BC CANCER
Provincial Health Services Authority

ABSTRACTS

SUMMIT

NOVEMBER 20-22, 2025

Moving Together from Vision to Action

BC Cancer Summit 2025

Clinical/Clinical Research Poster Abstracts

This abstract booklet is organized by the Clinical/Clinical Research categories. Please click on the link below to view the list of abstracts within that category. Alternatively, search (Ctrl+F) by the category, author or abstract title.

The posters will be displayed from Thursday, November 20, 8:30am to Saturday, November 22, 11:00am. Each poster is assigned a board number. This information is indicated in table of contents in each section, under "Poster Locator". Please reference the Poster Location Map for the location of the boards.

Categories:

BC Cancer Summit 2025 – Clinical/Clinical Research Poster Abstracts

Patient Experience and Supportive Care

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1A SPREADING NUTRITION KNOWLEDGE: A SERIES OF NUTRITION IN-SERVICES FOR RADIATION THERAPISTS AT BC CANCER

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POSTER CATEGORY: Patient Experience and Supportive Care

BACKGROUND: Many patients that receive radiation treatment at BC Cancer also encounter side effects which limit their nutrition intake and can cause them to be at high nutrition risk. These patients interact with their radiation therapists often, while only a fraction have routine contact with dietitians. The purpose of our project was to bridge the nutrition knowledge that Registered Dietitians at BC Cancer have with the common nutrition side effects that patients report to their radiation therapists, while improving the interdisciplinary collaboration between these two teams. Our objective improves the quality of life, patient safety and treatment experience of patients by ensuring they receive consistent, accurate, and evidence-based nutrition messaging, address common nutrition questions that radiation therapists receive from patients, review the role of dietitians at BC Cancer and strengthen team-based care. This abstract summarizes our initiative of presenting nutrition in-services using the Nutrition Education Fund which took place over Fall 2024-Winter 2025 between the Vancouver Oncology Nutrition and Radiation Therapy teams.

SUMMARY/METHODS: Our methods included a needs assessment, library search, literature synthesis and five presentations of our in-service. The needs assessment was used to identify which nutrition questions radiation therapists had, to determine which tumour sites received the most specific questions (i.e. head & neck, lower GI etc.) and provide the opportunity for general questions. The most popular questions were general diet recommendations for nutrition symptom management during radiation treatment, the differences between fibre types, and when/hot to refer to BC Cancer dietitians. Using this information, we conducted a literature review with the help of BC Cancer Librarians and identified literature focused on these topics. Our PICO question was: “In people undergoing radiation treatment for head and neck and pelvic cancers, what specific nutrition and dietary fibre recommendations have the most evidence for positive effects and what is the consensus among other large cancer care centres across Canada, Australia and the US”. Our in-service presentation was designed using our findings and delivered five times over 2 days to ensure most radiation therapists could attend and participate.

RESULTS: All participants who attended our in-service were invited to provide feedback via a pre and post presentation survey. From those answers, we saw an increase in reported understanding of all topics presented, including nutrition topics during cancer treatment, types of dietary fibre, how and when to refer to BC Cancer dietitian services (20-60% to 100%). These results are summarized on our one-page infographic.

CONCLUSION: Our in-services were successful in connecting the BC Cancer dietitians and radiation therapists and demonstrated the need for continued sharing learning initiatives designed for these two departments. Based on feedback we received, these in-services should happen on a yearly basis to address emerging evidence and recommendations and used as part of on-boarding training for both radiation therapists and dietitians.

1B BARRIERS AND FACILITATORS TO ACCESSING TELEHEALTH CANCER SERVICES FOR UNDERSERVED COMMUNITIES IN CANADA.

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BACKGROUND: Telehealth supports the provision of cancer care and offers opportunities to improve access to, and continuity of, services. However, little is known about the factors that hinder or facilitate access among underserved communities in Canada, who may face unique structural and social barriers to cancer care.

OBJECTIVE: To identify and synthesize barriers and facilitators to accessing telehealth cancer services for underserved communities in Canada.

METHODS: A rapid review of Canadian empirical studies was conducted using MEDLINE (Ovid), CINAHL, and Web of Science. A combination of medical subject headings and keywords was used to search studies published between 2000 and 2024. Studies were included if they focused on telehealth for individuals with cancer from one of 10 underserved communities identified by the Canadian Cancer Society. Titles and abstracts were screened to exclude irrelevant or duplicate studies, and full texts were assessed for eligibility based on inclusion criteria. Eligible studies reported on barriers and/or facilitators to accessing telehealth across the cancer care continuum. Data extraction and quality assessment were performed using standardized tools, and studies were synthesized narratively.

RESULTS: The search retrieved 374 references. Of these, 18 studies representing 17 interventions met the inclusion criteria. Most studies were quantitative in design. A range of underserved communities was explored, with rural (n=8) and advanced cancer (n=5) communities most frequently studied. Most telehealth services (n=14) were telephone or video visits, followed by app (n=2) and web page (n=2) communication with a provider. Most cited domain for barriers and facilitators was the availability/ability to reach telehealth services. Common barriers included low digital literacy of patients and providers (n=8) and inadequate telehealth equipment (n=5). Facilitators varied by community and included culturally appropriate care (n=5) and efficient appointment arrangements (n=5).

CONCLUSIONS: Findings will inform equity-oriented approaches to telehealth to ensure access and inclusivity for underserved communities in cancer care.

ACKNOWLEDGEMENT: This research is funded by the BC Cancer Rising Stars Award (F24-03234) with BC Cancer Foundation and the Canada Graduate Scholarship – Master's (CGS-M) with CIHR.

CONFLICT OF INTEREST: The authors declare that there are no conflicts of interest to disclose.

1C LIVING WITH A LIFE-LIMITING CANCER DIAGNOSIS: A LONGITUDINAL QUALITATIVE STUDY

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POSTER CATEGORY: Patient Experience & Supportive Care.

BACKGROUND: This research aims to understand the experiences of living with metastatic cancer with a particular focus on understanding the strategies persons use to continue to live and grow in an existential sense.

METHODS: This was a qualitative study that used semi-structured interviews. Participants were interviewed bi-monthly over the period of one year and asked to reflect upon their ongoing life experiences, relationships, and activities in the face of ongoing treatment and changing diagnoses. Participants reflected on how they maintained or created a new sense of purpose and meaning. All interviews were transcribed and coded using an Interpretive Descriptive approach.

RESULTS: Ten participants discussed their experiences of living with metastatic cancers both externally and internally. Factors that contributed to their experiences externally included interactions with healthcare, family and friends. Challenges were encountered with forming new relationships with healthcare professionals and undergoing new procedures after their diagnosis. A range of family and friends experiences were observed from supportive and understanding, to family members unwilling to face their loved ones' new reality, to deep denial and emotional inability to cope. Internal dialogue also contributed to participants' experiences. A recurring internal experience was fear of the progression and suffering the illness will bring. A sense of loss was also prevalent, ranging from loss of their future to not seeing children or grandchildren grow. As the cancer progressed some experienced loss through the inability to be active or participate in normal daily functions.

CONCLUSIONS: Preliminary findings indicate that participants have strived to maintain a 'normal' life, within the bounds dictated by their illness and complex treatment plans. They held a strong sense of needing others to understand that they were living "a new reality", a sense of liminality pervading all aspects of their lives. Each spoke of the struggle of facing their impending death while continuing to live, face the next complex step of their illness, and support those around them.

1D DEVELOPMENT OF RTT-LED PRE-CONSULT TELEPHONE TRIAGE FOR PALLIATIVE RT

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BACKGROUND: Palliative radiotherapy (PRT) comprises a large share of radiotherapy; bone metastases the most common indication and pain relief the primary goal. At our centre, referrals flow through tumour-site radiation oncologist (RO) queues without structured pre-consult triage, contributing to delays and inefficiencies. Published evaluations of radiation therapists (RTTs) with formal advanced training leading palliative pre-consult triage suggest shorter wait times, though often alongside co-interventions such as rapid-access clinics. Telemedicine triage may add patient convenience, better appointment alignment, departmental efficiency, and environmental benefit.

AIM: Describe development of a palliative RTT-led pre-consult telephone triage pathway: (1) pre-call chart review; (2) triage-call script; and (3) post-call clinical decision making.

PROCESS DEVELOPMENT: (1) Pre-call chart review: recent diagnostic imaging, PPS, comorbidities, home-care involvement, communication barriers, and prior PRT.
(2) Triage call, using Egan's skilled helper model: advising information will be shared with the RO, and obtaining consent to proceed. Pain area questions with reflective prompts clarify the patient's current situation. Asking what outcomes they hope for from PRT and what support they need defines their preferred situation. Evidence based PRT information is provided including the benefits, likelihood of pain relief, process, clinical trial eligibility, risk of pain flare and other acute toxicities, retreatment possibility, and alternatives to PRT. Patient understanding, opportunity, and motivation are assessed, and next steps based on their decision are relayed. The script underwent review by an Albertan palliative RTT with pre-consult triage experience, a patient family partner for realistic expectation setting and usefulness pre-consult, and RO for accuracy.
(3) Post- call: RTT records provisional decisions on PRT suitability, urgency, need for additional imaging or immediate support service referrals, treatment site(s) and fractionation, and clinical trial offers in a concordance table before conferring with the RO. Post consultation the final RO plan is compared with the RTT's decisions post-call, and discrepancies reviewed for learning.

ANALYSIS: Workflow evaluation with an REB approved study, PEACE-RT, will include: (1) expectation alignment measured with TEX-Q plus open- ended questions pre-RT and at 6 week post RT follow up to assess whether expectations were met; (2) patient-reported involvement in shared decision-making via open ended questions co-developed with the patient family partner; (3) single blinded RTT to RO decision concordance; and (4) operational metrics in concurrent cohorts with versus without triage.

CONCLUSIONS/IMPLICATIONS: An RTT-led, telemedicine pre-consult triage pathway is expected to improve expectation alignment, decision quality, and operational efficiency; concordance analysis will inform role refinement and scale-up.

2A ADVANCING THE SCIENCE OF QUALITATIVE PATIENT PREFERENCE ASSESSMENT USING LARGE LANGUAGE MODELS

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FUNDING/SUPPORT: This research was supported by UBC's AI and Health Network, Genome British Columbia (ISI003), Genome British Columbia/Genome Canada (G05CHS) and the Terry Fox Research Institute, and the New Frontiers in Research Fund.

ABSTRACT: Patient experiences and perspectives are essential for shaping patient-centered healthcare. While large language models (LLMs) in healthcare have been widely applied to specific clinical or patient-facing tasks, they have not been evaluated for qualitative patient preference assessment, which often relies on thematic analysis to understand patient views expressed in interviews or focus groups. LLMs show initial promise for performing inductive thematic analysis of healthcare interview or focus group transcripts, yet no empirical studies have investigated LLMs to facilitate qualitative patient preference assessment. We customized the open-source Hermes-3-Llama-3.1-70B LLM to perform inductive thematic analysis on focus group transcripts from a previously published qualitative patient preference assessment study using three SmartGPT prompt frameworks, and evaluated semantic similarity of LLM-generated themes against human-analyzed themes using the Sentence-T5-XXL language embedding model. Sentence-level theme similarity was assessed using Jaccard similarity coefficients (0 to 1 range), only retaining comparisons meeting an empirically determined cosine similarity threshold, to ensure semantic validity. We further evaluated LLM themes for similarity in lexical diversity and reading grade-level metrics and benchmarked semantic similarity results with published similarity thresholds previously used with qualitative healthcare data. All prompt frameworks generated themes with Jaccard similarity coefficients with human-analyzed themes between 0.46–0.64, indicating moderate to strong semantic overlap. Our best-performing framework instructed to pursue thematic saturation scored closest to human-analyzed themes on all reading grade-level metrics, and improved semantic similarity by 12% compared to published benchmarks. Our worst performing framework produced themes with moderate semantic overlap and hallucinated findings unidentified in human-analyzed themes. We demonstrate that LLMs can perform inductive thematic analysis of qualitative patient preference data, producing themes substantively similar in content and style to human-analyzed themes when augmented with sufficient domain-specific context. While LLMs may augment thematic analysis, the contextual nature of qualitative analysis remains a challenge requiring collaborative LLM frameworks integrating human expertise Our work can inform best practices for LLM use in qualitative patient preference assessment to improve healthcare decision-making.

2B PILOT OF A TEAM-BASED URGENT RT CLINIC FOCUSED ON SUPPORTING TIMELY ACCESS TO CARE

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BACKGROUND: There are currently two options available for patients requiring radiotherapy: 1) same-day access, limited exclusively to simple field plans ("unplanned" treatments) or 2) multi-day waits for RT treatments with the full gamut of planning tools available. Thus, patients who need both urgent care and all but the most rudimentary of planning considerations are forced to compromise between timeliness and quality. The aim of a new rapid access clinic (RAC) at BC Cancer Victoria is to reduce the time from physician referral/consult to treatment for RT patients without compromising the flexibility and quality of care provided.

METHODS: To achieve same-day treatment, the standard BC Cancer Victoria VMAT pathway was condensed to a 4-hour timeline from CT sim to delivery of first fraction. CT simulation and treatment of first fraction were pre-scheduled 4 hours apart for two patients on the RAC day (once biweekly). Microsoft Teams meetings and chats were used to communicate between a multidisciplinary team including RTs, nurses, dosimetrists, CT sim staff, ROs, and physicists. Team members were alerted when a task was completed to increase awareness of clinical decision making and reduce time between hand-offs. A pilot phase of the RAC was conducted between February 13 and May 8, 2025, treating two patients per clinic day.

RESULTS: 12 patients were treated with during the RAC pilot. The average time from start of CT simulation to treatment of first fraction was 4.5 hours. A total of 17 targets were treated, which were delivered in 13 VMAT plans, and 2 conformal field plans. After CT simulation was complete, it took an average of 35.2 minutes for the RO to complete contours and initiate the treatment planning process. Planning was then completed by a dosimetrist in an average of 23.9 minutes per plan. Treatment sites included: pelvis, sacrum, T-spine, L-spine, hip, and femur. Patients traveled ~100km on average each way to receive treatment.
We have yet to collect structured survey data on patient and practitioner satisfaction, but we have anecdotal evidence demonstrating the value of this approach to treating patients. Following one clinic day the supporting RO reported that patients received 'way better plans than I would have even asked for without this process'. Other observations included improved coordination with nursing, transportation, and other supporting services which disproportionately impact vulnerable populations. No patients were delayed for treatment planning or QA reasons and there were no replans. Some plans were designed to avoid previous treatment and even the CFL techniques treated with this clinic involved weighting, mixed energies, half beam blocks etc. which would not have been available through the conventional same-day process.

CONCLUSION: Using a team-based approach to urgent/palliative RT with strictly defined deadlines and aggressive communication could reduce time-to-treatment for patients who require urgent RT while maintaining a high standard of care. Following review of the pilot phase, we are moving forward with an adapted version of the clinic with higher capacity.

2C BLADDER CANCER SUPPORTIVE CARE (BCSC) PROGRAM: A MODEL FOR ADDRESSING UNMET NEEDS

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BACKGROUND: Bladder cancer (BCa) patients experience treatment-related effects that significantly impact quality of life. The BCSC Program was launched in 2025 by the Department of Urologic Sciences (UBC) and the Vancouver Prostate Centre, modeled after the Prostate Cancer Supportive Care (PCSC) Program (2013). Both programs are based at Vancouver General Hospital. This clinical and educational program provides evidence-based supportive care from diagnosis onward. Patients may be referred by clinicians or self-refer. Four modules are currently available —introduction to BCa and treatment options (for patients with invasive localized BCa), sexual health, wound ostomy and continence care, and counseling. Group education sessions are available virtually, while clinic appointments are delivered in clinic or virtually. Three additional modules (movement and exercise, nutrition, pelvic floor physiotherapy) are in development.

METHODS: We report demographics of BCSC participants enrolled 02/2025-08/2025 and module attendance. Patients were invited to submit feedback anonymously at the end of each virtual group education session.

RESULTS: By 31/08/2025, 49 patients had enrolled (median age 73; range 41–89); 69% were male, 76% were partnered, 80% had university-level education, and 88% identified as Caucasian. Sixteen patients (33%) lived in Metro Vancouver, and the remaining 33 (67%) came from communities across B.C., both urban and rural. Thirty-four of 49 patients had not received definitive bladder treatment yet, and 15 had undergone cystectomy.

- *Introduction to BCa and Primary Treatment Options:* 34 patients,10 partners, and 4 family members attended seven sessions. Of 29 survey respondents, 93% rated the session beneficial or very beneficial, 86% felt neutral or more relaxed after the session, and the mean satisfaction was 4.48/5.
- *Sexual Function and Intimacy:* 5 patients and 3 partners attended. All survey participants reported 5/5 satisfaction (n=3).
- *Wound, Ostomy, and Continence Care* sessions. 19 patients, 5 partners, and 2 family members attended. Mean satisfaction score was 4.17/5 (n = 12).
- *Counselling:* To date, 8 patients have accessed individual counseling appointments.

Overall, satisfaction scores across modules were consistently high (range 4.17–5.0). Satisfaction Survey scale 1-5, with 1 lowest, 5 highest.

CONCLUSIONS: Supportive care for oncology patients and families is often fragmented, costly, and difficult to coordinate. The BCSC Program provides centralized, multidisciplinary care accessible for patients across the province through a single registration. Early experience shows strong uptake and high satisfaction, underscoring the value of this model in addressing the supportive care needs of BCa patients. Further development and expansion of modules (exercice, nutrition, pelvic floor physiotherapy) will allow us to broaden reach, and additional long-term impact and satisfaction will be evaluated.

2D DIFFERENT MODELS OF SUPPORTIVE CARE PROGRAMS FOR ADULT CANCER PATIENTS

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BACKGROUND: Supportive care is integral to cancer survivorship, but models vary widely. We reviewed institutional supportive care programs at three major academic centers and compared them with the Prostate Cancer Supportive Care (PCSC) Program at the Vancouver Prostate Centre (VPC), a disease-specific, modular program.

METHODS: Narrative review of peer-reviewed reports describing programs at Dana-Farber, Roswell Park, and Stanford, combined with PCSC program data.

RESULTS: Institutional programs target broad survivorship goals across all cancers, including surveillance, education, outreach, smoking cessation, genetic counseling, and screening. Individual needs are assessed via EHR tools and referrals, often to community providers. Published reports did not include patient volumes or patient-reported outcomes (PROs/PREMs). PCSC is prostate-cancer-specific. Patients register at diagnosis and may opt out. Eight modules address domains of concern through group education and clinics. Services are centralized within the urology clinic, enabling systematic collection of PROs/PREMs. As of 09/2025, 6,609 patients have registered. Interpretation services are available, and recorded sessions are translated into five languages. Patient satisfaction is consistently high (mean 4.35–4.92/5).

CONCLUSIONS: Broad, cancer-center programs provide diverse services but lack centralized structures and standardized outcome reporting. By contrast, the disease-specific PCSC model delivers comprehensive, centralized care with consistent outcome measurement and high satisfaction, offering a potential template for adaptation to other cancers.

Modules	Attendees, n	Group education, n (# sessions)	Clinic Appointments, n (# appointments)	Mean Overall Satisfaction* (# respondents)
Introduction to PC and Primary Treatment Options	1462	1462 (226)	not applicable	4.64 (342)
Managing Sexual Function and Intimacy	2351	1135(151)	1984(8725)	4.56 (203)
Exercise	1242	727 (97)	962 (3140)	4.39 (173)
Management of side effects of ADT	610	534 (120)	236 (296)	4.35 (86)
Pelvic Floor Physiotherapy for Incontinence	1937	1366 (120)	1329 (3862)	4.64 (325)
Counselling	617	not applicable	601 (2089)	4.92 (36)
Metastatic Disease Management	137	137 (48)	not applicable	4.63 (32)
Nutrition	1275	950 (90)	567 (895)	4.49 (303)

**Survey responses from August 2022 to September 2025*

3A A QUALITATIVE STUDY OF SCHOOL (RE)INTEGRATION AND EDUCATIONAL EXPERIENCES AMONG CHILDHOOD SURVIVORS OF HEMATOLOGIC MALIGNANCIES

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BACKGROUND: Children and adolescents with hematologic malignancies (HM) often face educational challenges from disrupted schooling, late effects, and associated psychosocial impacts. Though academic continuation is a critical component of cancer survivorship, the lived-experiences of school (re)integration of CAHM survivors and their families are poorly understood. This study qualitatively explores how survivors and their families experience and navigate the process of school (re)integration.

METHODS: Eligible participants were survivors diagnosed with leukemia or lymphoma at ≤18 years of age within the last 10 years, identified through the BC Children's Hospital records. We developed a semi-structured interview guide, informed by the school (re)integration support framework and co-developed with our patient partners. The guide explored survivor's knowledge process of school (re)entry, communication between survivors/families, schools and healthcare providers, and perceived needs. Interview transcripts were transcribed verbatim and are being thematically analyzed using the constant comparative approach.

RESULTS: We interviewed 16 participants (5 survivors, 11 parents of survivors). Fourteen were diagnosed with leukemia and two with lymphoma with 62% being diagnosed before age 12. Preliminary analyses suggests that school (re)integration for survivors in general was motivated by desires of socialization with peers, normalcy and preparing for the future, though varying by age at diagnosis. The process often involved informal but substantial coordination between survivors, families and schools, with minimal involvement from healthcare providers. Reported challenges to the (re)integration process includes gaps in services, inconsistent accommodations at school, negative peer dynamics, lack of knowledge about integration process and a lack of a clear integration guideline. Facilitators include supportive teachers, positive peer interactions, proactive communication, self-advocacy and increasing opportunities for online schooling driven by the COVID pandemic. While some survivors reported resilience, personal growth and continued positive educational attainment, others experienced lost opportunities, altered career and education plans, and ongoing financial and accessibility barriers.

CONCLUSION: School (re)integration for childhood and adolescent HM survivors is shaped by complex social, developmental, and structural factors. Socialization was both a goal, facilitator, and challenge, underscoring its central role in the process. Age at diagnosis influenced experiences, with younger survivors relying heavily on parental advocacy—often adding emotional and practical burdens—while adolescents faced more disrupted opportunities, altered career trajectories, and ongoing financial barriers. Overall, the process lacked consistent guidelines and healthcare involvement, highlighting the need for coordinated, developmentally tailored supports to improve educational outcomes.

ACKNOWLEDGEMENT: This study is supported by the Leukemia and Lymphoma Society of Canada Blood Cancer Quality of Life grant.

CONFLICT OF INTEREST: The authors declare no conflicts of interest.

3B EXPLORING THE EXPERIENCES OF PRIMARY CARE PROVIDER INVOLVEMENT IN CANCER SURVIVORSHIP IN THE BRITISH COLUMBIA INTERIOR: A QUALITATIVE STUDY

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Abstract

PURPOSE: With rising rates of cancer globally, primary care providers (PCPs) are becoming increasingly involved in survivorship care to ensure posttreatment care needs are met. This qualitative study explores the British Columbia (BC) Interior's cancer survivor's experiences with involvement of PCPs in their survivorship care. Our aim is to center the voices of survivors to improve the quality and continuity of survivorship care in BC.

METHODS: Participants (1) had received care within the BC Interior, (2) detected their cancer between 2018 and 2023, (3) had no evidence of recurrence for at least 1 year, and (4) had breast, colorectal, lung, or prostate cancer. Participants (n-=17) completed semi structured interviews. Patterns across the interview data were identified and interpreted using reflexive thematic analysis.

RESULTS: Three themes were constructed grounded in cancer survivors' experiences with PCP involvement in their survivorship care: (1) No cancer journey is the same (2) Where do I go from here? and (3) We've survived, now what? Subthemes explored the nuances and complexities of cancer type, relationships with providers, communication, and physician availability. Suggestions for improvements included establishing clear healthcare provider roles, individualized survivorship care plans, increased survivorship care training for providers, and creating jobs for survivorship care coordinators.

CONCLUSIONS: Overall, BC Interior cancer survivors had mixed perspectives towards PCP involvement in their survivorship care and provided suggestions for improvement. Insights from this study shed light on potential strategies to improve PCP involvement in survivorship care management in BC to ultimately improve survivor health and wellness.

Keywords: Oncology, Survivorship, Post-treatment

3C SKIN DEEP: AN EVALUATION OF YOUTUBE VIDEOS ON ACUTE RADIATION DERMATITIS IN PATIENTS WITH BREAST CANCER

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BACKGROUND: Acute radiation dermatitis (ARD) is a common adverse effect of breast cancer radiation therapy. As YouTube is increasingly used for health information, relevant and reliable videos may play an important role in patient education.

OBJECTIVE: This study characterizes YouTube videos about ARD in breast cancer. Congruence with consensus guidelines is assessed.

METHODS: Seven relevant YouTube searches were web-scraped using a custom Python script to yield a total of 350 videos which were rank-ordered based on frequency across searches and position in the results. After applying pre-determined inclusion criteria, the top 50 videos were analyzed using a validated assessment tool to assess general parameters, presentation, content, and reliability. Recent International and National Delphi consensus literature was reviewed to inform content analysis. Two independent reviewers were used for inter-rater reliability.

RESULTS: Of 23 interventions, only three— prevention education, general skincare advice, and moisturizers—appeared in at least half the videos. Four of seven interventions recommended in international guidelines were entirely absent. Only two interventions (9%) were presented completely and accurately in at least 25% of the videos. 40% of the publishing channels had commercial affiliations, and 42% of videos integrated advertisements.

CONCLUSIONS: YouTube videos on ARD in breast cancer provide limited coverage of guideline-based prevention and management strategies. High rates of commercial affiliations and advertising underscore the potential for bias. Clinician awareness of these limitations can inform patient counseling about the benefits and risks of online health information.

3D UNDERSTANDING PSYCHOSOCIAL BURDENS OF ADOLESCENTS AND YOUNG ADULTS WITH HEMATOLOGIC MALIGNANCIES: A QUALITATIVE STUDY

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ABSTRACT

BACKGROUND: Adolescents and young adults (AYAs) diagnosed with hematologic malignancies (HM) between the ages of 15-39 years face long-term functional challenges persisting beyond cancer. In this study, we qualitatively explored the experiences and unmet needs of AYAs with HMs concerning mental health coping and support systems.

METHODS: Using clinician referrals and social media as recruitment strategies, AYAs with an HM diagnosis in the last 10 years participated in virtual semi-structured interviews. The topic guide, co-created with patient partners, explored the psychosocial challenges, their contributing factors and the coping strategies adopted by AYAs with HM across British Columbia. Interview transcripts were transcribed and thematically analyzed using the constant comparative approach.

RESULTS: We interviewed 19 participants (*n* = 11 women, 7 men, and 1 agender); three AYAs were undergoing treatment, and 16 were in the after-treatment phase. Participants expressed a constant state of uncertainty as they navigated their different emotions and new identities. This affected how they lived with cancer and beyond, experiencing intrusive thoughts, prolonged hypervigilance, 'scanxiety', guilt, and anger. Some participants felt disconnected from their pre-cancer identities and struggled to reintegrate into their previous roles. Participants coped with these challenges primarily through self-preservation, initially focusing on practical survival while suppressing their mental health needs, using activities as a form of distraction and escapism. As treatments progressed, these activities evolved positively to support and restore their sense of normalcy. Many emphasized the importance of seeking support from loved ones and peer communities. Others sought information and knowledge about their health condition to regain agency and control over their bodies. This helped participants acknowledge their vulnerabilities and trauma and solidify their identity beyond cancer.

CONCLUSION: Participants desired long-term, age-specific psychosocial supportive care, ideally commencing at diagnosis with periodic follow-ups throughout the care continuum to cope with the ongoing cancer-induced trauma. Future research should prioritize co-developing psychosocial interventions and integrating them into standard cancer treatments to address the diverse needs and improve care for AYAs with HM.

POSTER CATEGORY: Patient Experience & Supportive Care

ACKNOWLEDGEMENT: This study is supported by the Leukemia and Lymphoma Society of Canada Blood Cancer Quality of Life grant, funding number 1038804.

CONFLICT OF INTEREST: The authors declare no conflicts of interest.

4A EARLY AND LATE TOXICITIES FOLLOWING RADIOTHERAPY FOR HEAD AND NECK LYMPHOMA: PATIENT AND PHYSICIAN PERSPECTIVES

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BACKGROUND: Radiotherapy (RT) is a key treatment for lymphoma. While the toxicity of RT for head and neck squamous cell carcinoma (HNSCC) is well established, H&N lymphomas are generally treated with lower radiation doses, and the associated toxicity remains poorly defined. Concerns about potential severe side effects may limit the use of RT in this setting, despite the fact that their true incidence remains underreported.

OBJECTIVE(S): To describe early (< 3 months post-RT) and late (>3 months post-RT) toxicities in patients who received radiotherapy (RT) to the head and neck (H&N) for lymphoma, through
a) physician grading, and
b) patient reported outcomes (PROs).

METHODS: From November 2018 to December 2022, 420 patients received H&N RT for Hodgkin and non-Hodgkin lymphomas at BC Cancer. Toxicity data will be retrospectively collected from patient charts and graded using the Common Terminology Criteria for Adverse Events (CTCAE) v4. Of these 420 patients, 64 completed at least one MDASI-HN survey at baseline, during treatment, or in follow-up as part of the Prospective Outcomes and Support Initiative (POSI). PROs will be obtained from the POSI database. Toxicity rates were analyzed by RT site, dose, technique, patient age/sex, chemotherapy use, and occurrence of acute and late toxicities. PRO symptom scores were tracked over time to assess symptom progression.

