigorous activity or  $\geq 3$  h of walking per week may be beneficial. **IMPLICATIONS FOR CANCER SURVIVORS:** Encouraging men to engage in non-vigorous activity and walking may be helpful for managing prostate cancer-related HRQOL.

**INSPIREHEALTH'S INTERPRETATION:** Many prostate cancer survivors experience psychological and physiological side effects which may affect health-related quality of life (HRQOL). HRQOL refers to the measures of health which may alter overall quality of life (i.e. bowel and urinary function, physical functioning, and hormone balance). Some studies have indicated that HRQOL is related to cancer survivorship, and therefore an important construct to measure. Physical activity (PA) has been implicated as a modifiable behaviour as a method of increasing HRQOL, and as such, the authors of this paper looked to see whether there was an association between PA engagement and HRQOL.

This study was part of a larger prospective observational study that began in 1986, which included 51,529 male health professionals. Participants were mailed surveys every two years, and were included in this aspect of the study if they (a) were post-treatment following a diagnosis of non-advanced prostate cancer received before 2008, (b) had reported PA behaviour before diagnosis and after treatment, and (c) reported measures of HRQOL in 2010. The researchers assessed PA by evaluating weekly reports of vigorous PA, non-vigorous PA, walking time, and weight-lifting time. They assessed sedentary time by looking at participants' sitting time, and assessed HRQOL by participants' reports of their bowel, sexual, vitality/hormone functioning, and urinary incontinence and irritation. Other potentially confounding factors were assessed as well (such as age, time since diagnosis, treatment, and physical activity levels before diagnosis).

The results indicated that total activity, non-vigorous activity, and walking were all associated with increased vitality/hormonal functioning, whereas men who exercised more experienced greater vitality/hormonal functioning when controlling for other potentially confounding variables. Men who walked at a normal to brisk pace had less urinary irritation than men who walked at an easy pace, and men who walked at a brisk pace had less urinary incontinence and better sexual functioning compared to men who walked at an easy pace. Additionally, weight-lifting was associated with increased urinary incontinence, which the researchers suggested may be due to the increased abdominal pressure brought on by weightlifting. There have been a number of other research studies highlighting the importance of weight lifting for men with prostate cancer, and it is therefore recommended to work with a trained professional when beginning a program.

Based on the findings in this paper, older prostate-cancer survivors may benefit from engaging in lower intensity PA (like walking), and further research (perhaps using an experimental design and objective measures of PA) should be done on this subject.

## INTO THE VAULT

Edgington, A., & Morgan, M.

### Looking beyond recurrence: Comorbidities in cancer survivors.

*Clinical Journal of Oncology Nursing* (2011), 15(1), E3-E12.

**ABSTRACT:** Cancer recurrence is a very real concern for cancer survivors. Surveillance for recurrence and vigilance for development of new cancers are top priorities during follow-up visits after active treatment ends. However, the cancer survivor also is at risk for the development of comorbid conditions. These conditions, including obesity, diabetes, dyslipidemia, menopause, decreased bone mass, hypertension, and hypothyroidism, are discussed with their relevance for general health and their relationships to disease-specific cancers. All of these conditions should be routinely addressed as part of the patient's survivorship care when appropriate. The oncology nurse is in a prime position to educate survivors about the risks for these conditions, both through evidence-based practice guidelines specific to each condition and also through the use of a treatment summary and care plan. This article discusses these selected comorbidities and offers strategies for nurses to address them with survivors during follow-up visits. Clinical practice guidelines for comorbidities are included, along with oncology implications and relevance for survivors. Recommendations for modifiable risk factors and healthy living also are included, along with Web sites for survivorship care plans.

**INSPIREHEALTH'S INTERPRETATION:** After the completion of cancer treatments, prevention of recurrence becomes an important focus. Because recurrence of cancer is such an important health concern to cancer survivors, other immediate health risks which cancer survivors may be put at greater risk of may be ignored. The authors of the article reviewed certain comorbidities (defined as two or more medical conditions that a patient experiences at the same time) related to developing cancer that have the potential to affect well-being and survivorship.

**Obesity:** Obesity is often defined as having a body mass index (BMI) greater than 30 kg/m<sup>2</sup>, and is related to the increased risk of many life-threatening conditions. Certain studies have found an increased prevalence of higher BMI for colorectal, prostate, breast, and endometrial cancer survivors.

**Diabetes:** Type II diabetes is a metabolic condition related to the inability to regulate insulin, and has been linked (although not causally) to increased prevalence of developing colorectal cancer for women.

**Dyslipidemia:** Commonly referred to as high cholesterol, dyslipidemia is a common condition in cancer survivors and the general population. Individuals that have used androgen-deprived therapy (ADT) to treat prostate cancer may experience higher cholesterol.

**Menopause:** Defined as the absence of menstruation for one year, menopause typically occurs around age 51 (with pre-menopause occurring at around the age of 47). Women that have received certain treatments (e.g., cytotoxic chemotherapies) may reach menopause more abruptly.

**Osteopenia/Osteoporosis:** Many people (not just cancer survivors) appear to be at risk for loss of bone density. Particularly high-risk groups for density include breast cancer survivors, prostate cancer survivors (using ADT), and bone marrow transplant survivors (using glucocorticoids).

**Hypothyroidism:** Symptoms of hypothyroidism can include fatigue and memory impairment, and may affect thyroid cancer survivors, and survivors that have had neck surgery or radiation above the midsection.

**Hypertension:** Noted as the most common comorbidity in cancer registries, certain treatments (e.g. bevacizumab, sorafenib, sunitinib) may make hypertension worse for survivors.

The article suggests that while cancer recurrence is widely focused on in oncology guidelines, evidence-based guidelines for treating comorbid conditions may be found outside of cancer care. Lifestyle factors such as regular exercise, whole foods diet, stress reduction, and reducing time spent sitting have all been shown to decrease risk of these comorbidities.

**InspireHealth** provides patients with the knowledge, tools, and services to support their overall health during and after cancer treatment. Our medical doctors value conventional cancer treatments such as chemotherapy, radiation, and surgery. At the same time, they recognize the importance of supporting health, immune function, body, mind, and spirit.

InspireHealth's programs are supported by current research and can be safely integrated with patient's conventional treatments.

InspireHealth's *Research Updates* are compiled by Rachel Mark, M.A. (kin)—with guidance from the editorial board—using InspireHealth's Research Information System, a unique integrative cancer care knowledge management database. The editorial board includes: Dr. Hal Gunn, MD, CEO and Co-founder, Dr. Janice Wright, MD, Dr. Hannah Nette, MD, Dr. Lori McFarlane, MD, Terry Heidt, M.Sc., and Dr. Jannémé Frouws, MD. For more information, email [library@inspirehealth.ca](mailto:library@inspirehealth.ca)

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