RESULTS: Interim analysis included a random subset of 110 patients for physician-reported outcomes, and 64 patients for patient-reported data. 94.6% of all reported toxicities were Grade 1-2. Only 5.3% of acute toxicities were Grade 3, predominantly nasal congestion/epistaxis. Rates of hospitalization due to RT toxicity, IV hydration, tracheostomy, and NG tube use were 4.5%, 3.6%, 0.9%, and 1.8% respectively. Median weight loss during RT, calculated for 89 patients with available data, was 0.23%. Patient-reported outcomes mirrored physician assessments, showing resolution of most symptoms over time.

CONCLUSIONS: RT for H&N lymphoma is well-tolerated, with low rates of severe acute and late toxicities. The low incidence of clinically significant complications suggests that concerns over toxicity should not preclude RT in this population. Integration of PROs highlights the trajectory of symptom burden and may help guide supportive care interventions.

4B CONVERSATIONS TOWARDS IMPROVING THE QUALITY OF LIFE FOR INDIVIDUALS LIVING WITH METASTATIC BREAST CANCER IN BRITISH COLUMBIA.

AUTHORS: Rachelle Payandeh[1], Y. Sarah Chae[1,2], Colleen Foran[3,4], Colleen Doylend[4], HELEN MCTAGGART-COWAN[1,2]

AFFILIATIONS: [1]BC Cancer, Vancouver, BC; [2]Faculty of Health Sciences, Simon Fraser University, Burnaby, BC; [3]Patient and Family Partnerships and Experiences, BC Cancer, Vancouver, BC; [4]Community Researchers at the University of British Columbia – Okanagan, Kelowna, BC

BACKGROUND: Individuals with metastatic breast cancer (MBC) have a range of unmet needs when accessing quality care, which may considerably impact their quality of life (QOL). However, MBC remains an understudied research area. In this work, we aim to develop a collaborative research agenda to improve the QOL and care of individuals with MBC in British Columbia.

METHODS: We conducted a virtual World Café with individuals with MBC and clinicians in April 2025. Co-developed with patient research partners, the World Café consisted of: (1) information about current MBC research; (2) exploration of patient needs; and (3) discussion of barriers and facilitators to quality MBC care. Conversations from the World Café were analyzed to identify research priorities. The research priorities were then ranked by participants on an online survey.

RESULTS: Ten participants attended the World Café; of which, four were patients with MBC. Three barriers to quality care were underscored: 1) the difficulty with navigating the healthcare system; 2) the limited options for holistic care; and 3) underrepresentation of MBC patients in clinical research. Peer support was identified as an important facilitator to quality care. Suggestions for improved care included establishing peer or group support systems, and introducing a nurse navigator program to better coordinate care and fill gaps within the healthcare system.

CONCLUSION: Individuals living with MBC face unique barriers and facilitators to quality care. The co-creation of a research agenda, which highlights the experiences of patients and clinicians, will ensure meaningful momentum to an understudied area of research.

ACKNOWLEDGEMENT: The study is supported by the Michael Smith Health Research BC 2022 Convening and Collaborating Award #C2-2022-2864

CONFLICT OF INTEREST: The authors declare no conflict of interest.

5A EXPLORING PATIENT AND HEALTHCARE PROFESSIONAL PERSPECTIVES ON GENETIC TESTING FOR PREDICTION OF RADIATION LUNG TOXICITY

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AFFILIATIONS: [1] BC Cancer Kelowna; [2] UBC Okanagan; [3] BC Cancer Vancouver

BACKGROUND*:* A research collaboration between BC Cancer and UBC Okanagan is underway to identify pretreatment genetic factors which influence a patient response to radiotherapy. In anticipation of this advance, we seek to understand how patients and clinicians would use individual risk of radiation toxicity information in their treatment decisions.

STUDY AIMS: The first aim is to assess the patients' understanding, perspectives and usage considerations of a genetic test which could predict pulmonary side effects from radiation treatment. We will also seek to learn from patients how radiation treatment has impacted their life, and we will in particular focus on their post-treatment experiences and treatment decision factors. The second aim is to learn the perspective of radiation oncologists on the utility of a radiation toxicity genetic test.

METHODS: Qualitative data will be obtained through semi structured, one-to-one interviews with an intended population of 25 patients completed using a set of pre-defined questions**.** Through a separate set of questions, the potential benefit and barriers to the clinical implementation of such predictive genetic test will be captured from 5 consenting radiation oncologists. Eligible patients must have received radiation therapy for lung or breast cancer within the previous 3 months to 5 years, and radiation oncologists who have provided care to lung or breast cancer patients at BC Cancer, Kelowna will be invited to participate. The data obtained from the interviews will undergo qualitative coding through NVivo and a thematic analysis completed to reveal emerging themes and subthemes.

CONCLUSION: The proposed study addresses gaps in knowledge regarding Canadian patients' experiences with thoracic radiation therapy and physician's perspectives on predictive genetic testing, with the aim of contributing to the advancement of personalized cancer care.

5B IMPROVING CLINICAL COMMUNICATION IN ONCOLOGY WITH FIRST NATIONS, MÉTIS, AND INUIT PEOPLES IN CANADA: A SCOPING REVIEW

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BACKGROUND: First Nations, Métis, and Inuit patients often experience barriers in accessing healthcare services and report negative experiences. Patient-provider interactions are a key determinant of care quality. This review aimed to identify healthcare providers' communication strategies that can support clinical interactions, with a specific sub-focus on the cancer care population.

METHODS: We conducted a scoping review to identify studies published since 2015 that report on First Nations, Métis, and Inuit patients' and healthcare providers' perspectives on healthcare interactions. We extracted examples of communication strategies, including language use and non-verbal practices, and conducted a thematic analysis. Studies were also assessed for Indigenous involvement in research. A separate descriptive analysis was conducted on articles conducted within a cancer care setting.

RESULTS: Of 3285 records screened, 105 were included in the main analysis. Twenty-one papers did not specify Indigenous community involvement but supported findings from the studies that did. Identified strategies were related to four main themes: (1) expressing empathy and acknowledging systemic challenges; (2) discussing traditional healing practices and holistic healthcare needs; (3) conducting history-taking in a way to respect patients' preferences and autonomy; and (4) conveying medical information and working with Indigenous interpreters. Across themes, studies emphasize the importance of understanding each patients' unique context and history and avoiding generalizations, using strategies such as open questions about needs and priorities and asking permission before addressing certain topics. Only 15 of the 105 included articles were focused on cancer care. Of these, only 5 had a communication focus. Participants and providers in these studies highlighted communication, family involvement, and culturally grounded supports—including language translation, Elder guidance, and patient navigation—as central strategies to enable shared decision-making and culturally safe cancer care.

CONCLUSION: The review highlights practical strategies that healthcare and cancer care providers can implement in their practice. However more work is required to understand and better support provider communication with First Nations, Métis, and Inuit patients specifically in cancer care settings.

5C ADVANCING EQUITY, DIVERSITY, AND INCLUSION IN CANCER CLINICAL TRIALS: INSIGHTS FROM THE EDI T-CUPS PROGRAM

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AFFILIATIONS: [1]BC Cancer – Victoria; [2]BC Cancer – Abbotsford; [3]BC Cancer – Provincial Clinical Trials Office (PCTO); [4]BC Cancer – Kelowna; [5]BC Cancer – Centre for the North

ABSTRACT: In winter 2025, the BC Cancer Clinical Trials Team launched its *Equity, Diversity, and Inclusion in Clinical Trials* program in response to the critical need to improve representation in cancer clinical trials. This initiative delivered a three-part online learning series designed for all clinical trials staff, co-developed and facilitated in partnership with leaders from BIPOC, 2SLGBTQIA+, and other historically marginalized communities. The program aimed to enhance the cultural safety, accessibility, and inclusivity of cancer clinical trials through meaningful engagement and the translation of knowledge into practice. Each one-hour session addressed population-specific barriers to trial participation, encouraged collaborative problem-solving, and provided actionable strategies for staff to integrate into their daily practice. Facilitators were recruited through a call-out and included:

1. **Munaza Jamil** – *Building Bridges: Engaging New Immigrant Communities in Clinical Research*
2. **Vash Ebbadi-Cook** – *Expanding the Evidence Base: 2SLGBTQIA+ Inclusion in Clinical Trials*
3. **Michelle Audoin** – *Patient Partnerships: The Key to Creating and Facilitating Inclusive Clinical Trials*

To extend learning beyond the live sessions, participants received Post-Session Packages containing a video recording of the session, curriculum highlights, curated readings, and facilitator-recommended resources. In addition, the program integrated arts-based knowledge translation through professional graphic notetaking, visually capturing key insights from each session. This poster presents the graphic recordings alongside synthesized takeaways and participant feedback, offering a visually engaging and practice-oriented resource to guide clinical trial staff in advancing equity, diversity, and inclusion across research settings.

FUNDERS: We gratefully acknowledge the support of the Canadian Cancer Clinical Trials Network (3CTN) for funding this program. We also extend our thanks to Interior Health and Michael Smith Health Research BC – Interior Centre for their in-kind contributions of technology support and program hosting.

5D THE HEAD AND NECK CANCER APPLICATION FOR PATIENTS AND THEIR PARTNERS (HANC APP) STUDY: CO-DESIGNING THROUGH PATIENT PARTNER WORKSHOPS

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AFFILIATIONS: [1]BC Cancer- Victoria; [2]Department of Health Information Science, University of Victoria; [3]Vancouver Coastal Health; [4]Department of Medicine, University of British Columbia

BACKGROUND: People with head and neck cancer (HNC) carry a significant symptom burden, alterations in function (e.g., impaired ability to chew, swallow, and talk), and impaired quality of life. Literature reports that people with HNC suffer undue anxiety because they find treatment options incomprehensible, which is partially a function of limited, understandable information. Patients' perceptions of having obtained adequate information prior and during treatment are predictive of positive outcomes. Interviews with local survivors of HNC endorsed the need for patient-centered decision-support that utilizes visual images, to better explain treatment options, and associated benefits and risks to improve satisfaction with their decision and consultation, while reducing decisional conflict.

OBJECTIVE: As a response to patient needs, the research team aims to co-develop the HANC APP (Head and Cancer Application for Patient and their Partners) with a group of HNC survivors to be used on computers, phones, or ipads that will provide information on HNC in an easy-to-understand way. This poster reports on the study teams' progress-to-date.

METHODS: Three workshops will be held with a group of survivors of HNC to guide the HANC APP content and design features. Following each workshop, recommendations are applied to the HANC APP prototype then shared with participants for further feedback. This iterative process ensures every aspect of the app is fully informed and co-designed by community members with lived experience with HNC. Medical content will be reviewed by HNC interdisciplinary team members for accuracy of medical content. The final prototype will undergo usability testing at BC Cancer- Victoria.

RESULTS: We have completed two workshops with our group of patient participants. The informational content (e.g., type of information, level of detail, etc.) and key design features (e.g., colours, use of buttons, etc.) of the HANC APP have all been decided by our patient participants with medical oversight by the study team oncologists. As the web design of the HANC APP was complex, this was undertaken by technology design team at the University of Victoria. The HANC APP was reviewed by study team oncologists in August 2025, and the design team is in the process of applying their feedback. Once finalized, the HANC APP will be presented, again, to physicians and patient participants to validate the content and test usability.

CONCLUSION: The HANC APP is designed by and for patients with HNC and their partners. By responding to patient-identified needs and through co-design methodologies, the HANC APP study team has created a tool that aims to provide patient-centered decision-support.

CONFLICTS OF INTEREST: ES is supported by Michael Smith Health Research BC (award# HPI-2021-2353), Lotte & John Hecht Memorial Foundation, and the BC Cancer Foundation. EB is supported by Michael Smith Health Research BC (award# HPI-2018-2045). LHR, LL, EP, JL, and SS have nothing to declare.

6A CANCER PATIENT-REPORTED OUTCOMES AND EXPERIENCES IN RADIOTHERANOSTICS: A SYSTEMATIC REVIEW

AUTHORS: Ashiana Sunderji[1,2], Zaynab Muraj[3], Hannah Jin[4], Rachel Zhou[3], Rouhi Fazelzad[3], Tara Rosewall[3], Alvin Cuni[3], ANDREA SHESSEL[3]

AFFILIATIONS: [1]Department of Cell Systems Biology, University of Toronto [2] Faculty of Medicine, University of British Columbia [3]Princess Margaret Cancer Centre, Toronto, [4]Queens University

ABSTRACT: Theranostics is a precision oncology approach that uses the same molecular agent to both identify cancer cells through diagnostic imaging and deliver targeted radionuclide therapy to those cells. It is most often applied in resistant or metastatic cancers, including thyroid, prostate, and neuroendocrine tumours. While not curative, theranostics can extend survival and improve quality of life. Radiation oncology is moving away from provider-reported outcomes and toward patient-centered outcomes that better reflect individual experiences. Patient-reported outcomes (PROs) capture individual experiences, symptom burden, and quality-of-life impacts. These insights support more patient-centered care. This systematic review examined how PROs and patient-reported experience measures (PREMs) are assessed in radiotheranostics. Six reviewers screened 19,629 titles and abstracts in duplicate, with conflicts resolved by a third reviewer, using Covidence software (v2.0). Searches were conducted across nine bibliographic databases (2002–2023). Inclusion criteria were English-language studies reporting PROs or PREMs in patients receiving non-oral radiotheranostics. Exclusions included oral agents (e.g., I-131 for thyroid cancer), animal studies, and preprints. Methodological quality was appraised with the Mixed Methods Appraisal Tool (MMAT), and evidence certainty was evaluated with GRADE for quantitative studies and GRADE-CERQual for qualitative studies.
Fifty-seven studies published between 2002 and 2023 across 17 countries were included. PROs were reported in 52 studies and grouped into universal, disease site–specific, and pain or symptom–specific categories. The most used tool was the EORTC QLQ-C30, often paired with modules such as QLQ-GI.NET21, QLQ-LMC21, QLQ-BM22, FACT-P, and FACT-RNT, which allowed tailoring to specific cancer populations. PREMs were reported in six studies, highlighting themes of optimism and treatment-related hope, unmet informational and communication needs, improvements in quality of life such as pain relief, restored function, and psychological benefit, as well as barriers to access. CERQual confidence in these themes was moderate.

CONCLUSIONS: Theranostics represents a transformative step in precision medicine: it treats while simultaneously personalizing care through centering the patient's lived experience. As a novel treatment approach, incorporating PROs is essential for capturing the real-world impact of therapy and ensuring patient-centered endpoints are considered alongside clinical outcomes. While PRO collection in radiotheranostics is increasingly common, it remains heterogeneous, and PREM evidence is sparse and largely qualitative. To ensure patient voices inform the development, evaluation, and implementation of radiotheranostics, there is a critical need for validated, treatment-specific PRO and PREM frameworks that reflect the unique experiences associated with this emerging therapy.

CONFLICTS OF INTEREST: None declared

FUNDING: Bruce Power Seed Grant

6B REDUCING EMOTIONAL DISTRESS AND FOSTERING EMPOWERMENT:INSIGHTS FROM THE CANCER TRAVEL AND ACCOMMODATION SERVICES PROGRAM IN BRITISH COLUMBIA (CTAAS-BC)

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AFFILIATIONS: [1]Canadian Cancer Society

POSTER CATEGORY: Patient Experience & Supportive Care

OBJECTIVES AND PURPOSE: In October 2023, the Canadian Cancer Society (CCS) expanded its Cancer Travel and Accommodation Services program in British Columbia (CTAAS-BC), supported by a significant investment from the BC Government. People living in rural and remote communities often face a 'rural tax', a set of inequitable financial, emotional, and logistical barriers to accessing cancer treatment. Little research has explored protective factors that mitigate these burdens. This project assessed how CTAAS-BC's umbrella of offerings, including travel grants, expanded ground transportation, and subsidized cancer lodge accommodations, reduce patient burdens and improve patient experience during the program's first 18 months of operation.

METHODS: A mixed-methods evaluation was conducted from November 2024 to April 2025. Data sources included robust administrative data across services, a client and caregiver survey (n=956), and semi-structured interviews with operating program staff and leadership (n=9), on the ground program volunteers (n=5), participating patients and caregivers (n=6), and healthcare providers (n=2). A previously completed, rapid COSMIN review process of validated survey instruments informed the identification of 4 domains (compliance with treatment, financial toxicity, emotional distress, and patient empowerment) applied to the current survey tools. Quantitative survey data were analyzed descriptively to assess changes in emotional well-being and empowerment, while qualitative findings across data source contextualized these outcomes.

RESULTS: Participants reported decreased feelings of anger, depression, hopelessness, and worry after accessing the program. Almost half of surveyed patients felt less hopeless (45%) and less worried (49%) about their life and health. Additionally, 36% reported feeling less angry, while 44% of patients and 43% of caregivers experienced reduced depression when thinking about their own or their loved ones' health. Alongside these improvements to their emotional wellbeing, the program also fostered a sense of empowerment. Patients and caregivers described feeling more positive about the future (44%), enjoying life more despite their health challenges (39%), and having more strategies to cope with their health challenges (37%). These findings show that the program not only alleviated emotional burdens but also contributed to a more hopeful and resilient outlook among participants.

CONCLUSION AND CLINICAL IMPLICATIONS: The CTAAS-BC program significantly enhances the emotional and psychosocial wellbeing of cancer patients and caregivers by alleviating distress and strengthening feelings of empowerment. Through its umbrella of supports, the program has shown meaningful protective effects that enrich patient experience and quality of life. These outcomes showcase that supportive care services addressing logistical barriers, such as travel and accommodation, can have far-reaching benefits for patient quality of life. Clinically, these findings underscore the importance of reducing the 'rural tax' by integrating practical support programs into cancer care pathways, thereby promoting equitable access to treatment and improving holistic, patient-centred care.

6C CANCER PREVENTION EDUCATION IN HIGH SCHOOLS: A SCOPING REVIEW

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BACKGROUND: Cancer is a leading cause of preventable morbidity and mortality worldwide. Adolescence is a formative period for establishing health behaviors, making secondary schools an opportune setting for cancer prevention initiatives. Despite this, the extent to which cancer prevention has been systematically incorporated into high school curricula remains unclear.

OBJECTIVES: This scoping review aimed to map the current international landscape of high school-based cancer prevention education by identifying existing interventions, the cancer-related topics they address, methods and audiences of delivery, reported outcomes, and remaining gaps. We hope that identifying effective approaches to cancer education may help to better inform and implement future curricula.

METHODS: Following the Arksey and O'Malley framework, refined by Levac et al., and adhering to PRISMA-ScR guidelines, we searched MEDLINE, CINAHL, PsycINFO, ERIC, Scopus, and Google Scholar (2000–2025). Controlled vocabulary, Boolean operators, truncation (*), and proximity operators (adj, N3) were used. Titles/abstracts and full texts were screened independently by two reviewers in Covidence, with conflicts resolved by a third. Data were charted using a customized extraction form capturing study characteristics, intervention details, risk factors addressed, outcomes, and study gaps.

RESULTS: To date, 2,117 records have been identified from databases and 959 from Google Scholar. Seventeen full texts are currently in extraction, with most studies conducted in the United States, several in Oman, Brazil, Germany, Sweden, Poland, and Ghana. Early findings suggest that no formal or comprehensive international cancer prevention curriculum exists within high schools. Most studies focus on cervical cancer, melanoma/UV exposure, and smoking. Interventions were typically short-term (few weeks) and not integrated into formal curricula. Delivery methods included classroom instruction, peer-led activities, and innovative tools such as photoaging applications to encourage sun safe behavior. Reported outcomes primarily reflect short-term improvements in knowledge and attitudes, with limited evidence of sustained behavior change or program scalability. Importantly, across studies, strategies that combined words, images, and interactive tools were more effective than didactic teaching alone. Framing risk in term of personalized and visible loss – for example showing cumulative skin damage from UV exposure – appeared more successful in promoting behavior change. A notable gap in the literature was that while some studies addressed risk factors such as nutrition, physical activity, and alcohol consumption, they did not emphasize these behaviors in relation to cancer prevention, nor did they focus on early detection and screening. In addition, there was a lack of focus on which adolescents are most at risk of harm and what messages resonate most with them. Many students are already aware of general health risks and may not benefit from generic messaging. Targeting high-risk groups with tailored, efficient messaging may increase impact.

CONCLUSIONS: Current evidence highlights a major gap in the systematic integration of cancer prevention education in high schools. Existing initiatives typically focus on a single risk factor for a single cancer type and are short-term. While some innovative tools show promise, long-term, broad-scope curriculum-based strategies that identify and engage at-risk students are urgently needed to support lifelong cancer prevention.

6D ULTRASOUND IMAGING BIOFEEDBACK ENHANCES PELVIC FLOOR MUSCLE TRAINING FOR POST-PROSTATECTOMY URINARY INCONTINENCE

AUTHORS: CALVIN WONG, MPT, MRSc[1]; Sean BSc, MPT[1]; Rosalie Ho, MSc[1]; Abby O'Connor, BSc[1]; Monita Sundar, MA[1]; Celestia Higano, MD, FACP[1,2]

AFFILIATIONS: [1] Prostate Cancer Supportive Care Program; [2] The University of British Columbia

BACKGROUND: Post-prostatectomy incontinence (PPI) outcomes improve when pelvic floor muscle training (PFMT) targets the striated urethral sphincter (SUS) using real-time ultrasound (RTUS) for biofeedback. The Prostate Cancer Supportive Care (PCSC) Program has offered in-person and virtual PFMT since 2013; in July 2024, RTUS was added to enhance physiotherapist-led training.

METHODS: Patients attend the PCSC pelvic floor physiotherapy clinic beginning ~12 weeks post-prostatectomy for four biweekly PFMT sessions. Outcome measures (ICIQ-UI, pad use) are collected prior to each session. Physiotherapists employ RTUS or surface electromyography (sEMG) to guide motor recruitment, monitor activation, and assess fatigue. Patients participated in an anonymous survey at discharge that compared patient satisfaction with RTUS versus sEMG.

RESULTS: From 03/2025–09/2025, 152 patients attended 297 appointments. RTUS was used in 117 in-person sessions involving 61 unique patients. Of the 29 patients completed the satisfaction survey, 25/29 (86%) had at least 1 in-person physiotherapy appointment. Four patients had only virtual appointments and therefore did not receive sEMG or RTUS. Among the 25 survey respondents, 11/25 received both sEMG and RTUS, 8/25 received RTUS only, and 1/25 received sEMG only. All RTUS users found it somewhat or extremely helpful for learning pelvic floor contractions. Among those exposed to both modalities (n=11), 6 favored RTUS, 4 favored sEMG, and 1 expressed no preference.

CONCLUSION: RTUS and sEMG provide complementary biofeedback for PFMT in men with PPI. RTUS supports motor coordination and SUS training, while sEMG reflects global levator ani activation and muscle fatigue. Further prospective studies are needed to assess long-term outcomes and compare efficacy.

IMPLICATIONS: Both RTUS and sEMG appear to enhance patient engagement, satisfaction, and potentially adherence to PFMT, which may translate into improved continence outcomes.

REFERENCES: 1.Stafford RE, Van Den Hoorn W, Coughlin G, Hodges PW. Postprostatectomy incontinence is related to pelvic floor displacements observed with trans-perineal ultrasound imaging. *Neurourol Urodyn.* 2018;37(2):658-665. doi:10.1002/nau.2337

7A TUBE FEEDING DISCUSSION AID FOR PATIENTS WITH HEAD AND NECK CANCER: A KT CHALLENGE PROJECT

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BACKGROUND: Patients with head and neck cancer (HNC) are at high risk for malnutrition and swallowing difficulties. With chemotherapy and radiation therapy, a feeding tube may be needed to facilitate adequate nutrition, fluids, and medications, both during and following treatment. The decision of whether to accept a feeding tube can be distressing for patients. The goal of this project is to create and implement a tool for patients to use with clinicians, that provides information on tube feeding (TF), including the benefits and potential risks.

METHODS: A discussion aid (DA) was created, informed by a literature review, stakeholders, and patient partners, then implemented and assessed at BCC- Abbotsford by providers, nurses, dietitians, and patients and family.

RESULTS: The DA was piloted with 50 patients with HNC. Feedback was overwhelmingly positive, with patients describing it as a helpful tool in answering their questions and supporting decision- making. Multidisciplinary care providers also saw value, noting that the DA offered structure and relevant information to guide their discussions of TF. Staff expressed strong enthusiasm for its formal roll out across BCC centres.

CONCLUSIONS: The DA created was demonstrated to be a useful tool for both patients and clinicians, justifying the next steps of tailoring the DA to the enteral feeding practices at each BCC centre to expand the availability of information on TF.

LINK TO DISCUSSION AID: http://www.bccancer.bc.ca/nutrition-site/Documents/Patient%20Education/Discussion-Aid-G-Tube.pdf

ACKNOWLEDGEMENT: This project was funded in part by the KT Challenge (NAHRKT) with mentorship from Dr. Nick Bansback. We gratefully acknowledge the contributions of our patient partners, Cheryl Stephens and David Youngson, in the development and finalization of this document.

CONFLICT OF INTEREST: None

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7B BC CANCER CLINICAL TRIALS COLLABORATION: RAISING THE BAR AND SHAPING THE FUTURE

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ABSTRACT

INTRODUCTION: Clinical trials are an important step in research, innovation, and offer patients treatment options that may be otherwise inaccessible. At BC Cancer, results from clinical trials have demonstrated evidence for various clinical treatments and have guided clinical decision-making. Thus, it is vital that clinical trial conduct reach the standard of excellence to maintain patient safety, scientific integrity, and to better inform clinical practice. A quality improvement initiative resulted in the collaboration between two centers to enhance trial processes and achieve higher standards in clinical trials.

METHODS: The BC Cancer Kelowna and Prince George teams formed a partnership to share resources and knowledge. The partnership included weekly meetings between the Kelowna Research Project Manager and Prince George Clinical Trials Monitor to develop study processes and brainstorm ideas on boosting compliance and excellence. A SharePoint site was created for notes, as well as a Teams channel to document and keep track of all tasks for each study.

RESULTS: The collaboration between the two BC Cancer centers resulted in the development of standard processes such as monitoring plans that have been successfully implemented in a few brachytherapy studies where remote monitoring visits have been completed. Additional goals were completed including study database validations and development of central trial documents to improve study conduct.

CONCLUSIONS: The collaboration between BC Cancer Kelowna and Prince George has demonstrated the value of sharing resources and expertise in achieving high quality in clinical trial conduct as shown in the investigator-initiated brachytherapy trials in Kelowna. Next steps are to develop a guide to opening investigator-initiated trials at BC Cancer, building off lessons learned and the invaluable experiences and expertise of the study teams at both centers. This guide will include information about ethics applications, database design, and budgets as well as other key steps in opening a trial, paving the way for future studies.

8A SYNTHETIC LESION INSERTION AND RECONSTRUCTION FRAMEWORK FOR CLINICAL PET AND SPECT: A TOOL FOR TASK-BASED EVALUATION

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ABSTRACT

Accurate evaluation of image reconstruction algorithms in nuclear medicine imaging is fundamental for advancing both qualitative interpretation and quantitative accuracy of PET and SPECT scans. Such evaluations directly influence key clinical tasks such as small-lesion detectability, uptake quantification, and reliable dosimetry in radiopharmaceutical therapies. Traditional approaches including physical phantoms and Monte Carlo simulations have been instrumental but present critical limitations. Phantoms often oversimplify anatomical complexity and physiological variability, whereas Monte Carlo methods demand high computational resources and time, restricting their feasibility for large-scale, clinically relevant studies. To overcome these challenges, we introduce a novel, open-source, Python-based lesion insertion and reconstruction framework that integrates realism of patient data with the flexibility of synthetic lesion modeling. Developed on the PyTomography library and implemented with a graphical user interface, our toolbox enables interactive lesion definition (size, location, uptake), forward projection into sinogram (SPECT) or list-mode (PET) space, incorporation of attenuation and detector-specific effects, and reconstruction using state-of-the-art algorithms including OSEM, BSREM, OSMAPOSL, and KEM. By combining synthetic lesion data with real patient acquisitions, our approach generates images that preserve clinical realism while providing ground-truth control over lesion parameters, thereby enabling systematic task-based evaluations.

To demonstrate its utility, we performed a case study on quantitative SPECT imaging using data from prostate cancer patients undergoing ^{177}Lu-PSMA therapy. Synthetic lesions of varying diameters (10–40 mm) and uptake levels (8, 16) were inserted into bone, lung, and abdominal regions. Reconstructions using OSEM and BSREM revealed distinct trade-offs: OSEM achieved higher recovery coefficients, particularly for medium and large lesions, but exhibited elevated noise, whereas BSREM provided superior noise suppression and higher CNR in small or low-uptake lesions but with greater bias. Recovery plateaued after 6–8 iterations across methods, emphasizing the need for iteration-specific optimization. Post-reconstruction Gaussian filtering (2–5 mm FWHM) was found to balance noise reduction and lesion contrast effectively, underscoring the importance of tailoring filtering strategies to lesion context. These results illustrate that neither algorithm is universally optimal; instead, reconstruction and filtering must be adapted to specific lesion characteristics and clinical objectives. Beyond this case study, our framework's extensibility to PET and support for Monte Carlo simulated datasets highlight its broad potential for optimizing imaging pipelines, disease-specific protocol development, and lesion dosimetry. By releasing this framework publicly, we aim to provide the research community with a scalable, reproducible, and clinically meaningful tool to bridge the gap between idealized simulations and patient-specific imaging needs.

8B ASSESSING PODOCALYXIN AS A FUNCTIONAL TARGET FOR AML

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Podocalyxin (PODXL) is a surface glycoprotein expressed by vascular endothelial cells, megakaryocytes, a subset of neurons and hematopoietic cells. It is one of three members in the CD34-family and under physiological conditions in the blood, PODXL is expressed in primitive cells during embryonic development and in progenitor cells of adult bone marrow. Interestingly, PODXL overexpression is associated with poor prognosis and outcomes in several epithelial cancers by promoting migration, metastasis and immunomodulation. It is known to play a role in several signalling pathways, interact with the actin cytoskeleton and immune synapse formation via adaptor proteins or direct contact. In our previous work, we identified a novel PODXL tumour-restricted epitope (P447) in several solid cancers and generated an antibody, P447-Ab, for targeted killing. Here, we assess the expression and functional relevance of this tumour epitope in high-risk acute myeloid leukemias (AML) and determine its potential as a therapeutic target.

Our results show that P447 is expressed in several AML cell lines including HNT34, a proxy for Inv(3) AML, as well as in patient samples diagnosed with complex karyotype (CK) and Inv(3) AML. Notably, we observed a 2-fold enrichment of P447 in the CD34+ compartment only in AML samples suggesting disease-specific presentation. Our functional data hints that P447 expression in CD34+ cells, enhances colony-forming ability, indicating its relevance as a therapeutic target for high-risk AML. As anticipated, HNT34 cells briefly exposed to P447-Ab conjugated to a tubulin inhibitor, exhibited significant toxicity at concentrations above 544 ng/mL. We predict a similar response in patient samples and are currently developing PDX-models to further evaluate this. In summary, our study shows that P447 is selectively expressed in AML, where it confers a higher colony-forming capacity and thus could serve as potential target for therapy.

8C INTERACTIVE PERSONALIZED AI FOR PHYSICIAN-IN-THE-LOOP 3D TUMOR SEGMENTATION ON CT

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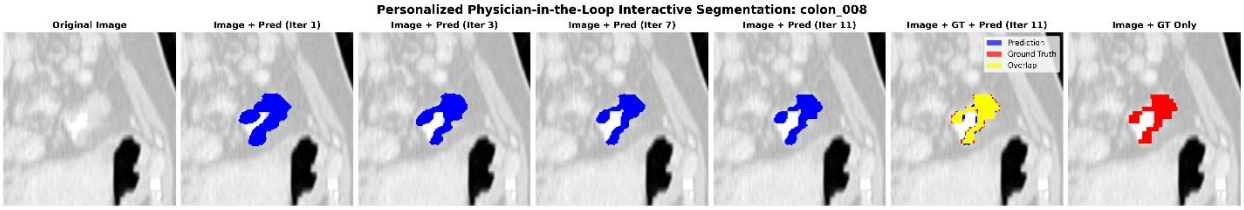

INTRODUCTION & OBJECTIVE: Accurate tumor delineation on CT is critical for diagnosis, treatment planning, and monitoring. Manual segmentation is precise but labor-intensive, while automated tools are efficient yet often fail with irregular or ambiguous tumors. Crucially, they lack adaptation to individual clinician workflows, limiting trust, explainability, and adoption. To address these gaps, we developed a personalized, physician-in-the-loop (PHIL) AI segmentation model that combines automation with iterative clinician feedback. The system integrates clinician corrections (clicks, scribbles and bounding boxes) and learns from each interaction to align with the clinician's individual refinement style. This approach achieves accurate 3D tumor segmentation with minimal effort while fostering trust through personalization and reliability.

METHODS: Our study included a multi-organ CT tumor segmentation dataset encompassing 825 patients, stratified by cancer type: colon (n=126), pancreas (n=281), liver (n=118), and kidney (n=300). The proposed model builds on a recent foundation model (MedSAM), where the pretrained image encoder was kept frozen and new components were trained to support personalization. Specifically, we introduced personalization through cascaded self-attention and cross-attention modules. These components capture the relationship between each clinician's current correction and prior segmentation outputs, enabling the model to anticipate and adapt to the clinician's refinement style. Clinician feedback could be provided through points, scribbles, or bounding boxes. At each step, the system generated a candidate segmentation mask and applied a lightweight CNN-based refinement after clinician review and confirmation. Training was performed using a five-fold cross-validation strategy. A composite loss function (Dice + cross-entropy) was used to optimize both overlap and boundary accuracy while improving iterative corrections. Performance was evaluated using the Dice similarity coefficient (DSC) and normalized surface Dice (NSD).

RESULTS: The model outperformed recent state-of-the-art methods and achieved near-expert performance after 10 iterations of clinician feedback: mean DSC/NSD of 0.947±0.03/0.982±0.02 (colon tumors), 0.955±0.02/0.936±0.03 (pancreas tumors), 0.948±0.02/0.951±0.01 (liver tumors), and 0.972±0.04/0.988±0.04 (kidney tumors). Accuracy improved steadily with each iteration, with major corrections typically completed within the first 5–6 interactions.

CONCLUSION & FUTURE WORK: The proposed personalized, PHIL AI segmentation tool provides fast, reliable tumor delineation in CT imaging. By adapting to each clinician's correction behavior, it builds trust, reduces variability, and minimizes time burden while achieving expert-level accuracy. Future work will focus on validating this framework on BC Cancer whole-body PET/CT datasets, with the goal of supporting oncology treatment planning, clinical decision-making, and research.

8D THE BC CANCER BIOCANCER INITIATIVE: A PROVINCE-WIDE INFRASTRUCTURE OF BIOSPECIMEN UTILIZATION FOR TRANSLATIONAL RESEARCH

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ACKNOWLEDGEMENTS: Hannah Miller, Amandeep Mamhotra, Anisha Ali, Kezia Robinson, Andrea Marichales

Access to ethically collected biospecimens enables meaningful improvements in cancer care. The utilization of these samples can further advance key milestones in research such as biomarker discovery and therapeutic development. Therefore, to address the need for standardized, high-quality biospecimens across British Columbia, the BC Cancer BioCancer Initiative was established as a harmonized, province-wide platform for consenting, collection, processing, storage, and distribution.

The program integrates operations across BC Cancer's six regional centres, ensuring equitable patient participation throughout the province, including those in remote and underrepresented communities. Supported by a dedicated management team and trained research staff, the program embeds screening, recruitment, and laboratory coordination into ongoing clinical workflows to ensure efficiency and adherence to ethical and regulatory guidelines.

Another component that is unique to BioCancer is the Clinical Acquisition and Sample Administration (CASA) laboratory for research, which serves as an internal system for standardized specimen processing and short-term storage. This provides centralized support for processing and storage of biospecimens for translational research endeavors. All procedures align with international best practices (ISBER), while the OpenSpecimen cataloguing system enables researchers to efficiently manage and track samples and associated data from collection, processing, and storage to shipment.

Historically, BioCancer started as a multi-disciplinary collaboration effort among lymphoma, breast, and prostate groups, but it aims to expand and support other tumour groups within BC Cancer in the future. As BioCancer continues to grow as a unified research platform, it creates opportunities for clinicians and researchers to connect and help address any gaps that are present in clinical and translational research. Through this coordinated provincial infrastructure, BioCancer directly advances BC's 10-year Cancer Action Plan by building sustainable research capacity that supports early detection, personalized medicine, and improved outcomes for patients across British Columbia.

9A APOBEC3B-DRIVEN METABOLIC ADAPTATION CONTRIBUTES TO BORTEZOMIB RESISTANCE IN MULTIPLE MYELOMA

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BACKGROUND: APOBEC3 enzymes especially APOBEC3B (A3B) drive mutagenesis in MM and are linked to aggressive disease. How A3B shapes bioenergetics and drug response under proteasome stress remains unclear.

AIM: Define how A3B modulates mitochondrial metabolism and treatment response, and test whether targeting APOBEC3 activity is therapeutically actionable.

METHODS: We engineered A3B knockout (KO; NCI-H929) and overexpression (OE; OPM-2) models, validated by qRT-PCR/Western. DNA damage was quantified by γH2AX (flow/immunoblot). Mitochondrial function was measured by Seahorse OCR. Viability and synergy were assessed in 384-well plates (CellTiter-Glo, 72 h) across metformin (Met) and bortezomib (BTZ) dose matrices; apoptosis was confirmed by Annexin V/Sytox. Recombinant A3A/A3B enzyme assays determined IC_{50} for novel B- and C8-series inhibitors; cellular A3A editing was profiled by RNA-seq (C/G→T/A).

RESULTS: BTZ increased γH2AX and induced A3A/A3B expression. A3B OE elevated basal/maximal OCR and spare capacity in OPM-2, whereas A3B KO reduced OCR in NCI-H929; BTZ±Met suppressed respiration in both settings. Checkerboards showed BTZ×Met synergy; NCI-H929 A3B-KO exhibited greater inhibition and a lower Met IC_{50} than parental, while BTZ IC_{50} was unchanged. In OPM-2, BTZ/Met IC_{50}s were similar between EV and A3B-OE, but the combination increased apoptosis versus single agents. Inhibitor profiling identified B22 (A3A IC_{50} ~29 μM) and C8.5 (A3B IC_{50} ~40 μM) and demonstrated reduced cellular C/G→T/A events with A3A inhibition; encapsulated C8.5 and etoposide elevated γH2AX in LP-

CONCLUSION: A3B promotes an OXPHOS-high state and metabolic flexibility under proteasome stress. BTZ×Met shows synergy, with A3B status shaping metabolic tone and (in NCI-H929) sensitivity to Met-containing regimens. Small-molecule APOBEC3 inhibitors suppress enzymatic and cellular editing, supporting a therapeutic strategy that combines APOBEC3 inhibition with proteasome/metabolic stress to curb mutagenesis and improve response in MM.

9B REPRODUCIBLE SUCCESS OF AUTOMATED SABR PLANNING WITH TPAS: FROM LIVER TO SPINE

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ABSTRACT

PURPOSE: Automated VMAT treatment planning using the Treatment Planning Automation System (TPAS) has shown promise in improving plan quality and efficiency. We previously reported encouraging results with TPAS for liver SABR. Extending evaluation across multiple disease sites is critical for clinical confidence. This study evaluates TPAS performance in liver and spine SABR.

MATERIALS AND METHODS: Previously treated SABR VMAT cases, originally generated by planning therapists using conventional iterative inverse planning, were retrospectively replanned with TPAS using identical priorities and OAR constraints. TPAS-generated plans were compared with corresponding clinical manual plans through blinded review by Radiation Oncologists (ROs). Four ROs independently evaluated 14 liver cases and 3 ROs evaluated 20 spine cases. Comparisons focused on organ-at-risk (OAR) tolerance criteria, PTV coverage, and overall RO preference. Estimated planning times were also assessed.

RESULTS: In all 34 cases (14 liver, 20 spine), TPAS-generated plans were unanimously preferred by reviewing ROs over corresponding manual plans. TPAS consistently demonstrated superior OAR sparing, improved target coverage, and better PTV dose conformity than conventionally generated plans. TPAS improved average PTV coverage (V100%) from 84.7 ± 15.0% to 90.9 ± 7.2% for spine plans and from 81.98 ± 16.29% to 90.1 ± 9.2% for liver SABR, with all individual TPAS plans showing increased coverage. Estimated planning time decreased from ~3 hours to ~40 minutes for liver SABR (≈77% reduction) and from more than one day to <2 hours for spine SABR (>87% reduction)

CONCLUSIONS: TPAS consistently produced clinically superior plans across two SABR disease sites, with unanimous RO preference in all evaluations. The consistency across liver and spine underscores its reproducibility and scalability across varying anatomical complexities. In addition to plan quality, TPAS significantly reduced planning times, enabling more efficient use of resources. These results highlight the multi-site capability of TPAS and supports its integration as a site-independent solution for automated SABR planning in routine practice.

9C DOSIMETRIC PLAN QUALITY COMPARISON BETWEEN 2 DIFFERENT MOTION MANAGEMENT RADIOTHERAPY PLATFORMS: HELICAL DELIVERY (TRACKING) VS C-ARM LINAC (GATING)

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PURPOSE: In 2026, the Vancouver Cancer Center will be implementing a Radixact tomotherapy linear accelerator (linac). Radixact delivers helical intensity modulated radiotherapy (IMRT) and is capable of dynamic tumor tracking (DTT), where the radiation beam follows a moving tumor in real time to continuously irradiate it. Radixact will be used to treat liver stereotactic ablative radiotherapy (SABR) in patients with tumors undergoing respiratory motion. These patients currently receive gated volumetric modulated arc therapy (VMAT) treatments. Radixact's unique beam and plan optimization parameters, such as pitch and delivery time factor (DTF), can impact plan quality. This work compares helical tomotherapy (HT) DTT plans on Radixact to gated plans using VMAT on a C-arm TrueBeam linac.

METHODS: HT and VMAT plans were re-generated for ten previous liver SABR patient datasets in the RayStation treatment planning system (TPS) with prescriptions of 45Gy/3, 54Gy/3, or 54Gy/5. The HT plans were optimized with field width (FW) = 2.5 cm, delivery time factor (DTF) = 1.5, and pitch = 0.215. Plans were normalized such that PTV $V_{100\%}$ = 95% was achieved or an organ at risk (OAR) maximum dose limit was reached. A script generated in the TPS created and optimized 30 HT plans for the ten patients using different combinations of values for FW (1cm or 2.5cm), pitch (0.287, 0.215, and 0.172) and DTF (1, 1.25, 1.5, 1.75, and 2) to assess how plan quality changes with these parameters. Plan quality metrics such as $V_{50\%}/V_{PTV}$ to the body, target conformity, target dose homogeneity, and delivery time were compared.

RESULTS: For 5/10 cases, both HT and VMAT optimized plans achieved PTV $V_{100\%}$ = 95%. For the other 5 cases, PTV coverage was 77.8%-88.9% for HT and 78.3%-88.5% for VMAT. The mean $V_{50\%}/V_{PTV}$ was significantly higher ($p=0.03$) for HT (mean=3.7±0.4) compared to VMAT (mean=3.4±0.4). There was no significant difference in the mean Paddick Conformity Index (CI) of the PTV (0.85 ± 0.07 for HT and 0.85 ± 0.08 for VMAT) or the PTV homogeneity index (0.42 ± 0.17 for HT and 0.44 ± 0.17 for VMAT). The average delivery times were 14.4 minutes for HT and 9-13.6 minutes for VMAT depending on the gating duty cycle. The scripted HT plans had double the treatment time when the FW was 1cm (mean = 29.5mins) compared to 2.5cm (mean = 13.7mins). Pitch = 0.215 produced statistically significantly ($p<0.05$) lower $V_{50\%}/V_{PTV}$, higher CI, and longer delivery time than pitch = 0.287. Delivery time also increased significantly for DTF = 1 than DTF = 1.5.

CONCLUSIONS: This study demonstrates that while HT plans can have similar PTV coverage and OAR sparing to TrueBeam VMAT plans, some plan quality parameters such as $V_{50\%}/V_{PTV}$ can be significantly different depending on the chosen FW, pitch, and DTF values. Delivery time may be comparable to VMAT gating treatments depending on the duty cycle. The choice of pitch, DTF, and FW values should take into consideration their influence on plan quality and delivery time for liver SABR treatments.

9D A NOVEL FRAMEWORK TO GRADE THE QUALITY OF SURROGATE ENDPOINTS AT THE TRIAL LEVEL: AN ANALYSIS OF SURROGATE ENDPOINTS USED IN COLORECTAL CANCER TRIALS

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Poster Category: Translation/clinical

BACKGROUND: Surrogate endpoints of overall survival (OS) are increasingly used as the basis of cancer drug approvals, but a strong association between their treatment effects is essential for validation as appropriate surrogates. We summarize the current evidence landscape for meta-analytic validation of surrogate endpoints in colorectal cancer (CRC) and assess surrogacy evaluation quality through a novel framework to inform the selection of primary endpoints in future trials.

METHODS: We developed a framework to grade the quality of surrogate endpoints in oncology. We then searched MEDLINE to identify meta-analytic validation studies of endpoints in CRC at the trial level. We consulted a research librarian to develop a search strategy in PubMed using keywords and MeSH terms. Articles published before 07/06/2024 were included and two reviewers independently evaluated each. Grades were assessed according to seven evidence domains: data source (A-B), disease population (0-3), surrogate and true endpoint definitions (0-3), number of trials evaluated (0-4), quality and strength of individual (0-2) and trial-level associations (0-8). Discordance in blinded assessments was resolved by consensus decision.

RESULTS: Eighteen articles were identified containing 39 evaluations of 12 unique endpoints. Results are presented for disease-free survival (DFS), Progression-free survival (PFS), overall response rate (ORR), time to progression (TTP) and disease control rate (DCR). PFS was most frequently assessed (n=11). Surrogates were primarily evaluated in stage IV disease (n=34) and analyses of biologic agents (n=29). Individual patient data (IPD) was used in 13 evaluations. A23 was the highest endpoint quality score assigned using IPD and B6 was the lowest using summary trial data (SD). Only DFS consistently demonstrated high-quality surrogacy for OS at the trial level using IPD (≥A18, $R^2 \geq 0.70$).

CONCLUSION: DFS consistently shows high quality of surrogacy, whereas other endpoints show inconsistent surrogacy evaluation ranging from low to moderate quality in contemporary CRC trials. Standardizing the methodology of endpoint validation using IPD may improve surrogacy estimates. Assessment of new, or revision of prior surrogate endpoints may be warranted, particularly in the context of metastatic disease.

10A REAL-WORLD OUTCOMES AND PROGNOSTIC FACTORS FOR IMMUNE CHECKPOINT INHIBITORS IN DMMR/MSI-H METASTATIC COLORECTAL CANCER (MCRC)

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BACKGROUND: Mismatch repair deficiency (dMMR) or microsatellite instability-high (MSI-H) status predicts response to immune checkpoint inhibitors (ICIs) in mCRC. In the landmark KEYNOTE177 study, a mPFS of 16.5 mos was observed with pembrolizumab, with a 29% progressive disease (PD) rate and 14% treatment discontinuation rate. Pembrolizumab was the first publicly reimbursed ICI in British Columbia, Canada. In this study, we evaluated real-world efficacy and safety of single-agent pembrolizumab in dMMR/MSI-H mCRC and explored patient and tumor factors associated with outcomes.

METHODS: We conducted a retrospective cohort study of patients (pts) with dMMR/MSI-H mCRC treated with pembrolizumab between 02/2022-11/2024. BC Cancer is the sole funder of oncology drugs across the province, and treated pts were identified through the pharmacy database. Demographics, tumor characteristics, and treatment patterns were collected. Descriptive statistics were used for baseline characteristics. Progression-free (PFS) and overall survival (OS) were estimated using Kaplan–Meier methods and compared by log-rank tests. Cox proportional hazards models were used to identify prognostic features.

RESULTS: Among the 129 pts included, median age at diagnosis was 71 years (24-88) and 57% were female. BRAF and RAS mutations were identified in 53% and 29% of patients, respectively. The primary tumor was more frequently right-sided (53%). Common metastatic sites included non-regional lymph nodes (37%), liver (33%), and peritoneum (30%). Median PFS was 19.3 months (95% CI, 11.9–NE). Estimated PFS at 3 and 24 months was 80% (95% CI, 73–87) and 49% (95% CI, 40–60), respectively. 14% of patients experienced progression at first restaging. Median OS was not reached (95% CI, 22.4 months–NE), with estimated OS at 3 and 24 months of 87% (95% CI, 82–93) and 57% (95% CI, 47–68), respectively. Treatment-related toxicity occurred in 65% of pts; 16% required hospitalization and 16% discontinued treatment. The most frequent toxicities were dermatitis (13%), fatigue (12%), colitis (10%), and hypothyroidism (5%). On multivariable analysis, older age (HR 1.05, 95%CI: 1.02-1.08, p<0.001, per year) and the presence of liver metastasis (HR 2.03, 95%CI: 1.02 – 4.03, p = 0.043) were associated with inferior PFS, whereas the occurrence of any grade of treatment-related toxicity was associated with improved outcomes (HR 0.19, 95%CI – 0.09 – 0.40), p<0.001).

CONCLUSIONS: In this population-based cohort, pembrolizumab demonstrated durable efficacy and manageable safety, comparable or better than that seen in KEYNOTE 177 with a mPFS of 19.3 mos and 16% treatment discontinuation rate. A primary PD rate of 14% was lower than expected. Age, ECOG performance status, and liver metastases were significant prognostic factors, while development of treatment-related toxicity was associated with improved survival. Now with the availability of dual IO, these factors may help inform IO treatment strategy in the 1L for dMMR /MSI-H mCRC.

RELEVANT DISCLOSURES: RDP: advisory honoraria received from Taiho, Servier, Bayer, Roche, and Pfizer outside of the submitted work. **JML:** research funding received from Personalis, Bayer, Saga Diagnostics, FoundationOne, and Guardant Health; consulting fees received from Amgen, Merck, Pfizer, Guardant Health, Sanofi, Ipsen, and Taiho outside of the submitted work. **JPS:** honoraria received from Pfizer and Incyte and advisory/consultancy fees received from Astellas and Ipsen outside of the submitted work. **SG:** advisory honoraria received from Pfizer, Amgen, Taiho, Takeda outside of the submitted work. **HJL:** received honorariums from Eisai, Taiho, Roche, Astra-Zeneca, Astellas, Amgen, Varian, CDA, Merck and Bristol-Myers Squibb for consultant work outside of the submitted work. All other authors have declared no conflicts of interest.

10B EVALUATION OF SEGREGATION OF PATHOGENIC VARIANTS WITH PARENTAL PANCREATIC CANCER BY PARENT-OF-ORIGIN ASSIGNMENT

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BACKGROUND: Hereditary cancer patients with pathogenic variants (PV) in *ATM*, *BRCA1*, *BRCA2*, *MLH1*, *MSH2*, *MSH6*, *EPCAM*, *PALB2*, or *TP53* and a close family history of pancreatic cancer (in first- or second-degree relatives) can face uncertain management recommendations in part due to lack of evidence of PV segregation with the pancreatic cancer in their family. However, establishing segregation of the PV with the individual with the pancreatic cancer can be challenging upfront when parents are deceased, unavailable, or decline genetic testing. Cascade genetic testing on both sides of the family may be necessary until segregation confirmed, however can take months to years to accomplish. Inability to determine variant parent-of origin (PofO) can lead to unclear pancreatic cancer screening recommendations and costly and ineffective cascade genetic testing to prevent and catch cancers early in other at-risk family members. To address these issues, we are piloting the use of Parent-of-Origin-Aware genomic analysis (POAga) to predict variant segregation with parental pancreatic cancer and are confirming our predictions by exploring POAga's ability to improve cascade genetic testing rates by facilitating a focused supported direct contact approach to cascade genetic testing compared to the patient's prior standard of care experience.

METHOD: Fifty-nine carriers of pathogenic variants in *ATM*, *BRCA1*, *BRCA2*, *MLH1*, *MSH2*, *MSH6*, *EPCAM*, *PALB2*, or *TP53* of differing age, sex, ethnicity, and cancer status with a parent with pancreatic cancer and unknown PV segregation, were invited to donate a new blood sample to determine parent of origin of their PV under an REB approved protocol. Blood samples were subjected to Strand-seq and long read sequencing to determine PofO.

RESULTS: Thus far, 25 of 59 patients have accepted the study and provided a sample with predictions available for 21 of 25 cases. PofO predications segregate with the parental pancreatic cancer in 16/21 cases (76.19%; p value~ 0.0266) with a stronger parental segregation trend observed among *ATM* and *BRCA2* carriers when compared to the other PC susceptibility genes. In five patients (2 *BRCA1*, 1 *MSH2* and 2 *ATM*), the predication did not segregate with the parental pancreatic cancer. Cascade genetic testing and tissue testing will be undertaken to confirm predictions.

CONCLUSION: The ability to determine a variant's PofO (i.e., if it is maternally or paternally inherited) could stand to improve more timely hereditary cancer risk stratification over traditional clinical cascade testing, resolve uncertainty, and may inform patient management and pancreatic cancer risk reduction. Future directions will be to assess segregation of polygenic risks with parental pancreatic cancer.

10C EVALUATING RISK STRATIFICATION FOR ENDOMETRIAL CANCER: A COMPARATIVE ANALYSIS OF FIVE RISK PREDICTION MODELS AND BMI

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ABSTRACT

BACKGROUND: Endometrial cancer (EC) is the most common gynecologic malignancy in high-income countries and the sixth most prevalent cancer worldwide. Its incidence is projected to rise by 50% in the next decade, largely driven by obesity, physical inactivity, and metabolic syndrome. Early detection typically relies on symptomatic presentation, such as abnormal uterine bleeding, which limits opportunities for intervention in asymptomatic high-risk individuals. Multivariable risk prediction models have emerged as promising tools to identify such individuals, while body mass index (BMI) alone remains widely used in clinical guidelines for risk stratification. It remains unclear whether multivariable models outperform BMI in endometrial cancer risk prediction.

OBJECTIVES: To compare the performance of five EC multivariable risk models with a univariable BMI model in a cohort of asymptomatic postmenopausal women in BC from the RESToRE study.

METHODS: The RESToRE cohort (n=713) completed an endometrial cancer risk factor questionnaire. Participants deemed high risk by the Pfeiffer model (>2%) or BMI (>35) were offered a progesterone challenge test (PCT). Absolute risk scores were generated for five prediction models (Pfeiffer, Hüsing, Kitson, Shi, and Hart). Performance metrics were evaluated across absolute risk thresholds and compared with BMI, and decision curve analysis was conducted to assess net clinical benefit.

RESULTS: Of 53 postmenopausal participants completing the PCT, 16 (30.2%) were positive, all with BMI>35. The PCT-positive group had higher BMI (40.2 vs. 37.4, p=.03) and weight (107.9 vs. 102 kg, p=.02). Hormonal contraceptive use and gynecologic history were more common in the PCT-positive group. Across models, Pfeiffer, Hüsing, and BMI average risk scores were higher in PCT-positive participants than in PCT-negative participants. As absolute risk thresholds increased, sensitivity decreased while specificity increased. Negative predictive value was consistently high (~70–80%), while positive predictive value varied (~30–70%) among the BMI and multivariable models. No model achieved optimal performance across all metrics, though the Pfeiffer model was most comparable to the BMI model. In decision curve analysis, the multivariable models demonstrated net benefit only at 0-3% absolute risk thresholds, with Pfeiffer showing the highest benefit among multivariable models, and BMI showing the highest benefit overall.

CONCLUSIONS: Model performance varied substantially, underscoring the need for model-specific thresholds. In this cohort with BMI>35, BMI alone outperformed multivariable models. Future comparisons should assess patients with BMI<35, where additional risk factors may contribute more meaningfully to absolute risk.

ACKNOWLEDGEMENT: This study was partially funded by the Vancouver Coastal Health Research Institute Summer Program Advancing Research Knowledge and Skills 2024.

10D OUTCOMES OF HIGH-DOSE HYPOFRACTIONATED RADIOTHERAPY FOR BULKY NON-SPINE BONE METASTASES

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BACKGROUND: Stereotactic ablative radiotherapy (SABR) is resource-intensive and not appropriate for all patients. High-dose non-SABR regimens, including 30 Gy in 5 fractions or 24 Gy in 3 fractions, are increasingly used to palliate symptoms and to achieve local control (LC) with less resource utilization than SABR. However, evidence for their use for bulky (≥ 5 cm) non-spine bone metastases (NSBM) is limited. This study investigates outcomes for bulky NSBMs following 30Gy/5 or 24Gy/3.

METHODS: A retrospective review was conducted of all BC Cancer Vancouver patients treated with 30Gy/5 or 24Gy/3 to bulky NSBMs between April 2019 and June 2024. Demographic, clinical, dosimetric, and outcome data were collected. LC was computed per lesion; progression-free survival (PFS) and overall survival (OS) were computed per patient. Survival analyses were done using the Kaplan-Meier method.

RESULTS: Twenty-seven patients (median age 65.0 years) were included. Median follow-up was 18.5 months. The most represented primaries were RCC (33%), prostate (11% castrate-resistant; 7% castrate-sensitive), lung (15%), colon (7%), and bladder (7%). Lesions were most commonly located in rib (33%), ilium (22%), and scapula (11%). Median gross tumour volume was 44.6 cm^3. Median planning target volume was 131.6 cm^3. Target lesions were painful prior to radiation in 22 patients. Fifteen lesions had extraosseous extension. One (4%) patient had a local failure. Local control at 1 year was 94%. Median OS after RT was 31.6 months (95% CI: 11.0-52.2). Median PFS was 8.6 months (95% CI: 2.7-14.5). One (4%) patient had a fracture after radiation.

CONCLUSION: The 30Gy/5 and 24Gy/3 regimens offer effective LC and low fracture risk for bulky NSBMs.

11A ANALYSIS OF METABOLIC COMORBIDITIES IN PATIENTS WITH PANCREATIC DUCTAL ADENOCARCINOMA (PDAC) AND PATHOGENIC GERMLINE VARIANTS

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BACKGROUND: PDAC is an aggressive cancer of rising incidence and the third leading cause of cancer death in Canada. Late-stage diagnosis is a major challenge in PDAC, and diabetes is present in about half of PDAC patients. Studies have shown that about 1% of patients over age 50 with new-onset diabetes are diagnosed with PDAC within 3 years of their diabetes diagnosis. Metabolic syndrome has also been linked to an increased risk of developing pancreatic cancer. Given the rising prevalence of diabetes and other metabolic disorders in Canada, increasing our knowledge on how they influence PDAC development and progression may have significant implications for earlier diagnosis. Approximately 10% of PDAC cases result from underlying hereditary predispositions, and genetic testing for pathogenic germline variants – inherited mutations that increase cancer risk – is recommended for all PDAC patients, regardless of family history or age at diagnosis. As genetic profiling becomes increasingly integrated into cancer treatment, understanding the relationships between tumour genetic profiles, patient characteristics, and response is crucial for improving patient screening and outcomes.

METHOD: Charts of 100 patients diagnosed with PDAC and with PGVs in BC from 2015-2023 were retrospectively reviewed. 98 patients had information on metabolic characteristics. Baseline data were collected at the time of initial consult with BC Cancer medical oncology services. Metabolic comorbidity rates were analyzed.

RESULTS: Out of 98 patients, 51 (52%) were male. Ages ranged from 36-89 years old with a median age of 65.5. Predominant ethnicities included 68 (69.4%) patients of European/UK background and 14 (14.3%) of East Asian background. 69 patients had ECOG 0-1. The most commonly identified PGVs were in genes *BRCA2* (n=30, 30.6%), *ATM* (n=25, 25.5%), *CDKN2A* (n=12, 12.2%), and *BRCA1* (n=9, 9.2%), with < 5 PGVs each identified in *MSH2, MSH6, PALB2, PMS2*, and more. Seven patients had 2 PGVs. 22 (22.4%) patients had diabetes, 39 (39.8%) patients had hypertension, and 25 (25.5%) patients had dyslipidemia, with 10 (10.2%) patients having a diagnosis of all 3 conditions. Of those with diabetes, 8 (36.3%) had long-standing diabetes, 9 (40.9%) had newly diagnosed diabetes (within 3 years of PDAC diagnosis), and 5 were unknown. No significant differences in genotypes were observed between patients with or without metabolic comorbidities.

CONCLUSION: This patient cohort had a lower fraction of confirmed diabetes compared to values reported in literature for unselected PDAC populations. Further analyses of the association of metabolic comorbidities with clinicopathologic parameters in patients with PDAC and PGVs are in progress.

11B THE INTERPLAY OF HLA DIVERSITY AND COPY LOSS, T-CELL PROFILES AND IMMUNOTHERAPY EFFICACY IN COLORECTAL ADENOCARCINOMA

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BACKGROUND: HLA Class I (HLA-I) proteins present antigens to CD8+ T-cells to facilitate antitumor responses. The impact of HLA-I diversity on immune checkpoint inhibition (ICI) efficacy is unclear in colorectal cancer (CRC). We explored HLA-I genotypes and loss of heterozygosity (LoH) in relation to T-cell dynamics and ICI efficacy in CRC.

METHODS: Tumor whole-exome sequencing was from 3 CRC datasets: 580 TCGA patients (pts), 82 pts from a BC Cancer resectable CRC study (VICTORI) and 109 pts from the Canadian Cancer Trials Group CO.26 trial (NCT02870920) comparing durvalumab and tremelimumab (D+T) to supportive care in refractory CRC. POLYSOLVER and LOHHLA were used to determine HLA-I genotypes and LoH status. Samples were labeled somatic LoH or germline homozygosity (Hom) if ≥1 HLA-I gene (HLA-A, B, or C) showed LoH or homozygosity. T-cell populations were inferred using CIBERSORT in TCGA and VICTORI RNA-seq data. In CO.26, T-cell receptor (TCR) Shannon diversity was determined using MiXCR on TCR-seq data.

RESULTS: The average rate of LoH and Hom was 24.7% and 25.0%, respectively (dataset and HLA-I-gene rates in table). Rates did not differ by age or sex; however, LoH was more frequent in white and Asian pts (OR=3.1, 95% CI 1.2-10.6), p=0.015) whereas Hom showed no race association. HLA-I supertypes had varied loss prevalence compared to germline: *B62* had the highest at 12.5% (95% CI 7.6-19.9) while *B08* was lowest at 4.1% (95% CI 1.8-9.2). We next assessed common (>5%) HLA alleles and ICI efficacy. *B44:02* and *C05:01* were present in 13% of pts and associated with reduced overall survival (OS) in pts receiving D+T after correcting for plasma TMB and liver metastases: adjusted hazard ratio (aHR)=3.5, p=0.001, p-interaction=0.005; aHR=3.5, p=0.004, p-int=0.004, respectively. These alleles often co-occurred (p<0.001) and B44 was most frequent white pts (OR=10.7, 95% CI 1.7-440.3, p=0.002). We then examined the role of LoH on immune regulation, microenvironment and patient outcomes. Surprisingly, LoH in *HLA-B* and *HLA-C* correlated with higher expression of each gene (p=0.004, p=0.009, respectively). Further, LoH CRCs had higher CD8+ T-cell and active/resting memory CD4+ T-cell scores in VICTORI (p=0.024, p=0.013, respectively) and TCGA (p=0.046, p=0.029, respectively). Neither LoH (p=0.13) nor Hom (p=0.86) affected OS in ICI treated CRCs. However, the combination of LoH and low TCR diversity associated with worse ICI activity (HR-int=7.1, p-int=0.01). Conclusions: HLA alleles *B44:02* and *C05:01* were associated with lower ICI efficacy. HLA-I LoH correlated with higher HLA-I gene expression and active T-cell levels, indicating its selection in T-cell infiltrated tumors. In these tumors, the combination of low TCR diversity and LoH may cause immune evasion and reduced ICI efficacy.

	CO.26	VICTORI	TCGA
HLA-I LoH (%)	21.2	28.8	24.9
HLA-I Hom (&)	22.3	25.3	25.5
HLA-A,B,C LoH (%)	16.9, 11,8, 13.1	15.7, 15,8, 22.1	19.1, 17.6, 17.2
HLA-A,B,C Hom (%)	16.8, 4.7, 7.5	14.6, 7.3, 13.9	14.1, 9.1, 12.4

11C AN UPFRONT, COMPREHENSIVE DONOR SEARCH OVERCOMES THE IMPACT OF POOR SEARCH PROGNOSIS, REGARDLESS OF RACIAL BACKGROUND.

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INTRODUCTION: Access to suitably matched donors remains a major barrier to allogeneic hematopoietic cell transplantation (HCT), particularly for non-White patients, who are underrepresented in global donor registries. Traditional donor search strategies vary in terms of timing and resource intensity, often resulting in delays or exclusion in racially diverse populations. At the Leukemia/BMT Program of British Columbia, which serves a multiethnic population under a publicly funded healthcare system, we implemented a strategy of simultaneous related and unrelated donor searches at diagnosis. This contrasts with the sequential, prognosis-guided approach supported by the recent BMT CTN 1702 trial. We hypothesized that early, comprehensive donor evaluation may mitigate the negative impact of poor donor search prognosis and lead to more equitable transplant access and outcomes across racial groups.

METHODS: We conducted a single-centre retrospective study of 542 consecutive adult patients with hematologic malignancies undergoing donor search between 2020 and 2024. Patients were categorized by self-identified race: White (n=401), Asian (n=107), and Other/mixed (n=34). Both transplanted and non-transplanted patients were analyzed. The primary endpoint was overall survival (OS); secondary endpoints included donor search prognosis (https://search-prognosis.b12x.org/), donor availability, final donor type, time to HCT in acute leukemia patients in first complete remission (CR1), and 1-year HCT outcomes of non-relapse mortality (NRM), relapse incidence (RI), and progression-free survival (PFS). Statistical analyses included Kaplan-Meier survival curves, log-rank tests, and cumulative incidence for competing risks.

RESULTS: Despite differences in donor availability, stem cell transplant utilization rates were similar across groups (White: 70%, Asian: 74%, Other: 59%; p=0.9). A good donor search prognosis was significantly more common in White patients (57%) than in Asian (37%) and Other (10%) patients (p<0.0001). Availability of fully matched unrelated donors (MUD) also differed significantly (White: 76%, Asian: 59%, Other: 40%; p=0.0002). Non-White patients more frequently received alternative donors, especially haploidentical grafts (White: 9%, Asian: 24%, Other: 25%, p=0.001).
Notably, very few patients were unable to proceed to transplant due to donor unavailability (1 per group). Median time to HCT for acute leukemia in CR1 was comparable across races (Whites: 128 days, Asians: 127 days, Other: 135 days, p=0.4). One-year overall survival showed a statistically significant difference (White: 80%, Asian: 85%, Other: 50%; p=0.03), while relapse incidence (White: 10%, Asian: 14%, Other: 30%; p=0.1), non-relapse mortality (White: 12%, Asian: 4%, Other: 20%; p=0.3), and progression-free survival (White: 74%, Asian: 85%, Other: 60%; p=0.4) were not significantly different.

CONCLUSION: In a universal healthcare setting with centralized transplant coordination, a strategy of simultaneous donor search at diagnosis was associated with equitable transplant access and comparable transplant timing across racial groups, despite underlying differences in donor availability. While overall survival was lower in patients of other racial backgrounds, no differences in relapse or non-relapse mortality suggest that the early search approach may mitigate traditional donor-related barriers. This model offers a promising alternative to sequential donor search algorithms and warrants further evaluation in diverse health systems.

11D SURVEILLANCE CONTRAST-ENHANCED MAMMOGRAPHY IN PATIENTS WITH DENSE BREASTS AND A PERSONAL HISTORY OF BREAST CANCER

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ABSTRACT

BACKGROUND: This study evaluates the diagnostic performance of contrast-enhanced mammography (CEM) for breast cancer surveillance in patients with dense breast tissue and a personal history of breast cancer: a population in whom the current standard, digital mammography, has limited sensitivity due to post-treatment changes and breast density. While breast MRI offers greater sensitivity, its use is often limited by cost and accessibility. CEM has emerged as a promising, more accessible alternative, combining anatomical and functional imaging to potentially improve cancer detection in this intermediate to high-risk group.

METHODS: In this single-center retrospective study, we reviewed consecutive CEM surveillance examinations performed between April 2022 and April 2025 in asymptomatic patients with a personal history of breast cancer and dense breasts. BI-RADS classification, lesion characteristics, follow-up imaging, and histopathology were reviewed. Sensitivity, specificity, cancer detection rate (CDR), positive predictive value (PPV) and negative predictive value (NPV) were calculated, using biopsy or at least 12 months imaging follow-up as reference standards.

RESULTS: A total of 176 patients underwent 376 CEM studies. Of the initial exams, 33% of patients (58 of 176) were recalled, with a CDR of 34.1 per 1,000 exams (95% CI: 14 – 75 per 1,000 exams). Sensitivity and specificity were 75.0% (95% CI: 40.0 – 93.3%) and 69.1% (95% CI: 61.7 – 75.5%), respectively, with a moderate PPV of 10.3% (95% CI: 4.6 – 21.3%) and high NPV of 98.3% (95% CI: 93.6 – 99.9%). Thirty-nine biopsies resulted in the diagnosis of eight malignancies in seven patients over the study period; yielding a **PPV** amongst patients who had a biopsy of **20.5% (**95% CI: 10.6 – 35.9%)**.** Of the eight cancers detected by CEM, three (37.5%) were visible only on recombined images. Two interval cancers were palpable axillary recurrences located outside the CEM field of view. One mild contrast reaction was recorded.

CONCLUSION: CEM is a valuable surveillance tool for patients with dense breasts and a prior history of breast cancer. Despite higher recall rates compared to prior studies, CEM demonstrated a high NPV and a substantial CDR, with all detected cancers classified as early-stage and node-negative. These findings support broader consideration of CEM in intermediate-to high-risk surveillance settings, particularly where access to MRI is limited.

12A ENHANCING EARLY LUNG CANCER DIAGNOSIS VIA DEEP LEARNING AND RADIOMICS FOR SUB-CENTIMETER NODULE CLASSIFICATION IN LDCT SCREENING PROGRAMS

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ABSTRACT:
Lung cancer remains the leading cause of cancer-related mortality in Canada, with early detection via Low-Dose Computed Tomography (LDCT) screening programs shown to significantly reduce mortality. However, the identification and classification of small lung nodules (solid component diameter ≤ 11 mm) presents challenges due to their limited pixel-based information and the high volume detected during screenings. In addition, Ground Glass Opacity (GGO) nodules have a clinically notorious reputation as being difficult to predict future malignant behaviors in screening studies as well. This study aimed to develop an integrated pipeline deep learning segmentation and a radiomics-based machine learning model to accurately predict future malignancy behaviors of these difficult nodule types.
Nodules were drawn from two large lung cancer screening datasets: the Pan Canadian Screening Study (PanCan, n=2537 participants, N=11,208 nodules) as the discovery/training set and a subset of small and GGO nodules from the International Lung Screening Trial (ILST, n=2318 participants, N=2566 nodules) as the test set. A self-attention 2D U-Net was trained for nodule segmentation and axial masks were restitched to make 3D core nodule masks. Radiomics features were extracted from four discrete masks; essentially the nodule core and its surroundings (core-plus-edge, shell, and shell plus removed blood vessel masks). Logistic regression models were developed for sub-cm solid/semi-solid nodules and GGO nodules separately and their test set performance was compared to the Brock model. The radiomics models showed superior sensitivity at low false positive rates compared to the Brock model for both sub-cm solid/semi-solid nodules (Sen: 0.500 vs 0.214, Spec: 0.925 vs 0.950) and GGO nodules (Sen: 0.917 vs 0.75, Spec: 0.726 vs 0.737). Both models identified cancerous nodules at baseline that would not have received interventional treatment according to the Brock model scores and predicted malignancy up to 24 months before clinical confirmation.
An external validation cohort from the Duke Lung Cancer Screening Study (DLCSS, n=2061 participants, N=3187 nodules), is currently under analysis to assess generalizability and medical utility. This approach demonstrated that integrating baseline LDCT radiomics with deep learning segmentation and incorporating 3D features from the parenchyma beyond the nodule core border can assist in accurately predicting can enhance sub-centimeter and GGO lung cancer identification, thereby improving decision-making in screening programs. Pending validation on the DLCSS dataset, this method shows promise for optimizing treatment protocols in lung screening programs in BC.

12B RADIOMIC SIGNATURES OF MICROCALCIFICATIONS PREDICT UPGRADE RISK IN ADH AND LOW-GRADE DCIS

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ABSTRACT:

Atypical ductal hyperplasia (ADH) and low-grade ductal carcinoma in situ (DCIS) are commonly excised due to a 20–30% risk of upgrade to invasive ductal carcinoma. However, most lesions do not upgrade, leading to unnecessary surgeries. Existing mammographic assessments lack precision in stratifying upgrade risk. This study applies radiomics to identify imaging biomarkers predictive of malignant upgrade, aiming to support risk-adapted management.

40 patients from BC Cancer (2015–2024) with biopsy-confirmed ADH or low-grade DCIS were retrospectively analyzed. Radiomic features were extracted from pre-biopsy diagnostic mammograms, focusing on segmented clusters of microcalcifications. Among the 17 upgraded cases, 88% were ADH and 12% low-grade DCIS. In the 23 non-upgraded cases, 91% were ADH and 9% low-grade DCIS. In both groups, the majority of patients had a BI-RADS score of 4. No significant correlation was found between diagnosis type (ADH vs. low-grade DCIS) and upgrade risk ($p = .3$) or BI-RADS score and upgrade risk ($p = .4$), highlighting the need for improved predictive tools. All 156 mammograms from the 40 patients were then classified by an artificial intelligence (AI) model. Radiomic features were evaluated for statistical significance. The top three features were age ($p < .001$), delaunay nearest neighbours skewness ($p < .001$), and voronoi cell perimeter skewness ($p < .05$), the latter two being radiomic features. The model achieved a sensitivity of 70.69%, specificity of 65.31%, and accuracy of 67.31%.

These are preliminary results of a larger endeavour that correlates microcalcifications and mammographic metadata with objective risk estimates. Building from this dataset, a modified convolutional neural network (CNN) will be trained on 415 patients to classify upgrade status using a 70/15/15 training, validation, and testing split with performance assessed using AUC, sensitivity, specificity, and accuracy. Our research objective to correlate radiomic features with upgrade risk aligns with the goal of active surveillance trials (LORIS, LORD, COMET, LORETTA) to reduce unnecessary surgeries by 40%.

CONFLICT OF INTEREST: No conflicts of interest to declare.

ACKNOWLEDGEMENT OF FUNDERS: This project was funded by BC Cancer and the BC Cancer Summer Studentship 2025.

12C PHANTOM DEVELOPMENT FOR QUANTIFICATION OF METAL ARTIFACT DISTORTIONS IN MAGNETIC RESONANCE IMAGES NEAR PEDICLE SCREWS

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ABSTRACT

PURPOSE: Magnetic resonance (MR) images are important in spinal metastasis radiation treatment planning (RTP) for visualizing the spinal cord. Patients with spinal metastasis may require metal implants to stabilize the spinal column, which can cause artifacts in MR images (geometric distortion, signal loss/pile-up)[1,2]. This is particularly critical in stereotactic body RTP, as PTV and organ at risk margins are small and the spinal cord dose needs to be minimized. Our objective was to design a phantom that could quantify the geometric accuracy of metal artifact reduction (MAR) techniques[1,2] in MR images that include pedicle screws.

METHODS: A phantom with 80 internal reference markers (diameter 2.38 mm, centers spaced 4.4 mm apart) and 2 pedicle screws (centers spaced 45 mm apart) was made. CT (resolution = 0.781 x 0.781 x 0.625 mm^3) and MR images without metal artifact reduction and with VAT set to 50% and 100% strength (T2-weighted 2D spin echo, TR/TE = 3000/87 ms, resolution = 0.781 x 0.781 x 3 mm^3) were collected (Figure). Geometric distortion was calculated by comparing the reference marker locations between the CT and MR images in 3 slices.

RESULTS: MRI distortions of 0-3 mm were measured for reference markers that were automatically detected in the analyzed slices. Some reference markers could not be automatically identified and were not included in initial analysis.

CONCLUSIONS: A phantom was developed to measure metal artifact MRI distortions within 13-58 mm of pedicle screws, which will facilitate comparisons between different MAR techniques. Further refinement of the automated reference marker detection analysis is needed.

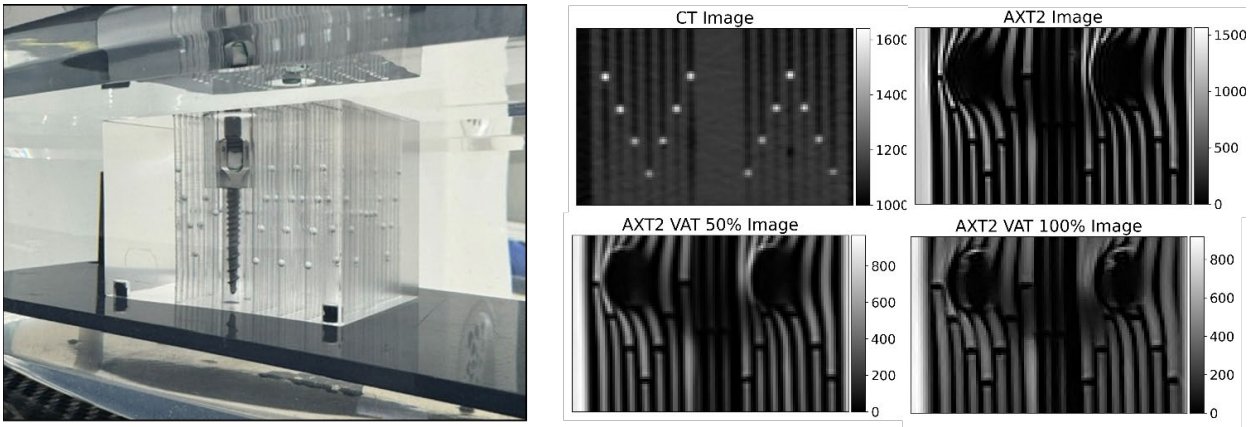

FIGURE: *Left image shows phantom with pedicle screw and Teflon reference markers. Images on the right show CT and MR slice located 15 mm from slice centered on screw. (AXT2: axial T2-weighted, VAT: view angle tilting)*

REFERENCES: (1) Stradiotti P, et al. *Eur Spine J*. 2009;18(1):102-108. doi:10.1007/s00586-009-0998-5 **(2)** Jungmann PM, et al. *J Magn Reson Imaging*. 2017;46(4):972-991. doi:10.1002/jmri.25708

12D COMMISSIONING THE ETHOS RADIOTHERAPY SYSTEM FOR ABDOMINAL AND PELVIC STEREOTACTIC ABLATIVE RADIOTHERAPY

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PURPOSE: This study evaluates the suitability of Ethos for abdominal and pelvic treatments using stereotactic ablative radiotherapy (SABR).

METHODS: Radiotherapy plans for seven patients previously treated with 6/10FFF SABR on Varian TrueBeam linacs were selected for commissioning the 6FFF Varian Ethos radiotherapy system: three pelvic lymph node cases (30–35 Gy in 5 fractions), two renal cases (40 Gy in 5 fractions), and two pancreas high-dose-palliation cases (24 Gy in 3 fractions). Volumetric modulated arc therapy (VMAT) plans for Ethos were generated using Eclipse (v.18.0) treatment planning system (TPS) with AAA (v.15.6) and compared to TrueBeam plans. Treatment plans using nine-field isotropic sliding-window intensity modulated radiation therapy (IMRT) were also generated in Ethos TPS (v.1.1) with AcurosXB. Patient-specific measurements for VMAT and IMRT plans were performed using the ArcCHECK 2D-diode phantom with point-dose ion chamber insert (Farmer 0.06 cc) and gamma factor analysis (2%/2 mm).

RESULTS: Mean (range) high-dose PTV volume was 79.4 cc (7.4–209.6 cc). Patient-specific measurements for Ethos VMAT planned in Eclipse TPS were closer to calculated dose distributions than Ethos IMRT plans generated by Ethos TPS. Mean ion chamber measurements differed by -0.7% (-2.5%–2.6%) for VMAT versus -2.1% (-5.9%–3.3%) for IMRT. Gamma pass rates for (2%/2mm) were 98.9% (97.3%–100.0%) for VMAT versus 87.9% (67.1%–99.7%) for IMRT.

CONCLUSIONS: The Ethos radiotherapy system is capable of SABR delivery for VMAT plans generated in Eclipse TPS. Further work is needed before releasing Ethos TPS sliding-window IMRT for abdominal/pelvic lymph node SABR treatments.

13A BRACHIFY: AN OPEN-SOURCE 3D MODELING SOLUTION FOR 3D PRINTABLE CERVICAL AND VAGINAL CYLINDRICAL TEMPLATES

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PURPOSE: 3D modeling for 3D printed GYN high dose rate (HDR) brachytherapy templates can be a time-consuming, error-prone process. To simplify the creation these templates, a software application has been created which can import dicom plans and generate a 3D printable cylinder with channels to facilitate preplanned needle and uterine tandem trajectories. Brachify is intended to help facilitate and accelerate clinical adoption of 3D printing in HDR brachytherapy by minimizing the time and expertise required to create 3D printable cylindrical templates for IC/IS GYN brachytherapy. This study validates brachify for a range of use cases for vaginal and cervical brachytherapy with and without a uterine tandem.

METHODS: HDR brachytherapy treatment pre-plans for 21 previously treated patients were exported as dicom files from our clinical treatment planning systems (Brachyvision and Oncentra). 10 patients were planned with a uterine tandem. Each plan was imported into brachify. Cylinders were modified according to the planned diameter, length, needle channel diameter, tandem channel diameter, and custom tandem geometry cutouts were generated. Each cylinder STL was generated and evaluated for printability and channel geometry correctness in two commercial slicing softwares (PreForm and Simplify3D). In addition, an operating room reference sheet was generated for each plan showing the channel mapping for each cylinder, and interstitial needle depths. These were manually verified for correctness.

RESULTS: Each cylinder STL was visually passed for printability and needle trajectory accuracy. Reference sheets were verified as correct by comparison with TPS values. Applicator name and channel number were validated. Planned interstitial needle lengths matched those listed in the operating room reference sheet. The base map generated for each OR reference sheet was cross validated with the TPS model. Each exported STL was validated across both the Preform and Simplify3D 3D printing slicer software systems for readability. Custom tandem cutouts were validated for geometric precision confirming accurate fit and alignment with standard applicators. Average time from DICOM import to STL and reference sheet generation is less than two minutes per case, compared to hours using traditional 3D modeling workflows.

CONCLUSION: Brachify has been shown to be an effective solution for the creation of 3D printable interstitial cylinder templates for HDR vaginal and cervical brachytherapy, with or without a tandem. To provide clinical flexibility, brachify allows the user to adjust cylinder geometry, including the ability to adjust channel diameters, threading depths for collets, needle lengths, overall cylinder dimensions, import custom tandem cutouts, remove individual needles, and export the cylinder as both STL and STEP files. Our hope is that brachify will help standardize the design of patient-specific GYN brachytherapy templates, and that it will serve as a launchpad for integration of other design features including custom contour-based applicator shapes, intersection and curvature checks for imported needle geometries (currently done in the TPS), and integration with 3D printers for single-click-manufacturing. Brachify is available for download as an executable at github.com/brachify-release.

13B END-TO-END PRE-PLANNING TRAJECTORY AND DWELL TIME OPTIMIZATION FOR 3D PRINTABLE CERVICAL AND VAGINAL TEMPLATES

AUTHORS: MICHAEL KUDLA, Ph.D. [1,2], Stephanie Merkl[1,2], Tony Teke, Ph.D. [1,2], Deidre Batchelar, Ph.D. [1,2]

AFFILIATIONS: [1] BC Cancer – Kelowna, [2] University of British Columbia - Okanagan

PURPOSE: Preplanning 3D-printed templates for cervical and vaginal brachytherapy is an iterative, manual and time-consuming process, often taking hours to for an individual patient. In some practices, dwell time optimization and dosimetry are not considered in the preplanning process due to the iterative nature of the needle trajectory determination process. Whether or not dwell time optimization is considered, manual preplanning for these types of templates can take on the order of hours and requires both brachytherapy optimization and 3D modelling skillsets.
This study demonstrates an end-to-end automated pre-planning software which generates a library of pre-plans performing both needle search and dwell-time optimization. The user can input a range of geometric and dosimetric search parameters, and the algorithm will generate results for all search parameters and will sort and display the final resulting optimization results as a 3D figure and a table of DVH values for the final accepted plan.

METHODS: This optimizer was evaluated on twenty-one interstitial GYN patients previously treated with 3D-printed cylinder templates. Ten patients were treated with tandem and cylinder and eleven with cylinder alone.
Needle trajectory and dwell-time optimization was performed for each patient using our optimization platform. For each patient, eight candidate needle trajectory solutions were generated, from which the plan with the most interstitial needles was selected automatically for dwell-time optimization.
Evaluation prescription was 30Gy/5 fractions. Objectives of HRCTV D90>650cGy, V100>95%, Bladder D2cm^3<550cGy, Rectum and Sigmoid D2cm^3<340cGy and Small Bowel D2cm^3<225cGy were used, with target and OAR goals chosen to meet EMBRACE II EQD2 guidelines when combined with 45Gy/25 fractions of external radiation.

RESULTS: Median optimization time per patient was 8.6 minutes (IQR 3.9, 21.6). All pre-plans generated were clinically acceptable. The resulting plans had a median of 13(11, 15) needles, and median HRCTV D90 of 6.2Gy (5.6, 6.4), and V100 of 91.9% (83.2, 94.0). Bladder, Rectum, Sigmoid, and Small Bowel D2cm^3 (Gy) were 5.5(5.3, 5.8), 3.9(3.1, 4.5), 3.4(2.5, 4.1), and 1.6(0.9, 3.1) respectively.

CONCLUSION: A software suite for end-to-end treatment pre-planning of 3D-printable interstitial GYN BT templates has been demonstrated. This end-to-end solution allows the planner to generate many clinically viable needle configurations and optimized dosimetry within a few minutes with a single click, without any treatment planning or 3D modeling skills. The option for incorporation of a tandem permits templates to be created for cervical, vaginal, and recurrent endometrial malignancies as needed. Generating a library of candidate needle trajectories allows the planner to easily evaluate how many needles are feasible and appropriate for a particular plan, and to automatically have several options generated. This permits the user to generate the final 3D printable solution or have an excellent starting point from which to continue designing the preplan from within a treatment planning software.

13C AUTOMATED IDENTIFICATION OF HER2 POSITIVE AND TRIPLE NEGATIVE BREAST CANCERS FROM CORE BIOPSY REPORTS USING NATURAL LANGUAGE PROCESSING

AUTHORS: Jaimie Lee[1,2], Trevor Kwan[3], Jonathan Chan[1,2], Gregory Arbour[3], Lovedeep Gondara[4], Jonathan Simkin[4], Kathryn Isaac[2], Raymond Ng[3], ALAN NICHOL[1,2]

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POSTER CATEGORY: Translational/Clinical

FUNDING: Canada Foundation for Innovation, Breast Cancer Canada, and the UBC Faculty of Medicine Multidisciplinary Research Program in Medicine.

BACKGROUND: Breast cancer treatment is guided by its subtype. Subtypes are defined by combinations of estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2) status. However, manual extraction of these biomarkers from clinical records can be time-consuming and resource-intensive. Natural language processing (NLP) is a type of artificial intelligence that can analyze text data. We aimed to evaluate an NLP model for extracting ER, PR, and HER2 status from breast core biopsy reports and identify high-risk HER2-positive (HER2+) and triple-negative (TN) subtypes.

METHODS: The study dataset was created through manual annotation of core biopsy reports from breast cancer patients diagnosed between January 1, 2020 and June 1, 2024 in BC, Canada. Trained annotators labelled spans of text in each report using the Doccano software to capture ER, PR, and HER2 status. Reports were preprocessed and split using a multi-stratified sampling approach into training (59%), validation (17%), and held-out test (24%) sets. We fine-tuned the BioMedBERT NLP model on the Stanford Question Answering Dataset (SQuAD) 2.0 and our domain-specific dataset, with hyperparameter optimization and prediction post-processing.

RESULTS: A total of 2,722 breast core biopsy reports were analyzed. Of these reports, 2,401 were free-text (non-synoptic) and 321 were structured (synoptic). On the held-out test set, the model achieved 99.79% accuracy on synoptic reports and 98.83% on non-synoptic reports, outperforming human annotators and maintaining robust performance across report formats and biomarker types.

CONCLUSION: Automated extraction of ER, PR, and HER2 status using NLP can reliably identify HER2+ and TNBC cases, which has potential to improve the timeliness of triage and treatment initiation for high-risk breast cancer patients. Future directions include external validation of our models on datasets from other institutions, model integration into prospective breast cancer triage workflows, and use of NLP for other cancer types.

13D PERIOPERATIVE FLOT IN GASTRIC CANCER: EFFECT ON SURVIVAL AMONG EAST ASIAN PATIENTS IN A CANADIAN POPULATION-BASED COHORT

AUTHORS: Tae Hoon Lee[1], Thiago Miranda[1], Giulia Pool[1], Howard Lim[1], RENATA PEIXOTO[1]

AFFILIATIONS: [1]BC Cancer, Vancouver, British Columbia, Canada

BACKGROUND: The FLOT regimen has emerged as the standard perioperative chemotherapy for resectable gastric and gastroesophageal junction (GEJ) adenocarcinomas. Outcomes in clinical trials differ between Asian and Western populations, with Asian cohorts often achieving superior survival. British Columbia (BC), Canada, provides a unique setting to study this effect given its high proportion of residents of East Asian ancestry.

METHODS: We conducted a retrospective cohort study of patients with gastric or GEJ adenocarcinoma treated with perioperative FLOT between February 2022 and November 2024 in BC. BC Cancer is the sole provider of publicly funded cancer treatments in the province, and patients were identified using our pharmacy database. Demographic, tumor, safety, and survival data were collected from electronic medical records. Descriptive statistics summarized baseline characteristics. Recurrence-free survival (RFS) and overall survival (OS) were estimated using Kaplan–Meier methods and compared by log-rank tests. Hazard ratios (HRs) with 95% confidence intervals (CIs) were derived from Cox proportional hazards models.

RESULTS: Among 141 patients, 40 (28.4%) were East Asian and 101 (71.6%) were of other ethnicities. Median age was 66 (East Asian) vs 64 (Other). ECOG 0–1 was predominant in both groups (85% East Asian, 94% Other). CPS > 1 were more common in Asian patients (91.6% vs 72%). Rates of completing all eight cycles of FLOT were similar (40% vs 44%). R0 resection was achieved in 94.7% of East Asian and 82.1% of non-Asian patients. Pathological complete response occurred in 5% of the cohort. Severe FLOT-related toxicity was comparable between groups (16% East Asian vs 23% Other). RFS did not differ significantly by ethnicity (HR 0.77, 95% CI, 0.42–1.42; p = 0.40). However, overall survival (OS) favored East Asian patients (median NR vs 40.0 mo; HR 0.46, 95% CI, 0.25–0.87; p = 0.016). One- and two-year OS were 90.0% (95%CI, 81.2–99.8) and 82.5% (95%CI, 71.5–95.2) East Asian vs 81.2% (95%CI, 73.9–89.2) and 60.2% (95%CI, 51.4–70.6) non-Asian.

CONCLUSIONS: East Asian patients treated with perioperative FLOT experienced significantly longer overall survival compared with non-Asian patients, despite similar treatment exposure and toxicity. These findings build up on the data suggesting that asian ethnicity may influence outcomes in gastric and gastroesophageal junction cancer.

14A TREATMENT PATTERNS AND OUTCOMES AFTER RECURRENCE FOLLOWING PERIOPERATIVE FLOT IN GASTRIC AND GASTROESOPHAGEAL CANCER

AUTHORS: Thiago do Amaral Miranda[1], Tae Hon Lee[1,2], Howard Lim[1], RENATA D'ALPINO PEIXOTO[1]

AFFILIATIONS: [1] BC Cancer Vancouver; [2] University of British Columbia – Medical Oncology Residency Program.

BACKGROUND: The FLOT regimen has emerged as the standard perioperative chemotherapy for resectable gastric and gastroesophageal junction adenocarcinomas. Despite improvements in disease-free and overall survival, recurrence remains common, and real-world data describing post-FLOT treatment patterns and outcomes are scarce.

METHODS: We conducted a retrospective cohort study of patients (pts) with Gastric or Gastroesophageal junction adenocarcinomas treated with perioperative FLOT between February 2022 and November 2024. BC Cancer is the sole provi.der of publicly funded cancer treatments in the province, and patients were identified using our pharmacy database. Demographics, tumor characteristics, and treatment patterns were collected. Descriptive statistics were used for baseline characteristics. Recurence-free survival (RFS), post-recurrence progression free survival (prPFS) and overall survival (OS) were estimated using Kaplan–Meier methods and compared by log-rank tests.

RESULTS: A total of 141 patients were included; the median age was 65 years, 64.5% were male, and 28.4% were of East Asian ancestry. Most patients had ECOG 0–1 (91.4%) and gastric primaries (93%). The majority had CPS >1 (78.4%), pMMR tumors (84.9%), and HER2-negative tumors (87.9%). Following perioperative FLOT, R0 resection was achieved in 86.2%, with a 5.2% pathologic complete response rate. Estimated RFS rates at 1 and 5 years were 82.2% (95% CI, 76–89) and 42.7% (95% CI, 33–55.2), respectively. OS rates at 1 and 5 years were 83.7% (95% CI, 78–90) and 48.3% (95% CI, 40–58.4), respectively. Forty patients developed recurrent disease (median time to recurrence 12.6 months), of whom 69% received first-line systemic therapy. Common first-line regimens included FOLFOX/CAPOX ± immunotherapy (51.7%), paclitaxel-based therapy (20.7%), and HER2-targeted therapy (6.9%). Only 15.7% proceeded to second-line therapy. Median prPFS was 13.5 months (95% CI, 9.2–NR) for chemo-immunotherapy, 9.4 months (95% CI, 7.5–NR) for platinum doublets, and not reached for HER2-targeted (n=2) and paclitaxel-based regimens (n=6). Toxicity profiles were consistent with expected safety signals: 42.6% of patients completed 8 cycles of FLOT, and 49% initiated adjuvant chemotherapy. Among those who received first-line therapy, 72.4% experienced adverse events, including 19.1% with serious events. Only 27% and 10% of patients who had a recurrence went on to second- and third-line therapy, respectively.

CONCLUSIONS: In this populational based cohort, recurrence after perioperative FLOT was common and few patients advanced to later-line therapy. Post-recurrence outcomes highlight the need for optimized treatment sequencing.

RELEVANT DISCLOSURES: RDP: advisory honoraria received from Taiho, Servier, Bayer, Roche, and Pfizer outside of the submitted work; **HJL:** received honorariums from Eisai, Taiho, Roche, Astra-Zeneca, Astellas, Amgen, Varian, CDA, Merck and Bristol-Myers Squibb for consultant work outside of the submitted work. All other authors have declared no conflicts of interest.

14B MAXIMUM LIKELIHOOD RECONSTRUCTION OF ATTENUATION AND ACTIVITY (MLAA) IN SPECT: A COMPREHENSIVE VALIDATION STUDY

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PURPOSE: Quantitative SPECT-CT, originally developed for radionuclide therapy dosimetry, relies on accurate attenuation maps. As attenuation is energy-dependent, CT-derived data must be converted to the radionuclide's photopeak energy (μ-map), typically via bilinear scaling, which can introduce bias. To address this, we apply a kernel-based maximum-likelihood attenuation and activity (MLAA) algorithm, which enhances μ-map accuracy by incorporating anatomical guidance from CT and object-specific information from the photopeak emission sinogram.

METHODS: The MLAA algorithm simultaneously estimates the μ-map and radiotracer distribution by maximizing the Poisson log-likelihood. Activity is updated via preconditioned gradient algorithm, and the μ-map, initialized using CT-derived attenuation map, is refined using gradient ascent algorithm. Kernel MLAA builds on this by incorporating CT-based features to reduce crosstalk between attenuation and activity estimates. Performance of kernel MLAA was evaluated together with the standard MLAA and the CT-converted μ-map using Monte Carlo simulation as well as real data collected from NEMA phantom and human subject.

RESULTS: In simulations, both two MLAA methods preserve image details, but standard MLAA causes crosstalk artifacts like edge darkening. Kernel MLAA not only addresses the issue of crosstalk, but also provides more accurate μ-map, leading to improved dosimetry accuracy compared to both standard MLAA and CT-converted μ-map. NEMA phantom and patient data further support this, demonstrating that kernel MLAA can eliminate crosstalk in high-activity regions, suppress noise in the μ-map, and improve the accuracy of attenuation correction.

CONCLUSION: Our publicly available, SPECT-enabled kernel MLAA method provides a practical solution for improved attenuation correction. GPU acceleration allows efficient reconstruction of full-size 3D images within a short runtime.

15A DOES LIMITING HOTSPOTS OUTSIDE THE GTV DECREASE THE RISK OF VERTEBRAL COMPRESSION FRACTURE IN PATIENTS TREATED WITH SPINE SABR? A SINGLE-INSTITUTION EXPERIENCE

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BACKGROUND: Stereotactic ablative body radiotherapy (SABR) has been shown to offer better local control and less re-treatment rates compared to conventional external beam radiotherapy (cEBRT). For spine metastases, SABR has also been shown to have superior pain control. However, vertebral compression fracture (VCF) is a common complication after spine SABR, with the risk estimated to be over 10%. Research has shown that radiation dose can increase the risk of VCFs, but reducing the overall dose would sacrifice oncologic control. As a compromise, BC Cancer Vancouver has adopted a new constraint to limit the hotspots (HS) in the PTV – (GTV + 2 mm) region to < 110% of the prescribed SABR dose. We hypothesize that utilization of this institutional constraint would reduce the risk of VCF without increasing the risk of local recurrence (LR).

OBJECTIVE: This study aims to test our hypothesis and evaluate the association of this new constraint on VCF rates and local control.

METHODS: A retrospective review was conducted of all patients treated with SABR between October 2014 and December 2022 for de novo spinal metastases. Patients with pre- and post-treatment MRIs were selected for the study cohort. Clinical, dosimetric, and survival data were collected, and survival analyses were performed using the Kaplan-Meier method to compare outcomes between plans that respected and exceeded the institutional constraint.

RESULTS: 70 patients were identified. They underwent SABR to 100 spine segments. 22 of these segments were treated with plans adhering to the institutional constraint while 78 were not. The median age was 64. 66% of patients were male. The most common histologies included castrate-sensitive prostate cancer (30%), breast (16%), and renal cell (11%). Most patients were ECOG 0 (50%) or 1 (43%). At a median 36 months of follow up, 28 patients died, there were 23 cases of VCF, and 20 cases of LR. There were no significant baseline differences between segments that adhered to the institutional constraint vs not. Spine segments that adhered to the constraint were less likely to develop a VCF than those that didn't ($p = 0.033$). The 48-month freedom from VCF were 95% (95% CI: 85-100%), and 66% (95% CI: 53-80%), respectively. There was no significant difference between the two cohorts for risk of LR ($p = 0.46$).

CONCLUSIONS: Spine SABR treatments using the institutional constraint is significantly associated with reduced VCF rates. It is not associated with an increased risk of LR. Therefore, the data supports integrating our institutional constraint into planning workflows in other cancer centres. Future prospective research could establish causality and help guide quality improvement initiatives.

15B OPERATIONAL ASSESSMENT OF TATTOOLESS BREAST RADIOTHERAPY USING ALIGNRT SURFACE GUIDANCE

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FUNDING: This project was generously funded by the BC Cancer Foundation Sprakkar Award.

BACKGROUND AND PURPOSE: Surface guided radiation therapy (SGRT) is a new approach for patient setup that can replace tattoo-based positioning. The permanent body markings that come with this long-standing standard of care can have a lasting negative emotional impact on cancer survivors. This study evaluates surface guidance as an alternative positioning modality, comparing speed, accuracy, and cost of the two techniques.

METHODS: Setup time and positional accuracy prior to radiographic localization for patients receiving radiation therapy for breast cancer were compared between two linear accelerators, one with and one without surface guidance technology. A Wilcoxon rank sum test was used to determine statistically significant differences in setup time and positional shifts. Cost projections per fraction and per patient for both modalities were conducted.

RESULTS: SGRT positional accuracy and setup time were equivalent to or better than tattoo-based setup. SGRT setup was faster for all photon treatments by 11 seconds. Deep inspiration breath hold setup times were equivalent for both positioning modalities, but SGRT was faster by 23 seconds for free breathing setups. There were no statistically significant differences in the magnitude of positional shifts on pre-treatment imaging. SGRT and tattoo-related pricing is broken down into item costs and staffing costs, with final estimates dependent on a center's capacity for treatments per day.

CONCLUSIONS: Surface guided patient positioning for breast radiotherapy is fiscally feasible and non-inferior to permanent tattoos in terms of set up time and accuracy. Cancer centers around the world are starting to investigate and adopt tattooless breast radiotherapy and the results of this study support the reduction of tattoo use in breast radiotherapy at BC Cancer.

16A AN ALGORITHM TO IDENTIFY OPTIMAL RADIATION THERAPY TREATMENT WINDOWS IN THE PRESENCE OF PHYSIOLOGICAL MOTION

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COI/Acknowledgements: ST & DS reports research funding from Varian Medical Systems. This work was generously funded by the BC Cancer Foundation.

INTRODUCTION: Physiological motions challenge precision irradiation of cancer targets. The effect of motion can be offset using active motion management, such as gating where the radiation beam is only turned on during a certain phase of the motion cycle. Identifying ideal motion phases for radiation treatment delivery may reduce dose to nearby healthy organs and reduce treatment toxicities.

METHODS: The Cumulative Proximity Volume Histogram (CWPVH) compares different phases of physiological motion on their pseudo-dosimetric quality. The CWPVH is akin to a dose volume histogram (DVH) albeit calculated purely from geometry. The weighted proximity to the PTV is modelled using a steep dose fall-off function based on a double exponential function modelled from RapidArc lung stereotactic body radiation therapy. Phases of motion are evaluated using an objective function (OF) that is a weighted sum (weights $p_{i,j}$) of j dose-volume constraints for each of the i organs at risk (OAR) $OF = \sum_i^{all\ OAR} \sum_j^n p_{i,j} O_{i,DVC_j}$. The objective function for each OAR is a conventional quadratic function based on dose volume constraints. The CWPVH was tested on its ability to identify optimal treatment phases uses a PTV contour that was programmed to translate based on respiratory motion derived from 5 Hz bi-planar fluoroscopy data with nearby organs kept static.

RESULTS: The CWPVH was effective at identifying tradeoffs between separation of the target and organs at risk. For the simulated example as shown in figure 1, the target translated between the stomach and proximal bronchial tree, with the objective function revealing this trade-off. Further, it identified undesirable portions of the breathing cycle for treatment delivery. Further work on volumetric data quantifying the motion of the target and nearby organs at risk is warranted to explore the degree of separation for different tumour sites.

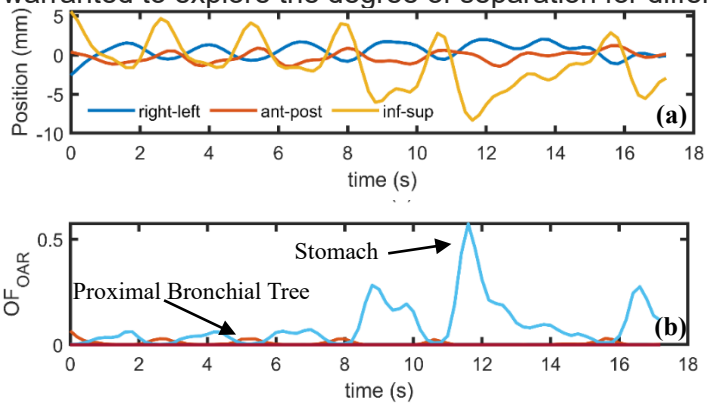

Figure 1: Panel (b) shows the objective function for the stomach and proximal bronchial tree due to the translational motions of panel (a).

CONCLUSIONS: An algorithm to identify optimal separation of the target from nearby organs in radiation therapy is presented. Further work is needed to benchmark its performance.

16B USE OF REALTIME CTMS TO EXPAND THE REACH OF CLINICAL TRIALS AT BC CANCER

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AFFILIATIONS: [1] BC Cancer Provincial Clinical Trials Office; [2] BC Cancer Vancouver

PURPOSE: A significant hinderance to clinical trial conduct are the data collection tools used at BC Cancer. Assessments performed as standard of care are documented in Cerner, while those assessments required specifically for trial purposes are documented on paper. The RealTime Clinical Trial Management Software platform has modules (eSOURCE and ENGAGE) which allow more efficient and reliable data management and verification. The electronic platform also has promise of improving clinical trial conduct in remote areas. This pilot project explored the use of RealTime's eSOURCE and ENGAGE modules to allow BC Cancer physicians to enroll clinical trial participants in underserved areas of the province. Two clinical trials, one in colon cancer at BC Cancer Prince George and one in urothelial cancer at BC Cancer Vancouver, were selected for this pilot.

METHODS: The Provincial Clinical Trials Office RealTime team compared the Schedule of Assessments and Case Report Form from each trial to map patient data currently captured in Cerner and on paper forms. Electronic forms in eSOURCE were created to replace paper forms so that all patient data for the clinical trial could be captured electronically. Validated electronic signatures are captured on the forms as needed, ensuring oversight is tracked and can be demonstrated. The trial's Informed Consent Forms were uploaded into the ENGAGE module, allowing participants to provide consent remotely using a validated electronic signature.

RESULTS: Template forms were created that could be customized for each trial. Based on these template forms, 25 customized forms were created for the urothelial trial and 17 customized forms were created for the colon cancer trial. Forms included verification of eligibility, adverse events, concomitant medications, and laboratory results. Certain fields on the forms were programmed to be completed by specific roles, ensuring correct data capture and Investigator oversight. All forms were reviewed by the applicable trial teams for accuracy and workflow before being packaged for trial visits and activated within RealTime eSOURCE. Trial participant data was recorded electronically during clinic visit and available for immediate review, making remote visits for Prince George participants possible. Diagnostic results, once signed on paper, could be routed electronically to treating oncologists to review. Enabling electronic consent avoided unnecessary visits to a BC Cancer centre for remote participants. ENGAGE also allowed participants to complete study questionnaires prior to their visits, saving time in clinic.

CONCLUSIONS: The efficiency introduced by these systems positively impacted all members of the clinical trial team. The pilot successfully demonstrated the utility of these modules. Further implementation of these modules for clinical trials will increase efficiency and will enhance the reach of BC Cancer's clinical trials.

17A COMMISSIONING OF THE RADPRO MYOSL SYSTEM FOR CLINICAL USE

AUTHORS: Jorja Moore[1], Gina Badragan[1], Justin Poon[1], IULIAN BADRAGAN[1]

AFFILIATIONS: [1]BC Cancer – Surrey

PURPOSE: In order to introduce a new in-vivo dosimetry system, optically stimulated luminescent (OSL) chip dosimeters were irradiated using multiple depths and energies to test the accuracy, consistency, and linearity of the measured dose, as well as set up a system calibration with energy correction factors. The OSLchips are used for both research purposes, and clinically, for patients with implanted electronic devices (IEDs).

METHODS: Using the RadPro instruction manual[2] and a research article from Kowalski et al.[3] out of Duke University as the basis for the dosimeter and system calibration, and energy correction and linearity measurements, respectively, multiple OSL chips were irradiated at depths of 1cm, 5cm, and 10cm, using energies of 6MV, 6FFF, 10MV, 10FFF, and 18MV. Thirteen chips were irradiated with a known dose of 100MU, a source-to-surface distance (SSD) of 95cm, 3cm off-axis, and at a depth of 1cm for the system calibration. Subsequently, the energy correction factors were done using a similar setup, however using 8 chips per energy, with the chips placed 3cm off axis for the flat beams and on the central axis (CAX) for the FFF beams. Moreover, further depth correction measurements were also done for each energy, at a depth of 10cm.

RESULTS: The system calibration process yielded a desirable factor of 1.0023, as compared to the objective factor of 1.0 – a perfect ratio between the reference dose and the average measured dose of the chips. Likewise, all energy correction factors remained reasonable when compared to those from Kowalski et al.[3]. At a depth of 1cm, the largest difference between measured and delivered dose was 3.07% (18MV) and, as expected, only slightly larger at a depth of 10cm: 4.05% (6FFF).

CONCLUSIONS: Due to an in-depth commissioning process, we are confident in the clinical applicability of the OSLchips. The results have shown to be consistent and precise, and the RadPro myOSL system therefore is well suited for both clinical and research purposes.

[2] RadPro International, *Instruction Manual: myOSLchip* (Freiberg Instruments GmbH, Freiberg, Germany, 2025)
[3] J. P. Kowalski, B. G. Erickson, Q. Wu, X. Li, and S. Yoo, “Characterization, commissioning, and clinical evaluation of a commercial BeO optically stimulated luminescence (OSL) system” JACMP 26, (2025)

17B DEVELOPMENT OF A CARDIAC PHANTOM FOR THE TESTING OF DYNAMIC TRACKING IN INTRATHORACIC RADIATION TREATMENT

AUTHORS: K. Nell[1,2], T. Karan[2], M. Camborde[2], A. Bergman[2,3], D. Ta[2], J. Marshall[1,2], J. Poon[4], D. Schellenberg[5], R. Thompson[6,7], M. Deyell[8], S. THOMAS[2,3]

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COI/Acknowledgements: ST, DS & MD report research funding from Varian Medical Systems

INTRODUCTION: The motion of intrathoracic targets in radiation therapy for cancer causes difficulties in minimizing treatment margins. Dynamic tracking can reduce treatment margins by following the target's motion through treatment. Often, this involves using internal surrogates for the target's motion. However, these surrogates typically only predict respiratory induced motions, even though cancers nearby the heart in the lung and esophagus can undergo cardiac induced motions. This motivates investigating the influence of cardiac motion on dynamic tracking enabled by developing a phantom to simulate cardiac motion.

METHODS: A cardiac phantom was developed using a 3D printed scaffold, Arduino UNO R3, Geckodrive G251 step motor driver, WanTai 42BYGHM809 stepper motor, and the Arduino IDE software. A small ball bearing placed inside the 3D printed cube was used as the target, which was placed on a platform attached to a gear rack and pinion, driven by the stepper motor. The Arduino was coded to step the motor based on the input of one-dimensional position data evenly spaced in time, which was converted to sets of steps executed at appropriately varying speeds to result in smooth, continuous motion. The phantom was tested with cardiac lead motion data using a BrainLAB ExacTrac Vero linear accelerator in conjunction with a respiratory BrainLAB ExacTrac gating phantom.

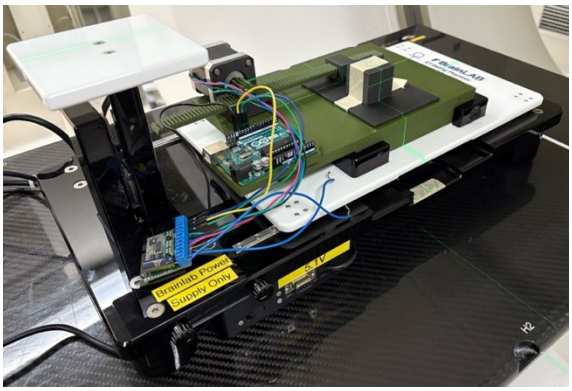

Figure 1: The created cardiac phantom setup with the BrainLAB ExacTrac gating phantom. The taped black cube on the right contains the target ball bearing.

RESULTS: The cardiac phantom successfully executed the desired motion with an average peak-to-peak hysteresis of 0.72mm in the direction perpendicular to the intended motion. The motor was tested across 30-80bpm, 3-10mm amplitudes, and a continuous run time of 10 minutes without any measurable skipped steps or motion drift.

CONCLUSIONS: A working cardiac phantom was constructed and evaluated for use in dynamic tracking experiments. It is currently being used to investigate the effects of cardiac motion on cardiorespiratory dynamic tracking, however its potential applications are numerous.

18A PLUVICTO FROM TRIAL TO TREATMENT: IMPLEMENTATION SUCCESSES

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AFFILIATIONS: [1]BC Cancer Provincial Programs

When new complex cancer treatments are approved by Health Canada, what happens between then and treatment launch can be a mystery. In reality, there is an entire implementation journey where various dedicated teams collaborate to develop and establish necessary tools and processes for timely, safe, and consistent treatment once launched and through to sustainment. This poster outlines the provincial implementation pathway for lutetium [177Lu] vipivotide tetraxetan (brand name: PLUVICTO). Launched across BC on June 1, 2025, PLUVICTO is a new radiopharmaceutical medication for advanced metastatic prostate cancer. It targets and binds to prostate cancer cells using a protein called PSMA and delivers radiation to kill the cancer cells while minimizing damage to healthy tissue. The delivery of PLUVICTO requires a unique partnership between the BC Cancer oncologists and Health Authority nuclear medicine physicians and their respective teams to streamline access and care for the patient, as the 'drug' is administered in the HA Nuclear Medicine department but is ordered by an Oncologist or GPO.

Three key themes of this successful implementation will be highlighted: health system collaboration, education and documentation, and the establishment of a BC Cancer Provincial coordinating team. By tying the three themes together with current patient data, the poster will outline how the program continues to leverage its successful launch to expand implementation to deliver treatments for patients closer to home.

18B ESTIMATING PHARMACIST HUMAN RESOURCES FOR A PHARMACIST ONCOLOGIST SHARED CARE ORAL ANTICANCER PHARMACOTHERAPY CLINIC

AUTHORS: Sonia Plaha[1] (PharmD 2026 Candidate), ANNE NGUYEN[1,2] BScPhm, PharmD, Dawn Warkentin[1,2] BSc(Pharm), PharmD

AFFILIATIONS: [1]University of British Columbia, Vancouver, British Columbia, [2]Lions Gate Hospital, North Vancouver, British Columbia.

RATIONALE: With advances in oral anticancer pharmacotherapy, patients may be offered oral therapies to take home, resulting in additional follow-up by oncologists prior to each renewal. At Lions Gate Hospital (LGH), our oncologists are approaching maximum capacity, but a shared care model with pharmacists may mitigate this. Pharmacist human resources need to be determined.

OBJECTIVE: To estimate pharmacist human resources required for a shared care model for oral anticancer pharmacotherapy, in a hospital clinic serving >270,000 residents in a rural/urban setting.

METHODS: A retrospective review of selected oral anticancer pharmacotherapy and protocols at our hospital was conducted to predict drug utilization. Our outpatient dispensing data were extracted from WinRx (01January2019-31July2024). Three analyses were conducted: a) 2019-2024, the number of unique dispenses were determined, b) 2024, the number of unique dispenses were extrapolated to December and compared to 2023, c) 2023, the top four tumour groups were described in depth. Prior to each dispense, patients were assessed by an oncologist, thus pharmacist patient workload and human resources were estimated from dispensing data.

RESULTS: There were 476 patients across 8 tumour groups. Over 5.5 years, the most frequent dispenses were for breast, lung, genitourinary and lymphoma protocols. Extrapolated 2024 data predicted a 15% increase in total dispenses, driven by breast protocols. In 2023, there were 724 total dispenses driven by breast, lymphoma, lung, and genitourinary protocols. The most prevalent protocols in each group were as follows: breast BRAVCAP (capecitabine, n=75), UBRAVPALAI (palbociclib, n=74), UBRAVRIBAI (ribociclib, n=72); lymphoma ULYFACAL (acalabrutinib, n=50) and LYIBRU (ibrutinib, n=42); lung LUAVOSIF (Osimertinib, n=68); genitourinary UGUPABI (abiraterone, n=34). We estimated that 0.5 fulltime equivalent (FTE) pharmacist was required to develop a shared care model.

CONCLUSIONS: Dispensing trends show growth in oral anticancer pharmacotherapy utilization, with breast protocols driving the increase. A 0.5 FTE clinical pharmacy resource is recommended to implement a shared care model program at our hospital.

19A AUTOMATED IMAGE ANALYSIS WITH PYLINAC IN QATRACK+

AUTHORS: Justin Poon, Gina Badragan, Jorja Moore, Vicky Huang, IULIAN BADRAGAN

AFFILIATIONS: BC Cancer – Surrey

PURPOSE: Several pylinac image analysis tools within QATrack+ (v3.1.1.3) were tested and compared with existing quality assurance (QA) software, with the goal of implementing the pylinac-based tests into our monthly machine QA program.

METHODS: Several test lists were created within QATrack+ employing pylinac for image analysis, including image quality tests (Standard Imaging QC3 and QCkV phantoms) and volumetric modulated arc therapy (VMAT) QA (picket fence, dose rate and gantry speed variance, and dose rate and MLC speed variance). For each test, 10 sets of images acquired during regular monthly QA were analyzed with pylinac and results were compared with the analysis from our existing QA software (Standard Imaging PIPSpro and in-house MATLAB programs). This comparison was done for two Varian TrueBeam linacs (one Millenium MLC and one HD MLC).

RESULTS: For image quality QA, results were compared for modulation transfer function (MTF) values (F80/F50/F30), contrast-to-noise ratio, and uniformity. For VMAT QA, maximum leaf errors were compared for the picket fence test, and ROI reading deviations were compared for the dose rate and gantry/MLC speed tests. Pylinac results showed good consistency month-to-month and agreed reasonably well with results from existing QA software.

CONCLUSIONS: Pylinac tests within QATrack+ were easy to implement and use, with consistent results comparing well against alternative tools. New baselines were created, and the tests are now regularly used for monthly QA. Having pylinac image analysis built directly into QATrack+ is convenient and has improved our QA workflow.

19B PHOTOGRAMMETRY APPROACH FOR CUSTOM 3D PRINTED BOLUS IN RADIOTHERAPY OF SKIN LESIONS

AUTHORS: Devon Richtsmeier[1], ROJA ZAKARIAEE[1]

AFFILIATIONS: [1]BC Cancer Victoria

PURPOSE: Conformal bolus for complex superficial lesions can be challenging with standard commercial products. Photogrammetry generates accurate 3D surface models from photographs and enables custom 3D-printed bolus production without extra CT scans, improving conformality and reducing imaging dose and resource usage.

METHODS: Two simulated 3D-printed surface lesions were affixed to a Varian SRS E2E head phantom. After acquiring photogrammetry images with an iPad Pro, a 3D surface model was processed in the Blender software to create a bolus mold into which silicone was poured to form the bolus. The phantom was immobilized, CT scanned, and set up on a linac for CBCT, mirroring clinical protocols. The same procedure was repeated using standard 1cm-thick Superflab. GTV expansions of 1 cm were used for both the CTV and PTV. Maximum air gap and air volume within the PTV between the bolus and phantom surface were then assessed. Reproducibility of the setup in both cases was also evaluated.

RESULTS: Compared with Superflab, the 3D-printed bolus demonstrated a seven-fold reduction in air volume and a four-fold decrease in maximum air gap across both CT and CBCT images. The 3D-printed bolus setup was more reproducible on the treatment unit with the DICE coefficient between bolus contours in the original CT and CBCT images ranging between 0.82 and 0.96, compared with 0.70 and 0.76 for Superflab. Photogrammetry also eliminated the need for an extra scan or modification of immobilization devices, ensuring an efficient workflow.

CONCLUSIONS: Photogrammetry-based 3D bolus design significantly improves skin conformality and reduces air gaps for posterior head lesions compared with the standard Superflab setup. Preparing a patient-specific bolus prior to CT-simulation reduces radiation exposure and improves setup reproducibility all made possible via photogrammetry on common devices, offering a practical and effective solution.

20A PBRPK-DRIVEN DOSIMETRY: ESTIMATING SPECT CURVES FROM PET DATA IN RADIOPHARMACEUTICAL THERAPY

AUTHORS: Maziar Sabouri[1,2], Alireza Rafiei Sardouei[1], James Fowler[1,2], Omid Gharibi[1,2], Hamid Abdollahi[1,2], Carlos Uribe[1,2], ARMAN RAHMIM[1,2]

AFFILIATIONS: [1] University of British Columbia, Vancouver, Canada; [2] BC Cancer Research Institute, Vancouver, Canada

AIM/INTRODUCTION: Accurate absorbed dose calculations in radiopharmaceutical therapies (RPTs) depend on the analysis of post-therapy SPECT data. However, pre-therapy PET scans provide valuable insights into the patient's pharmacokinetics. Recently, we developed a computational framework based on Physiologically Based Radiopharmacokinetic (PBPK) model to simulate radiopharmaceutical kinetics in the body. The PBPK model simulate the biological distribution of radiopharmaceuticals by solving a system of over 100 ordinary differential equations (ODEs) using pharmacokinetic parameters. In this study, we apply an inverse approach to estimate these parameters from PET data, enabling SPECT time-activity curve (TAC) prediction and dosimetry without the need for patient-specific SPECT imaging.

MATERIALS AND METHODS: The PET curves were generated using the same PBRPK model, with pharmacokinetic parameters derived from literature. Model parameters were estimated by minimizing the mean squared error (MSE) between simulated TAC and PET curve. Optimization was conducted in a log-transformed parameter space using the Adam optimizer with a fixed learning rate of 1×10^{-4}. The training process was divided into two stages. In the first stage, the model was fitted to early-time data (0–50 minutes) to estimate receptor densities in the salivary glands (SG), kidneys, and tumor, as well as blood flow rates in the SG and tumor. In the second stage, the time span was extended to 500 minutes to incorporate radioactive decay dynamics and estimate the release rates. Early stopping was applied to both stages, defined as no significant loss reduction (thresholds of 1×10^{-4} for the first stage and 1×10^{-6} for the second) over five consecutive epochs.

RESULTS: The accuracy of estimated parameters was assessed using mean absolute percentage error (MAPE), showing low errors for most density (SG: 3.64%, kidney: 1.13%, and tumor: 20.27%) and blood flow (SG: 1.19% and tumor: 4.60%) parameters, but higher deviations in release rate (SG: 117.97%, kidney: 32.80%, and tumor: 1246.54%). For dosimetry predictions, SPECT-derived area under the curve (AUC) values—which are proportional to absorbed dose—demonstrated good agreement for kidney (MAPE: 4.63%) and SG (16.58%), while tumor showed a higher discrepancy (120.18%), indicating potential challenges in accurately estimating tumor uptake.

CONCLUSION: The PBPK-based inverse modeling approach enables accurate prediction of pharmacokinetic parameters and absorbed doses for organs like kidneys and salivary glands using only PET data. However, tumor uptake remains a challenge, highlighting the need for improved modeling or data integration to reduce uncertainties in tumor dosimetry.

20B DIFFUSE OPTICAL BREAST (DOB) SCANNER AS A NON-INVASIVE APPROACH FOR PREDICTING PATHOLOGIC RESPONSE TO NEOADJUVANT CHEMOTHERAPY (NAC) IN LOCALLY ADVANCED BREAST CANCER (LABC)

AUTHORS: Mohammad Saleh[1], Parmveer Atwal[2], Maryam Momtahen[3], Shadi Momtahen[4], Marilyn Zhou[3], Zhi Y Lim[3], Wan Yap[5], Barbra Bradshaw[6], Dante Wan[7], Shatha Alqurashi[1], Anagha Gurjal[1], Suzana Gilmour[1], Mohammad Asif Shaikh[1], Ramani Ramseshan[3], Farid Golnaraghi[3], Phuong Thao Nguyen[1], JENNY J KO[1]

AFFILIATIONS: [1]Medical Oncology, BC Cancer - Abbotsford, [2] Medical Physics, BC Cancer - Abbotsford, [3]Mechatronics Engineering, Simon Fraser University, [4]Perioperative and Pain Medicine, Stanford University, [5]Medical Imaging, Abbotsford Regional Hospital and Cancer Centre, [6]Laboratory Medicine, Abbotsford Regional Hosp. and Cancer Centre, [7]Medical Oncology, Richmond General Hospital

BACKGROUND: Standard imaging modalities have limitations in accurately predicting pathologic response to NAC prior to surgery in patients with LABC. This prospective study evaluates the role of DOB-Scan, a non-invasive probe that uses differential reflectance of near-infrared (NIR) light through a range of tissues, to predict the pathologic response to NAC. Methods: 98 with LABC planned to receive NAC followed by surgery were enrolled. A DOB-Scan was performed using NIR light at baseline, before each NAC cycle, and after NAC was completed. Patient underwent measurement by palpation prior to each cycle, as well as targeted ultrasound pre-NAC, mid-NAC and prior to surgery. We compared the concordance between Optical Residual Cancer Burden (oRCB) from DOB-scan vs. pathological RCB (pRCB). The oRCB ratio (final:first cycle) stratified patients into RCB classes 0-3.

RESULTS: 64 completed NAC and surgery with analyzable DOB-Scan; 48 had DOB-Scans with adequate quality. Median age was 59 (range 29-81). For all analyzable scans, oRCB predicted pRCB in 70.3% (95% CI 57.4-80.8%) of the cases; agreement rose to 93.8% (95% CI 81.8-98.4%) in scans with adequate quality. Identified quality issues included ambient light and LED capture failure. Five DFS events and five OS events occurred over 55 months, all in patients classified as oRCB-II or -III. There was no significant difference in overall survival (OS) or disease-free survival (DFS) across final pathologic stage, number of NAC cycles received (4-7 vs 8 NAC cycles, p = 0.2 for both OS and DFS), ER/PR status, tumour grade, lymphovascular invasion, initial tumour size, initial lymph node status or size, NAC regimen used, type of surgery, or number of lymph nodes resected at surgery. >6cm tumour on the last clinical exam before surgery trended towards worse DFS (mDFS NR vs NR, 95% CI 8.1-NR vs NR-NR, p=0.059).

CONCLUSIONS: The DOB-Scan may predict residual cancer burden accurately, with high correlation between oRCB and pRCB. This non-invasive approach can assist in evaluating early disease response to NAC and final disease burden prior to surgery.

FUNDING: This study was funded by Michael Smith Foundation and Crystal Gala Foundation.

CONFLICTS OF INTEREST: The authors declare no conflict of interest.

21A MR PERFUSION IMAGING OUTSIDE THE BRAIN: AN ANALYSIS PIPELINE FOR SALIVARY BLOOD FLOW

AUTHORS: Adam Suban-Loewen[1,2], HALEY CLARK[1,2,3]

AFFILIATIONS: [1] BC Cancer Surrey, [2] UBC Physics and Astronomy, [3] UBC Medicine

Head and neck cancer patients undergoing external beam radiation therapy often receive non-therapeutic dose to their salivary glands causing loss of salivary function and long-term effects on nutrition, oral health, and quality of life. Despite this, imaging methods to track and map salivary gland damage are limited. Arterial Spin Labelling (ASL) offers a contrast-agent free opportunity to leverage Magnetic Resonance (MR) perfusion imaging to measure blood flow in the salivary glands. However, while ASL has been successfully applied in other parts of the body, it is most commonly used in the brain, and all open-source ASL analysis tools and processing pipelines are designed around brain-specific assumptions.
Our work examines the essential steps for an ASL analysis pipeline in the salivary glands. We compare algorithms for motion correction, co-registration with anatomical volumes, susceptibility distortion correction, spatial regularization, and pharmacokinetic models for quantifying Salivary Blood Flow (SBF) and Arterial Transit Time (ATT).
ASL with concurrent gustatory stimulation could potentially be incorporated into the clinical imaging workflow for patient monitoring during radiation therapy, which would provide the opportunity to adapt radiation treatment planning and mitigate loss of salivary function. Furthermore, the analysis methodology employed by this pipeline could be extended to other organs-at-risk with unambiguous arterial supply such as liver, breast, prostate, and kidney.

The authors have no conflicts to declare. This work was conducted as part of graduate studies towards a PhD in Physics at UBC, funded by BC Cancer and with a 4 Year Fellowship from UBC.

21B TOWARDS LOW-COST CANCER SCREENING: DESIGN OF AN ULTRA-LOW FIELD MAGNET USING A HALBACH ARRAY

AUTHORS: Adam Suban-Loewen[1,2], HALEY CLARK[1,2,3]

AFFILIATIONS: [1] BC Cancer Surrey, [2] UBC Physics and Astronomy, [3] UBC Medicine

Increasing cancer screening has a resounding benefit in improving early detection and survival outcomes. For example, in 2020, 88% of women with breast cancer are alive at least 5 years after diagnosis. However, screening programs have not yet met all targets, such as Abnormal Cell Rate (ACR), the percentage of mammograms which require follow-up: the rate has been increasing away from its 5% target for subsequent screens across Canada. This means a reduced likelihood that a patient undergoing further tests actually has cancer, which is stressful for the patient and diverts resources in a burdened healthcare system. More low-cost imaging options for cancer screening could potentially help improve ACR and screening outcomes.
Ultra-low field (ULF) Magnetic Resonance Imaging (MRI) is an emerging technology that constructs an image from a low-frequency radio signal generated under the influence of a static magnetic field (B_0) on the order of mT, thousands of times weaker than expensive superconducting magnets. However, there is still somewhat limited open-source hardware and educational material accessible, and furthermore physical behaviour at ULF regimes remains relatively unexplored in comparison to high-field.
In this work, we designed a relatively homogenous magnetic field using a Halbach array configuration with 120 permanent magnets, costing approximately $400 CAD. Three-dimensional field simulations predict a nominal B_0 of 8 mT and homogeneity of 1.97% at 6 cm away from isocentre. Alternatively, the Diameter of Spherical Volume (DSV) within which there is better than 1% homogeneity is 9.43 cm, enough volume for a prototype to potentially image extremities.
An initial prototype is being constructed based on this design to promote open-source, educational content at ULF, and potentially provide a platform for further investigations, in the hopes of one day enabling additional future technology options for accessible, low-cost cancer screening.

The authors have no conflicts to declare. This work was not funded by BC Cancer.

22A TECHNICAL SOLUTIONS FOR THE IMPLEMENTATION OF A PBI VMAT TECHNIQUE AT BC CANCER VANCOUVER

AUTHORS: IAN SUN[1], Tania Karan[1], Jason Hui[1], Robynn Ferris[1], Dave Voduc[1], Alanah Bergman[1]

AFFILIATIONS: [1]BC Cancer Vancouver

A partial breast irradiation (PBI) VMAT technique has been implemented at BC Cancer Vancouver following publication of the Florence Phase III Trial for accelerated partial breast irradiation[1]. The IMPORT LOW phase III trial has shown that partial breast irradiation can reduce long term breast toxicity versus whole breast irradiation[2]. A PBI VMAT technique is offered when a conventional partial breast short tangent technique would still irradiate a large volume of healthy breast tissue, for example in women with large breasts. It is also utilized when Organ at Risk constraints cannot be met while also ensuring adequate target coverage, for example if the treatment volume is located in close proximity to the heart.
The main barrier to implementation of the technique is image guidance: how to accurately localize a 3D treatment volume inside mobile breast tissue. This poster outlines the various technical challenges associated with implementation of this technique and the solutions the Breast Technical Group at BC Cancer Vancouver came up with:
Challenge: target visualization on pre-treatment imaging
Solutions: a new ConeBeam CT (CBCT) imaging technique, and guidelines to breast surgeons for surgical bed clip placement to help with target delineation and image guidance
Challenge: image acquisition time and number of breath holds required for deep inspiration breath hold (DIBH) treatments
Solution: a partial trajectory CBCT acquisition technique with faster acquisition time requiring fewer breath holds.
Challenge: safe image acquisition for very lateral targets within the mechanical limits of a C-arm linear accelerator
Solution: changes to standard patient positioning and a new lookup table to guide treatment isocentre placement and improve gantry and imager clearance, and commissioning of jaw tracking for our linear accelerators.

1. Meattini et al (2020). Accelerated partial-breast irradiation compared with whole-breast irradiation for early breast cancer: Long-term results of the randomized phase III APBI-IMRT-Florence trial. *Journal of Clinical Oncology*, *38*(35), 4175–4183. https://doi.org/10.1200/jco.20.00650
2. Kirby et al (2025). Partial-breast radiotherapy after breast conservation surgery for women with early breast cancer (UK IMPORT LOW): 10-year outcomes from a multicentre, open-label, randomised, controlled, phase 3, non-inferiority trial. *The Lancet Oncology*, *26*(7), 898–910. https://doi.org/10.1016/s1470-2045(25)00194-9

22B CLINICAL CHARACTERISTICS AND TREATMENT OUTCOMES OF PEDIATRIC CENTRAL NERVOUS SYSTEM TUMORS TREATED WITH TARGETED THERAPIES IN BRITISH COLUMBIA

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ABSTRACT: Central nervous system (CNS) tumors are the most common solid tumors in children and remain a leading cause of cancer-related morbidity and mortality worldwide. Gross total resection is often not feasible due to tumor location or invasiveness, and conventional therapies such as chemotherapy and radiotherapy can carry significant long-term toxicities including endocrine, cognitive, and neurological sequelae. Over the past decade, targeted therapies have emerged as a promising alternative. Nevertheless, clinical trial and real-world data in pediatric populations remain limited, and the variability of treatment response across tumor types and molecular alterations is not fully understood. This study aims to describe the clinical and molecular characteristics of pediatric patients with CNS tumors treated with targeted therapies in British Columbia and to evaluate treatment outcomes. A retrospective chart review was conducted at BC Children's Hospital for pediatric patients (0–18 years) diagnosed with CNS tumors and treated with targeted therapy. Data collected included demographics, tumor diagnosis and location, molecular alterations, prior therapies, and treatment outcomes. Fifty-four patients were included (59% male, mean age at diagnosis 6.1 years). The most common diagnoses were glioma (57%) and plexiform neurofibroma (20%), followed by schwannoma (4%), tumor of the sella region (4%), and other rare CNS tumors (15%). Neurofibromatosis was present in 18 patients (NF1: 14; NF2: 4). Molecular alterations included BRAF fusions (19%), BRAF V600E mutations (17%), TSC (15%), and other alterations (13%), while 36% had no identifiable molecular alteration. Tumor locations included ventricular (15%), diencephalic (7%), optic pathway (7%), cerebellum (5.5%), brainstem (5.5%), spine (4%), hemispheric (4%), and other/unknown (52%). The most frequently used agents were trametinib (n=14), dabrafenib + trametinib (n=9), and everolimus (n=7). Median treatment duration was 26.8 months, and at analysis, 61% of patients remained on therapy. Radiographic response varied by molecular subtype, with BRAF V600E mutations showing the highest objective response rates, suggesting differential benefit depending on the molecular driver.

CONCLUSION: This study provides the first provincial summary of targeted therapy in pediatric CNS tumors. Findings highlight variability in treatment response across molecular subgroups and underscore the importance of comprehensive molecular profiling to guide clinical decision-making. As the use of targeted therapy in pediatric neuro-oncology continues to expand, prospective studies are urgently needed to evaluate long-term safety and efficacy and ultimately improve outcomes for children affected by these challenging and complex diseases.

CONFLICTS OF INTEREST: None declared

FUNDING: UBC Faculty of Medicine Summer Student Research Program

23A A CUSTOM SILICONE PHANTOM FOR EVALUATION OF CT VOLUME ESTIMATION TOOLS

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PURPOSE: To evaluate the accuracy of a volume estimation tool provided on a modern CT scanner by designing and constructing a silicone phantom containing flasks of customizable water volumes.

METHODS: The phantom was designed in SolidWorks to house a set of three plastic flasks of varying capacity. The phantom was poured in two halves using a 3D-printed mold and using equal parts A and B of Ecoflex 00-30. The phantom was scanned using our department's dedicated radiotherapy CT using different volumes of water for each of two scans. Average Hounsfield Unit (HU) values for the phantom were compared with the average HU for a cohort of ten patient CT scans previously acquired for bladder volume estimation.
Using the CT's inherent auto-contouring tool, four radiation therapists (RTs) generated contours for each of six water volumes and recorded their volumes. The average of these volumes was compared to the known volumes of water in each flask.

RESULTS: The HU of the phantom water volumes were more uniform than HU measured for patients but with similar mean HU values (-2 HU in phantom vs. 7 HU in patients). Volume estimates from four RTs systematically overestimated the volume of water present, but on average measured values within 6-14% of the true volume.

CONCLUSIONS: We have designed and used a custom water cavity phantom for evaluation of a CT auto-contouring tool. The tool was shown to be accurate to within 15%, on average, for volumes between 30 mL and 350 mL.

23B LEVERAGING MULTI -OMICS DATA TO IDENTIFY CORRELATES OF RESPONSE TO IMMUNE CHECKPOINT INHIBITORS

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FUNDED BY: BC Cancer Foundation, TFRI MoHCNN, Genome BC

While immune checkpoint inhibitors (ICI) use has steadily increased, up to 85% of patients do not respond (intrinsic resistance) or become resistant to therapy (acquired resistance), underscoring the urgent **need for better biomarkers to predict response and resistance. From over 1,400 adult patients with advanced/metastatic cancer enrolled in the Personalized OncoGenomics (POG) Program at BC Cancer, w**e identified 235 patients across more than 25 tumour types who were treated with ICIs and underwent whole genome and transcriptome analysis (WGTA). WGTA was used to profile the immune microenvironment, and determine somatic mutations, copy number alterations, fusions, and mRNA expression profiles. Established and emerging biomarkers were evaluated, including tumour mutation burden, mutations in epigenetic modulators, and features of the tumour microenvironment. WGTA identified features associated with durable clinical benefit (DCB; defined as complete response, partial response, or stable disease without progression for $\geq$ 6 months) and improved survival, including SETD2 mutations and multiple immune cell subtypes. A scoring model integrating WGTA features predicted patients who experienced DCB, and identified features that were associated with improved outcomes in multivariable analysis. In patients with no DCB we identified alterations associated with resistance, including loss of function mutations in antigen presentation and IFN-gamma signaling genes and the HLA-C*01 allele group. Single cell RNA sequencing was performed on 41 patient samples to validate gene expression profiles and cell types inferred from bulk sequencing. Additionally, single cell RNA sequencing results validated and refined the genomic features associated with sensitivity and resistance to ICI treatment. The integration of multi-omics technologies can facilitate identification of biomarkers, with implications for improving ICI patient selection and clinical outcomes.

CATEGORY: Translation/clinical

23C COMPARING WHOLE-LUNG AND ROI-BASED RADIOMICS TO CHARACTERIZE RADIATION PNEUMONITIS

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PURPOSE: Radiation pneumonitis (RP) is a common radiation-induced lung toxicity that can negatively affect patients' quality of life. Radiomic analysis of diagnostic CTs can be used to characterize patient lung tissue, helping to distinguish RP from normal lung. However, it has not been reported whether radiomic features derived from whole lung (WL) or an RP region of interest (ROI) offer comparable descriptions of RP. WL radiomics may be more practical for clinical implementation, as it does not require contouring expertise and saves time and resources by using automated WL analysis. In contrast, a closely contoured RP-ROI may be more descriptive of the disease. As such, we hypothesize that radiomic features derived from ROIs will be more descriptive of the disease state than WL features.

METHODS: The RP cohort analyzed in this work comprised 21 patients that developed grade 2+ RP after receiving curative thoracic RT at BC Cancer Kelowna for non-small cell lung cancer, from 2010 to 2016. Follow-up CT images were extracted from PACS for radiomic analysis. To compare radiomic features between WL and ROIs, four different contours were generated: 1) an ROI containing solely RP (RP-ROI), 2) WL containing RP (RP-Lung), 3) an ROI containing solely normal lung (nonRP-ROI), and 4) whole contralateral lung (nonRP-Lung). RP-ROI contours were generated by a radiation oncologist, and nonRP-ROI contours were generated by cloning RP-ROI in the contralateral lung (in a different axial plane). WL contours were generated in 3D-Slicer using Lung CT Segmenter AI tool. A total of 930 radiomic features were extracted in 3D-Slicer with isotropic pixel spacing (1x1x1mm), focusing on texture features.
To test for radiomic feature differences between different contours, we filtered redundant features by Spearman correlation ($r>0.8$), applied dimension reduction with principal component analysis, and applied stratified PERMANOVA between contour groups. Moreover, to test for differences between all individual features, Wilcoxon signed-rank test was applied to contour sets. To identify which contours provided greater predictive potential, a logistic regression model was trained to predict RP vs. nonRP with a leave-one-out cross validation (LOO-CV) approach with 3 principal components. To evaluate the predictive utility of each volume (ie: WL or ROI), we computed the percentage of correct RP/nonRP predictions.

RESULTS: The results align with our hypothesis that radiomic features derived from closely contoured RP-ROIs will be more descriptive of RP compared to WL features. Stratified PERMANOVA revealed differences between all contour groups ($p=0.001$) except RP-Lung and nonRP-Lung ($p=0.7$), suggesting that descriptive RP features were attenuated by considering the larger lung volume. Further support for this idea was observed as testing for differences between RP and nonRP revealed significant differences (adjusted-$p<0.05$) between 605* ROI features compared to 450* lung features. Furthermore, LOO-CV with logistic regression more accurately predicted ROI contours (RP-ROI=100%, nonRP-ROI=95%) compared to WL contours (RP-Lung=52%, nonRP-Lung=85%).

CONCLUSIONS: While WL contours are clinically desirable to use for RP predictions due to efficiency, our findings demonstrate the utility of directly contouring ROIs. Closely contoured RP regions offered richer quantitative features than WL for the characterization, and prediction, of tissue state within our cohort. Future work will expand the patient cohort to increase robustness and offer more generalizable insights.

23D INTEGRATING CLINICAL, DOSE, AND IMAGE DATA TO PREDICT RADIATION PNEUMONITIS BEFORE TREATMENT

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PURPOSE: Following thoracic radiotherapy, up to 25% of patients with lung cancer may experience radiation pneumonitis (RP), an adverse treatment effect characterized by lung inflammation. Clinical manifestation can range from mild symptoms such as shortness of breath and cough, to severe symptoms such as hypoxemia and respiratory failure. RP has been associated with clinical factors (ex: age, smoking history), dosimetric parameters (mean lung dose, V20), and image features (radiomics); however, the integration of such factors for a multi-modality prediction model requires further exploration. Herein, we developed models predictive of RP based on a combination of clinical, dose, and image features.

METHODS: From a cohort of 226 lung cancer patients who received curative-intent radiotherapy at BC Cancer, we collected clinical information through chart review and extracted planning CTs and 3D dose distributions from Aria software. Radiomic features were computed from CT volumes of interest (VOI: PTV, Lungs, Lungs-PTV receiving doses > 5, 20, or 30 Gy). Dosiomic features were computed from 3D dose distributions on the same VOIs, while dose-volume-histogram features were computed on the full lung volume. Predictions of RP for three different supervised learning models (elastic net, random forest, and sparse partial least squares-discriminant analysis) were evaluated by 10-fold cross-validation under the single- and multi-modality context. Two methods were employed to integrate data types: 1) early fusion, where all datatypes were input to the model together, and 2) late fusion, where the predictions of single-modality models were combined for a multi-modality prediction.

RESULTS: To assess how each datatype influenced toxicity predictions, we developed predictive models under the single-modality context, considering a single datatype at a time. Radiomic features produced the most predictive single-modality models (AUC=0.68-0.69), significantly outperforming clinical features (AUC=0.57-0.62, $p<0.02$), but was not significantly different from dose-based models (AUC=0.57-0.65, $p>0.06$). Notably, predictions based on DVH and dosiomic models were not significantly different from each other ($p>0.2$).
To evaluate the predictive utility of integrating datatypes, we developed models with combinations of clinical, dose, and radiomic features. The early fusion integration of clinical, DVH, and radiomic features produced the model most predictive of RP (AUC=0.7-0.71), significantly outperforming 2/3 dose-based models ($p<0.01$), but not radiomic-based models ($p>0.3$). Additionally, predictions from early fusion and late fusion methods were comparable ($p>0.05$).

CONCLUSIONS: The integration of patient- and treatment-specific features can improve pre-treatment predictions of RP beyond what is capable with dose-based features. Moreover, our results demonstrated that simple and interpretable DVH metrics were as predictive of RP as the more complex dosiomic features, supporting their continued use for clinical RP prediction. Finally, the utility of image-based features for RP predictions was demonstrated in our cohort as the most predictive single modality, supporting radiomic feature inclusion in future RP predictive models. Future work aims to incorporate further patient-specific features such as genetic and blood profiles.

24A TISSUE ARCHITECTURE ANALYSIS PREDICTS PROSTATE CANCER AGGRESSIVENESS

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BACKGROUND: Prostate cancer (PCa) is the most prevalent cancer among men, with significant global health implications. Among the three factors in the D'Amico classification system, the Gleason Score (GS) is the most powerful prognostic predictor in therapeutic decision-making and patient outcomes. Despite its clinical utility, GS is heavily susceptible to inter- and intra-observer variability in assessing tumor architecture due to tumor heterogeneity and complex tissue morphology. This variability risks misclassification, leading to inconsistent therapeutic decisions and downstream treatments. To address this, we propose a quantitative histomorphometric framework leveraging computational geometric methods, including Voronoi diagram and Delaunay triangulation, to derive objective, architecture-driven biomarkers.

METHODS: A total of 708 biopsies from 363 patients in 4 cohorts was analyzed, encompassing the full spectrum from GS6 (least aggressive) to GS9 (most aggressive). Biopsies were stained with Feulgen-thionin, a DNA-specific stoichiometric dye, followed by nuclei segmentation optimized with deep learning algorithms. Architectural features were extracted from Voronoi diagrams and Delaunay triangulations constructed from segmented nuclei coordinates. Voronoi-derived metrics included cell area, perimeter, and roundness factor, while Delaunay-based features contained neighbor counts, nearest-neighbor distances, and edge lengths from minimum spanning trees. Statistical descriptors of these features were calculated to quantify architectural heterogeneity. To identify the most discriminative features across GS groups, forward stepwise linear discriminant analysis was applied, iteratively selecting features that maximized inter-group separation. The selected features were then integrated into a composite Tissue Architectural Score (TAS) via canonical correlation analysis. The model was trained using features selected from 75% of GS6 and GS9 samples, and tested on the remaining 25%.

RESULTS: The classification matrices achieved a balanced accuracy of 84%, correctly classifying 187/209 GS6 and 57/77 GS9 samples in the training set, and 61/70 GS6 and 19/26 GS9 samples in the testing set. The TAS exhibited a sigmoidal distribution, efficiently separating low/intermediate-risk (GS6–7, TAS <0) from high-risk (GS8–9, TAS >1) cohorts. Notably, mapping cellular density and spatial entropy in addition to TAS improved the discriminatory power of GS6 and GS7, which was previously obscured with TAS only.

CONCLUSIONS: The proposed tissue architecture analysis using Voronoi-Delaunay constructs show promising results. Future work will focus on combining TAS with nuclear features derived from large-scale DNA organization, such as chromatin texture and nuclear pleomorphism, to further enhance prognostic precision.

24B OMISSION OF BLEOMYCIN IN LIMITED STAGE CLASSIC HODGKIN LYMPHOMA PATIENTS WITH A NEGATIVE PET SCAN FOLLOWING 2 CYCLES OF ABVD IS ASSOCIATED WITH COMPARABLE OUTCOMES AND REDUCED PULMONARY TOXICITY

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Treatment strategies for limited stage classic Hodgkin lymphoma (cHL) have evolved to minimize toxicity. The RATHL study in advanced stage cHL established that bleomycin can be omitted in patients with a PET2-negative scan following ABVD. An analogous approach was adopted at BC Cancer for limited stage cHL in 2016. Following 2 cycles of ABVD, those with a PET2-negative scan received a further 2 cycles of ABVD ('ABVD era'–pre-2016) or AVD('AVD era') (total 4 cycles). Median follow-up for all 188 patients was 6.2 years (1.3-12.4) and 5-year progression free survival (PFS) and overall survival (OS) were 93.8% and 99.3%, respectively. Comparing ABVD and AVD treatment eras, there was no difference in PFS (5-year: 92.3% vs. 94.9%, P=0.50) or OS (5-year: 98.4% vs. 100%, P=0.22); however, pulmonary toxicity was higher in the ABVD era (17.9% vs 3.3%, p<0.001). In an as-treated analysis of patients with a PET2-negative scan who completed treatment with either 2 cycles of ABVD(n=65) or AVD (n=96), there was no difference in PFS (5 year: 93.8% vs. 95.7%, P=1.00) or OS (5 year: 98.4% vs. 100%, P=0.74). In limited stage cHL, omission of bleomycin following a PET2-negative scan was associated with excellent outcomes and reduced bleomycin-related pulmonary toxicity.

24C FRAMEWORK FOR THERANOSTIC DIGITAL TWINS GENERATION AND VIRTUAL THERANOSTIC TRIALS

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Theranostic Digital Twins (TDTs) are computational representations of individual patients that integrate personalized data, such as medical imaging and clinical information, with advanced modeling techniques like physiologically based pharmacokinetics (PBPK), enabling personalized radiopharmaceutical therapies (RPTs) to improve therapeutic precision and outcomes. Validating TDTs remains a significant challenge due to the limited availability of comprehensive datasets that include both pre- and post-treatment imaging, clinical data, dosimetry, and ground truth information such as treatment response.

To address this limitation, we present an enhanced publicly-shared simulation framework to generate synthetic datasets for benchmarking, validation, and optimization of TDT models. Extending our previous pipeline (Fedrigo et al., 2023), which supported XCAT phantoms with Monte-Carlo-based SPECT and analytical PET simulations, followed by image reconstruction, our improved framework now incorporates patient-specific CT phantoms, Monte-Carlo-based PET simulators, and Monte-Carlo-based dosimetry. Within this framework, PBPK modeling simulates realistic biodistribution of diagnostic and therapeutic radiopharmaceuticals to produce time-activity curves (TACs), which are assigned to these voxelized phantoms for generating realistic imaging and dosimetry datasets.

Validation studies will compare simulated images and TACs against real patient data. Initial applications of generated datasets include evaluating AI-assisted SPECT lesion detection and segmentation and benchmarking longitudinal lesion tracking techniques, and AI-based predictive modeling of absorbed doses in RPTs from pre-therapy PET scans. Importantly, these datasets will enable systematic pursuit of what we refer to as “virtual theranostic trials” (VTTs), enabling optimization of imaging as well as RPT protocols, e.g. towards more accurate PBPK parameter estimation and improved predictive dosimetry for personalized treatment planning.

Reference :

Fedrigo, R., Polson, L., Li, C., et al. (2023) ‘Development of theranostic digital twins framework to perform quantitative image analysis of radiopharmaceutical biodistributions’, Journal of Nuclear Medicine, 64(Suppl 1), p. P1233.

24D INCIDENCE OF CHRONIC IMMUNE RELATED ADVERSE EVENTS (IRAES) IN PATIENTS WITH ADVANCED MELANOMA TREATED WITH IMMUNE CHECKPOINT INHIBITORS IN BRITISH COLUMBIA

AUTHORS: Sarah Yeo[1], Arkhjamil Angeles[2], Cynthia Ye[1], Thao Nguyen[3], Gaurav Bahl[3], Vanessa Bernstein[4], Eric Sonke[4], Vincent Poon[1], Alison M. Weppler[1], KERRY J. SAVAGE[1]

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Immune checkpoint inhibitors (ICIs) are the preferred treatment for patients with locally advanced or metastatic melanoma. However, long-term immune-related adverse events (irAEs), which may affect quality of life and overall health, are often not captured in clinical trials due to limited long-term follow-up.

Patients with locally advanced/metastatic melanoma who received ≥1 cycles of ICIs at BC Cancer from 2012-2022 were identified. irAEs were assessed using CTCAEv5. Per SITC guidelines, chronic irAEs were defined as persisting > 3m after ICI discontinuation; chronic + active if ongoing inflammation requiring immunosuppression and chronic + inactive if absence of ongoing inflammation and not requiring immunosuppression.

Among 530 patients, 136 (26%) received ipilimumab/nivolumab (ipi/nivo), 259 (49%) received a PD1 inhibitor and 135 (25%) received ipi as their first ICI. Using reverse censoring, median follow-up was 7.0 y (95% CI: 6.6-7.4 y). Acute irAEs occurred in 298 (56%) patients: 107 received ipi/nivo, 144 PD1and 47 ipi. Chronic irAEs >3m occurred in 146 (28%) patients, of which 39/146 (27%) were chronic active and 107 (73%) were chronic inactive. 126 (24%) and 99 (19%) patients had chronic irAEs persisting at 6m and 12m, respectively. Patients treated with ipi/nivo had a greater frequency of chronic irAEs (54/136=40%) compared to those who received PD1 (75/259=29%, p=0.03), and were more likely to develop chronic active irAEs (22/136=16% vs 13/259=5%, p<0.001) The most frequently affected systems were endocrine (37%) and dermatologic (36%, vitiligo 22%) but GI (11%), rheumatologic (9%), respiratory (6%), neurologic (1.5%), ophthalmologic (1%), cardiac (1%) and renal (.5%) toxicities were also observed. Of the chronic irAEs, 48% were grade 1, 36% were grade 2 and 16% were grade 3/4. Following irAE onset, 99 (49%) of chronic irAEs required a subspecialist and 18 (9%) required hospitalization.

More than one in four patients with advanced melanoma treated with ICIs developed chronic irAEs. This highlights the importance of counseling patients on the risk of long-term toxicities associated with ICIs, the need for extended follow-up in selected cases, and the value of further research into the impact of these toxicities on quality of life and long-term health outcomes.

25A AUTOMATED PIPELINE FOR LONGITUDINAL LESION TRACKING IN SPECT IMAGING USING MORPHOLOGY AND TEXTURE AWARE COST FUNCTION

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PURPOSE: Manual assessment of individual lesions in whole-body SPECT is impractical across multiple radiopharmaceutical therapy (RPT) cycles. Automated lesion tracking can address anatomical and physiological variations over time, yet no widely available solution exists for longitudinal SPECT. Building on Santoro-Fernandes et al. (Phys Med Biol 2024), we developed a semi-automated pipeline integrating rigid registration and radiomics-derived heterogeneity metrics to improve lesion correspondence, enabling robust dose–response and predictive analyses.

METHODS: The approach was validated in 5 metastatic castration-resistant prostate cancer patients (17 cycles, 250 lesions) treated with ^{177}Lu-PSMA. Lesions were segmented in MIM Software (qPSMA) and physician reviewed. Rigid registration (Mattes mutual information, Euler3DTransform) aligned two time-point SPECT scans; transformations were applied to lesion masks. For each lesion, centroid, volume, and heterogeneity features (first-order and GLCM-based) were computed. A custom cost function combined centroid distance, volume overlap, and heterogeneity difference with weights α=0.5, β=0.4, γ=0.1. The Hungarian algorithm minimized total cost for optimal lesion correspondence.

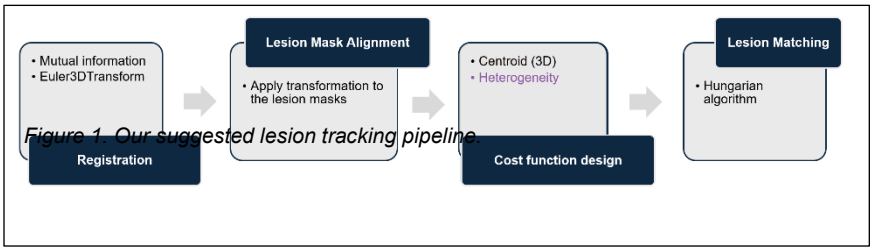

Figure 1. Our suggested lesion tracking pipeline.

RESULTS: Of 250 tracked lesions, the average cost was 0.37 (SD ≈0.03); 191 lesions were correctly matched using a threshold of 0.39 (based on visual inspection). Eight new lesions and eleven resolved lesions were identified and confirmed. On average, 75.7% of lesions were matched per patient. MIP-based qualitative review corroborated quantitative results.

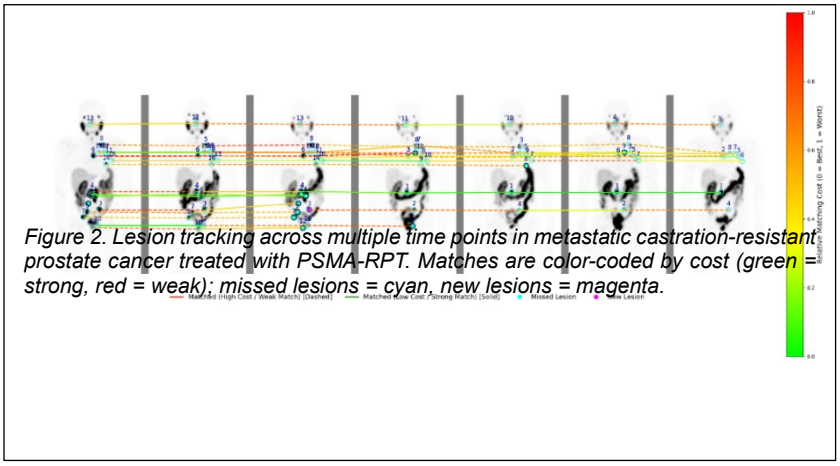

Figure 2. Lesion tracking across multiple time points in metastatic castration-resistant prostate cancer treated with PSMA-RPT. Matches are color-coded by cost (green = strong, red = weak); missed lesions = cyan, new lesions = magenta.

CONCLUSION: Combining rigid registration with a multifactor lesion-matching metric achieved robust longitudinal lesion tracking in SPECT, capturing morphological and textural changes. Validation in larger cohorts and metric refinement are ongoing to improve accuracy. This method supports dose–response evaluation, predictive modeling, and therapeutic monitoring in RPT, with potential adaptation to other imaging modalities.

25B CLINICAL REPORT-INFORMED LESION SEGMENTATION ON WHOLE-BODY PSMA PET/CT FOR PROSTATE CANCER

AUTHORS: Mahan Pouromidi, Nourhan Bayasi, Fereshteh Yousefirizi, Arman Rahmim

PURPOSE: Manual lesion segmentation on PSMA PET/CT is labor-intensive and variable across readers, limiting reliable quantification of disease burden by total tumor volume (TTV). Moreover, image-only segmentation methods overlook clinically meaningful context that is already encoded in PET reports, such as standardize uptake value (SUV), lesion descriptors, status, and quantitative measures. We therefore develop a language-guided 3D segmentation framework that considers PET/CT volumes with PET report semantics to improve whole-body lesion delineation in prostate cancer.

METHODS: A retrospective cohort of 286 clinical ^{68}Ga-PSMA-11 PET/CT studies was curated, each paired with expert-approved lesion masks and corresponding PET/CT reports, obtained from patients who provided informed consent at a center outside Canada. Volumes were standardized to an isotropic grid (4.07 mm) and CT was co-registered to PET. Reports were cleaned and embedded using clinically informed text encoders. A 3D SegResNet backbone was augmented with decoder-stage cross-attention blocks that condition volumetric features on report tokens. We pass on the image features as the Query, and text features (embeddings) as Key/Values. To evaluate the contribution of report semantics, we conducted ablation experiments: (1) Image-only: plain SegResNet 3D on 2-channel PET/CT. (2) SegResNet 3D + RadGraph: entities from RadGraph with token embeddings (BiomedVLP-CXR-BERT). (3) SegResNet 3D + GPT-engineered: structured extraction via JSON schema (sections, status, negation cue, SUVmax, measurements), then embedding of descriptor strings/phrases. (4) SegResNet 3D + GPT-raw: no entity recognition; cleaned report chunked into overlapping windows and embedded (text-embedding-3-small). (5) SegResNet 3D + MS-RAW: BiomedVLP-CXR-BERT (Microsoft) token embeddings over long text with overflow+stride (no entity layer). Model performance was assessed with five-fold cross-validation, comparing the image-only baseline against language-guided variants. Planned endpoints included Dice similarity coefficient (DSC) and false positives. Model training and inference pipelines have been completed across folds with stable convergence and reproducible preprocessing.

RESULTS: Across 41 held-out test cases, the image-only SegResNet baseline achieved a mean Dice score of 55.8% (max 88.8%). Incorporating report semantics improved segmentation, with BiomedVLP embeddings yielding the highest mean Dice of 58.3% (+2.5 over baseline; max 89.4%) and RadGraph closely behind at 58.1% (+2.4). GPT-based embeddings performed weaker (GPT-raw: 54.8%; GPT-engineered: 52.2%), which is expected since these models were not pre-trained on medical or radiological reports, unlike BiomedVLP and RadGraph.

CONCLUSION: Incorporating PET report semantics via cross-attention is feasible for whole-body PSMA PET/CT lesion segmentation and aligns voxel-level predictions with clinically meaningful descriptors. By integrating knowledge that physicians already encode in their reports, this approach moves toward an automated segmentation pipeline that is continuously informed by expert reasoning. This approach aims to enhance robustness and interpretability, supporting quantification of TTV and response assessment.

25C CLINICAL OUTCOMES OF RECTAL SQUAMOUS CELL CARCINOMA IN BRITISH COLUMBIA, CANADA

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BACKGROUND: Rectal squamous cell carcinoma (SCC) is a rare malignancy, comprising <1% of rectal cancers, with no standardized treatment.[1,2] Historically managed like adenocarcinoma with radical surgery ± chemotherapy or radiation therapy (RT), it carried significant morbidity and mortality.[3,4,5] Due to its histological similarity to anal SCC, treatment has shifted toward definitive concurrent chemoradiation (CRT), showing favorable outcomes. [6,7,8,9] However, with evidence largely limited to case reports and small series, consensus guidelines remain lacking.

METHOD: We aimed to review treatment methods and outcomes of rectal SCC patients in British Columbia. Using the BC Cancer Registry, we identified 30 patients (mean age 65 ± 9.8 years, range 38-91; 22 females) with biopsy-confirmed, endoscopy-visualized rectal SCC (2011–2023). Data on demographics, tumor, treatment, and survival were extracted.

RESULTS: Among the cohort, 73% were female, 96% p16 positive, 89% had T3/4 disease and 70% had nodal involvement; 23% presented with metastases. Of 22 patients treated with curative intent, 91% received definitive CRT, primarily capecitabine/mitomycin (90%), with RT doses 50–55 Gy. CRT achieved complete clinical response (CR) in 13 patients (65%). The 1-, 3-, and 5-year overall survival (OS) rates were 83%, 62%, and 50%, respectively; in the CRT subset, OS was 95%, 89%, and 79%.

CONCLUSION: Our findings support CRT as definitive treatment for rectal SCC, with survival rates comparable to anal SCC (70–80% at 5 years[10,11]). The predominance of CRT and favorable OS in the CRT-treated subset reinforce its effectiveness as an organ preserving approach. However, lower OS in the entire cohort (50% at 5 years) and the modest complete CR rate (65%) call for further multicenter research. Limitations include small sample size and potential misclassification of rectal versus anal primaries due to vague clinical documentation. Collaborative prospective international registries could advance research for this rare cancer.

DISCLOSURES: Previously presented at ESMO GI 2025, FPN (Final Publication Number): 251P, Lei Yuan et al. - Reused with permission

25D MANAGING NEUROPATHIC CANCER BREAKTHROUGH PAIN FOR PATIENTS ON REGULAR METHADONE

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DISCLAIMER: No conflicts of interest. No funding was received for this project.

INTRODUCTION: Methadone is a potent mu-opioid agonist used extensively in the management of substance use disorders and complex chronic pain syndromes. In patients prescribed methadone for pain, methadone is occasionally used by practitioners for breakthrough analgesia. However, its use as a breakthrough analgesic is controversial, and prescribing practices vary across palliative care centers within British Columbia (BC), Canada.

METHODS: Patients in BC over 18 years of age with any neuropathic pain related to their cancer or cancer treatment on regular methadone were included in this retrospective chart review. A total of 604 patients met the inclusion criteria, 114 of which were prescribed methadone breakthrough in addition to their regular methadone (group M), and 491 which were prescribed another breakthrough analgesic (group N). Group M was compared with group N using descriptive statistics. Then, a univariate logistic regression analysis was performed, and factors significant at a $p<0.10$ level were included in the multivariate logistic regression analysis.

RESULTS: Both groups M and N were statistically similar in age, sex, advanced cancer status, baseline functional status, and number of co-analgesics used. Methadone breakthrough use prevalence was 18.87%, and methadone breakthrough was prescribed at a dosage equivalent to 13.91% (SD 10.75) of their methadone mean total daily dose (TDD), and at a mean frequency of every 4.05 hours (SD 3.95) with a median of 3 hours. The maximum breakthrough dose allowed in 24 hours was on average 2.90 (SD 0.67) with a median of 3 doses. In group M, 58.8% had physician-perceived benefit of methadone breakthrough use. The most common adverse event due to methadone breakthrough use was drowsiness (n=3, 2.6%), with no reports of severe adverse events such as respiratory depression, overdose, opioid-induced neurotoxicity, or QTc prolongation. Furthermore, higher methadone TDD was independently associated with methadone breakthrough use, with the odds ratio (OR) increasing by 1.23 per 10mg increase in methadone TDD ($p=0.003$). On the other hand, patients with severe pain, defined as an average ESAS pain score of 7-10, were associated with lower odds of being prescribed methadone breakthrough (OR 0.25, $p = 0.10$).

CONCLUSION: This is the largest study in Canada showing opioid prescribing practices for patients on regular methadone for neuropathic cancer pain. Methadone breakthrough was commonly used and generally perceived as safe and effective in patients on regular methadone for neuropathic cancer pain. Methadone breakthrough use was associated with higher methadone TDD and less severe pain on average, potentially reflecting prescribing caution and patient complexity. Further prospective studies are warranted to confirm the effectiveness and safety of methadone breakthrough use.

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26A REAL WORLD POPULATION-BASED OUTCOME ANALYSIS OF SMALL LYMPHOCYTIC LYMPHOMA (SLL) IN BRITISH COLUMBIA (BC)

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BACKGROUND: Small lymphocytic lymphoma (SLL) primarily involves lymph nodes (LNs) and is considered biologically identical to its peripheral blood (PB)/bone marrow counterpart, chronic lymphocytic leukemia (CLL). Although CLL/SLL are effectively considered the same disease, little is known about the epidemiology and natural history of SLL. The objective herein was to evaluate clinical characteristics, treatment (tx) patterns, and survival in a large population-based cohort of SLL pts distinct from CLL.

METHODS: Adults ≥18 years (y) newly diagnosed with SLL from 1989-2024 in BC, Canada, were identified using provincial databases. SLL was defined as requiring the presence of enlarged LNs with $<5x10^9$/L PB clonal B lymphocytes, or $<10x10^9$/L PB lymphocytes when clonal B-cell count was unknown, confirmed by histopathologic LN/tissue evaluation where possible. Time-to-event analyses were conducted for overall survival (OS), treatment-free survival and, for those who were treated, time from first to second-line tx (TTNT). Subgroups were compared using the log-rank test. Time to development of CLL was also assessed, defined as time from SLL diagnosis to PB clonal B lymphocytes $>5x10^9$/L or PB lymphocyte count $\geq 10x10^9$/L when clonal B-cell count was unknown.

RESULTS: 676 pts were identified. Median age was 68y (range 25-97y), with 419 (62%) ≥65y and 404 (60%) male. At diagnosis, the majority had Ann Arbor stage 3-4 (89%), no B symptoms (82%), and ECOG performance status 0-1 (85%). Median PB lymphocytes were 3x10^9/L (range 0-10) and 30% had bulk ≥5cm. Among the 228 pts with FISH performed prior to any tx, prevalence of FISH abnormalities were: 63 (28%) del13q; 76 (33%) trisomy 12; 28 (12%) del11q; 20 (9%) del17p, and 85 (37%) had none of these 4 abnormalities. Among the 104 pts with IGHV mutation testing performed, 34 (33%) were mutated, 64 (62%) unmutated, and 6 (5%) indeterminate.
At a median f/u of 12.4y (range 0.5-31.6y), median OS was 9.2y with 5- and 10-y OS 70% and 49%, respectively. OS was significantly worse for males (*P*=.005), those with B symptoms (*P*=.004), bulk ≥5cm (*P*<.001), elevated LDH (*P*<.001) or del17p (*P*=.002). Over the f/u period, 473 pts (70%) received tx with median 1 line (range 0-13). Median TFS was 1.6y with 5- and 10-y TFS 27% and 14%, respectively. First-line tx included: 150 (32%) purine analog (PA) + rituximab (R); 23 (5%) PA alone; 97 (20%) alkylating chemotherapy + R; 88 (19%) alkylating chemotherapy alone; 67 (14%) BTK inhibitor; 17 (4%) BCL2 inhibitor ± anti-CD20 monoclonal antibody; 31 (6%) other, including localized radiation/surgery. After first-line treatment, median TTNT was 3.8y (range 0.1-23.4y). 45 pts (7%) developed RT at a median of 3.5y from diagnosis (range 0.2-18.8y) with the majority, 26 (58%), being to DLBCL. During the f/u period, 175 pts (26%) developed into CLL at a median of 3.5y from diagnosis (range 0.1-19.8y). When evaluating only those who developed CLL while on watchful waiting (natural history cohort, n=88), CLL developed at a median of 2.6y from diagnosis (range 0.1-18.7y). Treatment was more frequent in those who developed CLL (*P*=0.04).

CONCLUSION: In this large real-world cohort of SLL pts spanning three decades, median OS was 9.2y with worse OS for those with del17p and high-risk features typical of lymphoma including bulk, B symptoms, and elevated LDH. Median TFS was notably short at 1.6y, likely reflecting the classic symptomatic presentation of SLL prompting treatment, in contrast to the often incidental diagnosis of CLL. Treatment patterns differed among those who developed CLL versus those who did not. These results highlight both overlapping and distinct clinical trajectories in SLL and reinforce the need for dedicated SLL research, including disease biology which may be distinct from CLL, to better inform risk stratification and guide optimal treatment strategies.

26B CREATION OF A PROVINCIAL MULTIDISCIPLINARY PARAGANGLIOMA AND PHEOCHROMOCYTOMA PROGRAM IN BRITISH COLUMBIA

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BACKGROUND: Paragangliomas (PGL) and pheochromocytomas (pheo) are rare, poorly understood neuroendocrine neoplasms that differ only in their anatomic origin. Only 40 cases are diagnosed in British Columbia (BC) per year of which 7 may be malignant. Up to 40% are related to hereditary predispositions that require life-long surveillance beginning in childhood. Historically, malignant PGL were treated by sarcoma medical oncologists whereas pheo by genitourinary medical oncologists leading to fragmented care, suboptimal expertise, and potentially poor patient outcomes. We aim to create a provincial, multidisciplinary PGL-pheo program in BC.

METHODS: We will achieve this by tackling 5 key problems: 1) Establishing a multidisciplinary team of clinicians and researchers 2) Creating a PGL-pheo research program via the formation of a prospective patient registry, biobank, state-of-the art genetic testing, novel imaging, and clinical trials; 3) Formalizing a PGL-pheo Tumour Group within BC Cancer and ultimately applying for 'Centre of Excellence' designation by the Pheo Para Alliance; 4) Implementing a clinical support network inclusive of quarterly tumour conference and e-mail listserv; 5) Improving surveillance of affected and at-risk individuals in collaboration with primary care and patient partners.

RESULTS: A working group of passionate clinicians has been established to work on the 5 key problems. Funding has been secured through PHSA Health System Redesign to tackle specific deficiencies in clinical care, with additional opportunities through SharedCare and Facility Engagement funds planned. An application to the UBC-BC Cancer Academic Enhancement Fund has been submitted, and research funding through the BC Cancer Foundation and Rare Disease Foundation to be explored. Lastly, Dr. Bernard will be completing the PQI Applied Training Program and will use the learnings to advance this initiative.

CONCLUSION: The creation of a robust, provincial clinical and research PGL-pheo program including an expansive multidisciplinary team of clinicians and investigators will lead to improved patient care and the emergence of BC Cancer as a centre of excellence in this space.

26C ADHERENCE TO CLINICAL SURVEILLANCE GUIDELINES IN VON HIPPEL-LINDAU (VHL) DISEASE: EVALUATING THE IMPACT OF A COORDINATED CARE CENTRE IMPLEMENTATION

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BACKGROUND: VHL is a rare hereditary cancer syndrome, predisposing to the development of multiorgan tumour growth. While guidelines for the screening and management of these patients exist, adherence to guidelines is variable. The development of coordinated clinical care centers with multidisciplinary expertise in rare diseases has been demonstrated to improve outcomes. In this study, we reviewed adherence to surveillance guidelines prior to and after development of a provincial vHL clinic at our institution, British Columbia (BC) Cancer. Care in this clinic is provided both in-person and through telehealth. We sought to evaluate whether patient geographic distance from the clinic impacted time to being seen for consultation, and whether there was a change in management plan after being seen in the clinic.

RESULTS: Between June 2022, and April 2024, 57 patients were seen in the vHL clinic (median age 34, 58% female, and 42% male. We found significant improvement in adherence to nearly all surveillance guidelines after the development of the vHL Clinic (table 1). We did not find any difference in time from referral to consultation based on patient geographic proximity to the clinic, $F(3,53)=1.10$, $p=0.35$ nor the modality (in person vs telehealth) of initial consultation ($t(55)=1.07$, $p=0.29$). Finally, after initial consultation, 87% of patients had a change in their management plans, most commonly involving referral for further subspecialty evaluation (n=41) or initiation of pharmaceutical treatment (n=24).

CONCLUSIONS: Our results add to existing evidence that coordinated care centers with multidisciplinary expertise in vHL are feasible in the Canadian public healthcare system and can result in improvements in quality of care. Our clinical model has a robust multidisciplinary care team that utilizes technology to reach patients for equitable access to care. Future work will evaluate potential cost savings to the healthcare system with this model, as well as patient satisfaction with their care pre and post participation in the vHL clinic.

Screening Guideline Parameter	Pre VHL clinic adherence	Post VHL clinic adherence
Central nervous system imaging	51.8%	100%*
Abdo/Pelvis imaging	44.6%	100%*
Metanephrines	8.9%	64.3%*
Ophthalmologic	75.0%	85.7%
Audiology	21.4%	85.7%*

Table 1: Adherence to clinical screening guidelines for patients with vHL before and after being consultation with the BC Cancer provincial vHL Clinic; *statistically significant difference ($p<0.05$)

26D AVAILABILITY AND REIMBURSEMENT OF BIOMARKER TESTING IN CANADA

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OBJECTIVES: Globally, patient access to precision oncology remains limited. Biomarker test availability varies widely across and within countries, with many genomic technologies confined to research settings. In Canada, accessibility of biomarker testing for cancer care is poorly characterized, with geographic diversity and siloed provincial healthcare systems challenging equitable access to testing services. We aimed to examine the current landscape of biomarker testing availability and reimbursement in Canada.

METHODS: We conducted a structured literature review of sources reporting on the availability, reimbursement, characteristics, and/or infrastructure of somatic tumour and germline hereditary cancer tests in Canada. We searched peer-reviewed and grey literature, and publicly available reports from public health agencies, medical insurance bodies, laboratories, and professional organizations. Two reviewers independently screened and abstracted data, resolving discrepancies by consensus. Extracted characteristics included test type, purpose, included biomarkers, patient eligibility, reimbursement criteria, turnaround time, and laboratory infrastructure. We summarized number and types of available test technologies reimbursed across provinces and territories.

RESULTS: Biomarker testing for cancer care was available in-province for nine provinces, out-of-province for one province and one territory, and unreported in two territories. The following tumour indications were universally covered: acute myeloid leukemia, breast cancer, colorectal cancer, and myeloproliferative neoplasms, with testing used for diagnosis (77%), prognosis (9%), or to inform therapy (14%). Ontario offered the largest number of funded biomarker tests (n=99) and range of tumour indications (n=40), while Alberta and British Columbia sequenced the highest number of unique biomarkers (n=229 and n=198, respectively). Single-gene testing was more widely available than multi-gene panels (9/9 provinces and territories with testing vs. 7/9, respectively), with the broadest panel availability found in Alberta, Ontario, and Quebec. The majority (83%) of reimbursed multi-gene panels across all provinces were tumour group-specific, and half (51%) targeted less than 10 biomarkers. Tumour-agnostic panels were available in 6 of the 7 provinces offering multi-gene panels, and typically targeted more than 50 biomarkers for over 10 tumour types. Advanced techniques—such as whole exome sequencing (WES) and whole genome sequencing (WGS)—remained in research settings and were not identified as reimbursed for routine care.

CONCLUSION: There is growing availability of biomarker testing for cancer in Canada, but inequitable technology access across regions persists. Strengthened national collaboration and infrastructure development will be essential to promote evidence-based access to precision oncology for all Canadians.

27A ROOT CAUSE ANALYSIS OF OMISSIONS AND DELAYS IN THE INITIATION OF NEOADJUVANT CHEMOTHERAPY IN ELIGIBLE PATIENTS WITH BREAST CANCER

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BACKGROUND: Chemotherapy before surgery, otherwise known as neoadjuvant chemotherapy (NACT), is indicated for patients with clinical stage II or III breast cancers featuring high-risk biomarker subtypes: triple-negative or HER2-positive. NACT can downstage disease in the breast, facilitating breast conservation. Response to NACT may also inform prognosis and influences adjuvant treatment. Clinical guidelines recommend patients begin treatment within 28 days of diagnosis. Unfortunately, a complex web of referrals, tests, and visits in the current care pathway imposes barriers to accessing NACT. Identification of specific chokepoints in the system may prevent omission of NACT in eligible patients and expedite NACT initiation.

METHODS: We reviewed charts in BC Cancer records between January 1st, 2024, and December 31st, 2024, of patients who were eligible for NACT based on age and tumour profile: 80 years old or younger and newly diagnosed with a clinical stage II or III triple-negative or HER2-positive breast cancer. Data were collected on biomarkers and staging, treatments, and treatment dates. If possible, the main cause of omission or delay of NACT was identified for each patient.

RESULTS: Out of 100 patients reviewed, 73 received NACT, 26 received surgery first, and one declined all treatment. The main reasons identified for NACT omission include patients not being offered NACT by medical oncology (37%; 10/27), not being referred to medical oncology (30%; 8/27), and patients declining NACT after meeting with medical oncology (7%; 2/27). Reasons for NACT omission were not documented in 22% (6/27) of patient charts. Only 22% of patients receiving NACT commenced treatment within 28 days of diagnosis. The median time between diagnosis and NACT commencement was 40 days [IQR 30.0-53.0]. The main cause of delay to NACT identified was waiting more than 21 days for consultation with medical oncology, accounting for 72% (39/54) of delayed cases. Other causes of delay identified include patient preference to delay treatment, concurrent illness, and further testing being required (2% each; 1/54), with reasons for delay not documented in 22% (12/54) of patient charts. Reasons for omission and delay were similar across different BC health regions.

CONCLUSION: 78% (42/54) of patients receiving NACT are not receiving it within the clinically recommended timeframe, while many patients eligible for NACT were not seen by medical oncology for consideration of treatment. Our findings suggest that improved triaging to medical oncology may help reduce delays and omission of NACT in otherwise eligible patients with high-risk breast cancers, improving patient outcomes.

CONFLICTS OF INTEREST: None

FUNDING: Canada Foundation for Innovation

27B SURVIVAL OF PATIENTS FOLLOWING RECURRENCE AFTER CURATIVE-INTENT SURGERY FOR NON-SMALL CELL LUNG CANCER

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BACKGROUND: For patients with non-small cell lung cancer (NSCLC) treated with curative-intent surgery, recurrence remains common, yet survival following recurrence is not well described in population-based cohorts. This study aimed to characterize post-recurrence survival using real-world data sources.

METHODS: Using data from the British Columbia Cancer Registry, we conducted a retrospective cohort study that included patients with NSCLC diagnosed between 2005 and 2021 who had recurrence following curative-intent surgery.
A trained clinical research assistant reviewed pathology and imaging reports to determine recurrence timing and location—considered the gold standard. We used Kaplan-Meier method to estimate post-recurrence survival and log-rank tests to compare survival by recurrence location, age, sex, and characteristics of primary lung cancer (diagnosis year, stage, and histology).

RESULTS: Median survival ranged from 6 to 13 months across clinical factors. Distant-only recurrence was associated with the poorest survival (2-year survival: 7.7%), followed by local-only (22.2%) and combined local and distant recurrence (25.4%) (p=0.011). Older age (70-79 vs 40-69, p=0.015) was also associated with shorter post-recurrence survival. Sex, diagnosis year, stage, and histology were not significantly associated with survival.

CONCLUSION: This study, combined with medical chart data, provides reliable estimates of post-recurrence survival following surgery in NSCLC patients. Future analyses will include patients without recurrence to identify predictors of recurrence and expand assessment of clinical characteristics and treatments. These findings can support follow-up care and individualized strategies for patients at risk of recurrence.

27C PLANETARY HEALTH NURSING INTERNSHIP PROGRAM: INSIGHTS ON OUTCOMES, IMPACTS, AND EVALUATION AT THE ONE YEAR MILESTONE.

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Human activities have severely disrupted the functioning of Earth's natural systems, resulting in a wide range of health impacts including cancer incidence, experiences, and outcomes. As ecological health and wellbeing decline through climate change, pollution and biodiversity loss, so does human health and well-being. Recent extreme weather has imperiled health system functioning, but also paradoxically contributes to the climate crisis, emitting 5% of global greenhouse gas (GHG) emissions. Planetary health (PH), an evolving, transdisciplinary, solutions-driven science and movement grounded in Indigenous Knowledges, is dedicated to protecting and preserving Earth's natural systems essential for the well-being of all living creatures. An innovative Planetary Health Nursing Internship Program (PHNIP), established at BC Cancer in April 2024, supports nurse-led action to combat healthcare-related GHG emissions, recognizing nurses as key to reducing the environmental impact of cancer care. Over a 12-week period, nurse interns are granted protected time to develop transformational projects guided by PH principles, anchored in quality improvement. Participants learn about PH, and develop project management and leadership skills, mechanics of change management and establishing partner engagement. Since the project began, nurses have facilitated 22 successful projects across the province, aimed at reducing single use items, curbing waste bound for landfill or incineration, and optimizing current processes to improve patient experience while decreasing health care emissions. In one centre, plastic waste from single use dressing trays was decreased by 94%. One project worked to translate home educational materials for non-English speaking patients to enable them to review teaching materials at home instead of travelling to their cancer centre. Not only did this project slash patient travel time and emissions, it increased accessibility and equity of care. Amongst nurses who have completed the program, 100% report satisfaction. Next steps involve working with provincial centres and the BC Cancer Planetary Health Unit to identify projects for scaling up across the province, while continuing to engage nurse champions in ensuring long-term project momentum and sustainability.

27D CARBON FOOTPRINT REDUCTION FROM EXTENDED PEMBROLIZUMAB DOSING INTERVAL AT BC CANCER

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BACKGROUND: How we provide systemic treatment at BC Cancer directly shapes future population health through climate change. In 2022-23, 2640 pembrolizumab doses, excluding ones given with other IV systemic therapy, were administered across six BC Cancer Regional sites, with only 18.6% as Q6W. Pharmacokinetic data expects Q6W to be equivalent in efficacy as Q3W. Expanding Q6W use may therefore reduce emissions, ease patient/caregiver burden, and improve patient satisfaction. US Modeling suggests broad Q6W adoption could prevent up to 15 climate-related deaths by 2100. Our primary aim was to quantify carbon footprint of current pembrolizumab use across BC Cancer sites and model potential CO_2e reductions with Q6W dosing. Secondary aim was to assess economic impact of this change.

METHOD: We used 2022-23 dispensing data and the Greenhouse Gas Protocol to quantify CO_2e from current and future pembrolizumab dosing with increased use of Q6W interval. For modelling, all doses were converted to their equivalent standard dose-banding dose. Doses administered with other IV systemic therapy were excluded. Sources considered were primarily Scope 3 (supply-chain): a) drug manufacturing, b) patient travel for infusions, c) waste from administration, and d) waste transport / disposal (autoclave, incineration with energy recovery). Patient postal codes informed travel distance modeling. Vial, packaging, and consumable weights were directly measured. Scenarios modeled 20, 30, 50% increases in Q6W utilization.

RESULTS: Of 673 patients receiving pembrolizumab, 451 met eligibility criteria (baseline 111 Q6W, 340 Q3W). Converting all eligible Q3W patients to Q6W would save 929 infusion visits, a 44.4% reduction (36.8% with baseline Q6W). However, this change increases vial use by ~330 vials, adding 749 kg CO2e from drug manufacturing alone. Subsequently, net CO2e reduction is 3018 kg, driven by a 3695 kg reduction from patient travel and 72 kg from infusion-related sources, partially offset by the added drug use. Although Q6W dosing theoretically halves visits, we only observed 44.4% reduction due to patients who end on an odd-numbered Q3W cycle receiving an additional final dose when converted to Q6W. Treatment gaps can also reset the schedule, creating more odd stops. As a result, an ~5% increase in vial use is expected (for 100% switching to Q6W), assuming perfect vial sharing. Patient travel was the largest emission source, contributing 90% of total emissions (4.50 kg CO_2e/infusion). At 50% Q6W adoption, 348 clinic chair-hours are saved annually but incur an estimated $750K increase in drug costs.

CONCLUSION: Increasing Q6W pembrolizumab use at BC Cancer has potential to significantly reduce healthcare emissions, primarily by reducing patient travel. Even partial (20-50%) adoption yields meaningful reductions in patient travel and infusion-event related CO_2e, chair time, clinic resource use, while decreasing patient/caregiver time burden. However, net financial impact would favor Q3W with an approximate $750K increase in drug cost at 50% increase use of Q6W and an estimated saving of 50K for nursing and patient carer time. Future work will verify these findings and evaluate whether Q6W can improve system capacity, enabling shorter wait times for more timely initial chemotherapy administration.

28A PLAUSIBILITY OF ACETAMINOPHEN INTERACTION WITH IMMUNE CHECKPOINT INHIBITORS (ICI)

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BACKGROUND: Four recent studies suggest that acetaminophen may be linked to poorer long-term outcomes in patients receiving ICI.[1-4] Since acetaminophen is a widely used essential medication for many cancer patients, plausibility of the interaction was evaluated.

METHODS: Plausibility was evaluated using the WHO Causality Assessment and the Drug Interaction Probability Score (DIPS). WHO classifies interaction as Certain, Probable, Possible, Unlikely. DIPS is a 10-item tool with total score of 11, developed by experts' consensus and classifies interaction as Highly Probable (>8), Probable (5-8), Possible (2-4), Doubtful (<2).

RESULTS: WHO and DPIS classify the interaction as Unlikely and Doubtful (score<2), respectively.

- **WHO**: (1) Time relationship between the events (death, disease progression, tumour response) to acetaminophen intake could not be established because the studies did not verify if patients took acetaminophen during ICI therapy (2) Confounding factors were not well controlled for (3) Response to withdrawal or rechallenge was not investigated (4) Animal studies showed no difference in survival in mice with implanted tumour treated with ICI alone or with concurrent acetaminophen (5) More detailed information for proper assessment is required on acetaminophen intake, including verifying if patients took acetaminophen during ICI therapy, average dose and duration of the intake, any acetaminophen intake not accounted for (e.g., OTC) (6) No direct link between the main mechanism of actions of acetaminophen and immune suppression (7) Changes in systemic exposure of ICI was not investigated.
- **DPIS**: (1) No previous credible human reports of this interaction (2) No observed interaction consistent with the known interactive properties (immune suppression) of acetaminophen (3) Observed interaction was consistent with the known interactive properties (immune suppression) of ICI (4) Unknown if the event was consistent with the known or reasonable time course of the interaction (onset and/or offset) (5) Unknown if the interaction remitted upon dechallenge of acetaminophen with no change in ICI (6) Unknown if the interaction reappeared when acetaminophen was readministered in the presence of continued use of ICI (7) There were reasonable alternative causes for the event (8) Unknown if ICI was detected in the blood or other body fluids in concentrations consistent with the proposed interaction (9) The interaction was not confirmed by any objective evidence consistent with the effects on ICI other than drug concentrations (10) Unknown if the interaction was greater when acetaminophen dose was increased or less when acetaminophen dose was decreased.

CONCLUSIONS: Significant interaction between acetaminophen and ICI seems unlikely or doubtful. Acetaminophen should not be restricted when used with ICI until more robust evidence is available.

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28B TEMPORAL PATTERNS IN THE INCIDENCE OF ORAL PRE-MALIGNANT LESIONS

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OBJECTIVES: Epithelial dysplasia (ED), verrucous hyperplasia (VH), and carcinoma *in situ* (CIS) refer to histological abnormal architectural and cytological changes in the oral epithelium. Clinical lesions presenting with these features are associated with an increased risk of malignant transformation. This study aims to develop an epidemiological profile of first-time ED, VH, and CIS diagnoses over a 5-year period. We hypothesize changes in the yearly incidence and clinicopathological features of these lesions.

METHODS: A search of the Vancouver Coastal Health database for pathology reports with a diagnosis of ED, VH, or CIS in the oral cavity from January 1st, 2019, to December 31st, 2023, was conducted. Previous laboratory reports of these patients were reviewed, and cases with a history of malignancy or pre-malignancy in the head and neck were excluded. Data regarding histological diagnosis, demographics, risk behaviors, and clinical characteristics were collected.

RESULTS: Over the 5-year period, there were 2195 new cases of histologically diagnosed oral pre-cancerous lesions. Despite a slight decrease in 2020, there was an overall increase in the incidence, with 2023 reporting 688 cases, the highest across all years. Mild dysplasia (46%) and no lichenoid presence (85%) were the most common diagnoses. The incidence was slightly more common in males and people older than 60 years old. Lesions were predominantly found on the tongue (40%) and presented with white color (80%), no pain (75%), 0-10mm in size (50%), and smooth (37%) or rough/verrucous texture (38%). Many patients never smoked tobacco (43%) and occasionally consumed alcohol (38%). The proportions of these patterns remained relatively consistent throughout the years.

CONCLUSIONS: The incidence of oral pre-cancerous lesions increased during the past 5 years, with 2023 attaining the highest incidence. Understanding the incidence of oral pre-malignancy is crucial for investigating the underlying factors behind these trends and guiding appropriate patient care.

ACKNOWLEDGEMENTS: This work was supported by the UBC Faculty of Dentistry Undergraduate Summer Student Research Award and funding from Better Outcomes. This research was conducted as part of Ilena Yim's PhD thesis. Ilena Yim received the CIHR Doctoral Research Award.

CONFLICT OF INTEREST: None.

29A TREATING BRAIN METASTASES IN BC: TRENDS IN RADIATION PRACTICES AND PATIENT SURVIVAL

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PURPOSE: To characterize the patterns and changes in the use of radiotherapy (RT) for brain metastases (BM) in British Columbia (BC) from January 2017 to December 2022.

METHODS: Patients who received BM-directed RT and did not have concurrent primary brain tumor were identified from the BC Cancer Registry and RT delivery software. Patient demographics, disease characteristics, and RT details were collected. Kruskal-Wallis and Chi-squared tests were used to compare patients receiving different RT modalities. Trends over time were assessed with Cochran-Armitage tests. Kaplan-Meier analysis and log rank tests were used for OS, while factors associated with OS were determined with univariable and multivariable Cox proportional hazards models.

RESULTS: A total of 2,791 patients received 3,311 RT courses. The most common primary cancers were non-small cell lung cancer (NSCLC) (49.6%), small cell lung cancer (SCLC) (18.1%), breast (9.0%), and gastrointestinal (6.8%). Across all primary histologies and BC Cancer sites, focal RT increased significantly while whole brain RT (WBRT) decreased ($p<0.001$). The number of delivered RT courses increased over the study period (291 in 2017 to 668 in 2022), with an increasing proportion of patients receiving stereotactic radiation (SRS) (14% in 2017 vs 33% in 2022) and ≥2 RT courses (8.9% in 2017 to 11.2% in 2022). The most common dose was 30 Gy in 5 fractions. The use of WBRT only was associated with older age, earlier treatment era, small cell lung cancer diagnosis, and fewer repeat brain RT compared to those who were treated with focal RT with or without WBRT ($p<0.05$). Median OS from primary diagnosis was 0.29, 0.71, and 1.3 years for WBRT only, focal only, and WBRT with focal RT, respectively. Superior OS was associated with focal RT, younger age, greater number of brain RT courses, and higher RT dose ($p<0.05$).

CONCLUSION: RT use for BM in BC has increased, with a shift from WBRT to focal RT, particularly SRS. Further evaluation of the resource utilization and strategic planning in the context of increasing provincial need and complexity associated with brain RT is required.

CONFLICTS OF INTEREST: None

FUNDING STATEMENT: Funding for this work was provided by the BC Cancer and the University of British Columbia's Faculty of Medicine.

29B PATIENT ACCEPTANCE OF GENETIC TESTING VIA TUMOUR BIOPSY AND PERIPHERAL BLOOD IN THE BREAST CANCER DIAGNOSTIC PIPELINE

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BACKGROUND: Current practice guidelines for genetic testing in breast cancer patients primarily target individuals with high-risk factors including tumour histology, medical history, age at diagnosis, and family history. This risk-based approach extends evaluation and referral timelines. A simplified, reflexive testing process could substantially reduce turnaround time from tumour diagnosis to genetic report, thereby supporting surgical planning. As breast tumour sequencing is not yet a standard service, evaluating its acceptance prior to implementing a tumour-first sequencing strategy is necessary.

OBJECTIVES: This pilot program aims to rapidly and systematically identify individuals with hereditary breast cancer, while facilitating the identification of family members at high risk of heritable cancer who may benefit from cancer prevention and risk-reduction strategies. The study compares the effectiveness, efficiency, and patient acceptance of tumour-first versus germline genetic testing approaches.

METHODS: Since August 2024, this pilot program has enrolled newly diagnosed invasive and/or ductal carcinoma in situ breast cancer patients who are age 65 and under at BC Cancer Vancouver. The first stage evaluates pre-diagnosis and post-diagnosis consent approaches and on-site turnaround time with germline testing. The second stage implements reflexive tumour-first testing with germline testing confirmation where tumour sequencing results are positive.

RESULTS: From August 28, 2024 to September 11, 2025, we approached 103 patients (23 pre-diagnosis, 80 post-diagnosis). Among the response group (n = 97), the overall consent rate is 96.9% (94 patients agreed, 3 patients declined), with no significant difference in consent rates between pre-diagnosis and post-diagnosis consent approaches. Over 80% of the patients provided consents during the initial discussion. Of the 62 completed germline tests, 7 cases (11.2%) had a pathogenic variant. The most recent mean turnaround time from diagnosis to genetic report using post-diagnostic consent approach for germline testing is 49 days.

CONCLUSIONS: Our approach demonstrates high patient acceptance and a relatively high pathogenic variant detection rate. The results from the first stage of this pilot study provide evidence supporting the feasibility and clinical utility of genetic testing in breast cancer care within the BC provincial healthcare context. This information can help streamline the reflexive breast tumour sequencing protocol in the upcoming second stage.

29C MEASUREMENT OF RADON LEVELS IN RESIDENCES OF BC CANCER STAFF

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PURPOSE: Radon is a colourless, odorless and tasteless radioactive gas which occurs naturally in soil. The accumulation of radon gas in buildings can potentially pose health risks. The purpose of this REB-approved study is to raise awareness about radon to BC Cancer Surrey staff and encourage them to measure radon levels at their homes by providing free test kits. Long-term radon test kits were distributed to staff during the fall and winter of 2024-2025.

MATERIALS AND METHODS: BC Cancer Surrey staff were provided with free Canadian National Radon Proficiency Program (C-NRPP) approved long-term radon test kits. These alpha-track detectors, Radtrak^3, from Radonova were handed out after consent to participate in the study was obtained. In total, 121 long-term test kits were distributed. Health Canada's guide for radon measurements in residential dwellings were printed and provided to staff for testing protocols. After more than 90 days of measurement, long-term test kits were collected and sent to Radonova Laboratories (Lombard, IL, USA) for analysis.

RESULTS: Test kits were deployed in apartments, townhouses, duplexes and single-family homes. Most of the dwellings were occupied by 1-4 residents (79%) while others had 5-8 residents (19%) and a few had more than 9 residents (2%). Only 2% of the participants have a radon mitigation system at home and the rest either don't know or don't have a radon mitigation system at home. Out of 121 distributed test kits, 93 of them were returned and analyzed at this time. A few of the test kits are waiting to be analyzed, some were unfortunately lost while others were forgotten by staff members and thus not deployed at their homes. Results from Radonova laboratories (range=0 to 169 Bq/m^3) indicate none of the residences had radon level beyond Health Canada recommendations (> 200 Bq/m^3) but 4 measurements were above WHO's recommendation (> 100 Bq/m^3). These findings were shared with our staff members along with Health Canada recommendations including radon resources and where to find certified radon mitigation professionals.

CONCLUSIONS: As part of our radon educational program at BC Cancer Surrey, free radon test kits were provided to staff during the fall and winter of 2024-2025. This take-home test kit program was successful and in total 121 test kits were distributed. Results from these measurements will provide information to residents about radon levels in their home and will be used to expand BC's Radon Map.

ACKNOWLEDGEMENT: Financial support was provided by Health Canada, grant number 2324-HQ-000092.

29D SMALL-AREA CANCER SURVEILLANCE IN BRITISH COLUMBIA: DEVELOPMENT OF AN INTERACTIVE DASHBOARD FOR INCIDENCE, MORTALITY, AND PREVALENCE.

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BACKGROUND: Cancer surveillance in British Columbia has largely been limited to data presentations at a health authority geographical level, potentially obscuring subregional variation. Monitoring smaller health areas is essential to detect localized disparities and inform population-based planning and support targeted interventions. To address this, we developed an interactive dashboard presenting cancer incidence, mortality, and prevalence across health service delivery areas and local health authorities.

METHODS: We used BC Cancer Registry data on cancer incidence (1985–2022), mortality (1995–2022), and prevalence (1999–2022). To address small case counts in certain regions, analyses were restricted to common cancers (breast, colorectal, lung, prostate) and all cancers combined, grouped according to Canadian Cancer Statistics categories. Geographic area was determined using postal code at diagnosis for incidence and current residential postal code for mortality and prevalence. Standardized incidence and mortality ratios were calculated by comparing the average observed cases or deaths over 5-year periods with the average expected counts in a reference population. Age-standardized incidence and mortality rates per 100,000 population were derived by applying observed rates to the 2011 Canadian standard population (Statistics Canada Census) and reported as 5-year rolling averages. Crude prevalence proportions were measured as the number of prevalent cases per 100,000 population per year in each geographic area. The interactive dashboard was developed in R (version 4.5.1) using the Shiny package.

RESULTS: We developed an interactive, publicly available data visualization tool that enables standardized comparisons of cancer incidence, mortality, and prevalence across multiple dimensions, including geography, cancer type, and sex. The tool offers flexibility to explore data at different geographic levels—regional health authority, health service delivery area, and local health area. An interactive heat map highlights cancer burden and helps identify high-burden regions, while trend visualization features allow comparisons over time across administrative levels. In addition, customizable data tables provide users with tabular outputs tailored to their specific needs.

CONCLUSION: This interactive dashboard fills a critical gap in small-area cancer surveillance in British Columbia. By integrating incidence, mortality, and prevalence data into a single platform, it offers both visualizations and customizable tables to meet diverse analytic needs. The tool is designed to support partners across the cancer control spectrum in planning care and interventions, with the potential to reduce disparities and improve cancer outcomes in smaller geographic regions.

30A ONE TEAM, MY TEAM: EVALUATION OF TEAM-BASED CARE ON TEAM EFFECTIVENESS IN CANCER CARE

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ABSTRACT

BACKGROUND: The British Columbia (BC) government is investing in the implementation of team-based care (TBC) within cancer care to (a) establish/expand multidisciplinary care teams (b) optimize scope of practice and (c) increase team consistency. This study assesses the impact of BC Cancer's new provincial team-based model of care on staff and clinicians through five surveys over a two-year period.

METHODS: The online survey was sent to all TBC staff and clinicians across six BC Cancer centres at four time points between May 2023 and March 2025. The survey includes validated measures examining interdisciplinary interactions, workplace culture, team composition, team consistency, team effectiveness, scope of practice, intention to leave, and quality of care and safety outcomes. Quantitative data was analyzed using descriptive and regression analysis, and qualitative data using content analysis.

RESULTS: Average response rate to online surveys was 40%. We found team consistency and scope of practice to be significant predictors of team effectiveness. More frequent practice below scope was associated with lower ratings of team effectiveness, while greater team consistency was positively correlated. Workforce retention was strong despite staffing gaps, with reported reasons for staying including a positive team culture, feeling valued, and the ability to practice to full scope. Factors contributing to team effectiveness include effective communication, enhanced knowledge of each team member's scope of practice, and strong interpersonal relationships.

CONCLUSION: Team consistency and role optimization are key factors of team effectiveness in TBC implementation in oncology. Opportunities for improvement include aligning roles, responsibilities, and scopes of practice across disciplines.

The authors declared no potential conflict of interest with respect to the research, authorship, and/or publication of this abstract. This study was funded by BC Cancer Foundation under grant F22-05583.

30B OPTIMIZING THE CLINICAL NURSE SPECIALIST WORKFORCE IN BC: AN INTEGRATED KNOWLEDGE TRANSLATION MODEL

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ABSTRACT

BACKGROUND: Canada is facing critical nursing shortages, and one potential solution being Clinical Nurse Specialists (CNS). Despite a decades-long presence in the Canadian healthcare system and well-documented benefits to patient outcomes and health systems, the CNS role remains underutilized and sub-optimally deployed. Understanding barriers and factors impacting CNS effectiveness is critical to optimizing and sustaining these roles to meet the evolving demands of healthcare systems.

METHODS: This study explored factors influencing the optimization, integration, and sustainability of CNS roles. Using an integrated knowledge translation approach, this three-phase study consisted of the following:

i) evidence-generation using four data sources: an environmental scan, a provincial survey of CNSs, interview with CNSs, and interviews with senior leaders;
ii) co-development of policy recommendations through a workshop; and
iii) policy implementation at BC Cancer.

RESULTS: This research highlighted persistent challenges in optimizing CNS roles, including insufficient role clarity, inconsistent integration into healthcare teams, and limited access to professional development opportunities. Key drivers of job satisfaction and retention were strong role definition, alignment with organizational priorities, and access to professional networks. The policy-setting workshop resulted in a set of strategic recommendations to enhance CNS role integration, improve workforce sustainability, and maximize their impact on patient outcomes and health system performance. These findings have informed a set of new policies to strengthen the CNS workforce in BC, which was piloted with implementation across BC Cancer sites.

CONCLUSION: This work resulted in a set of policy recommendations to address better CNS role integration, ensuring their full potential in improving patient outcomes and driving transformative health system change. The successful implementation at BC Cancer sites can serve as a model for other provinces.

The authors declared no potential conflict of interest with respect to the research, authorship, and/or publication of this abstract. This study was funded by the Canadian Institutes of Health Research under grant PO6-187052.

30C STRENGTHENING ADVANCE CARE PLANNING IN PRACTICE: A NURSING-LED KNOWLEDGE MOBILIZATION PROJECT

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AFFILIATIONS: [1]BC Cancer

BACKGROUND: Advance care planning is essential for supporting patient-centred care at BC Cancer, yet it has not been fully integrated into standard nursing practice. Building on nurse-led research, a collaborative group of nurses, leaders, and patient partners launched a knowledge mobilization project to help oncology nurses engage patients and families in ACP conversations. The project created leadership opportunities for direct care nurses while driving system-level changes to strengthen nursing practice and improve patient outcomes.

METHODS: Informed by knowledge translation and change management methodologies, we developed a knowledge mobilization plan grounded in co-creation with nursing leaders, direct-care nurses, patient and family partners, and ACP experts. Activities have included, (1) the formation of a provincial BC Cancer ACP nursing working group, (2) co-creating a new ACP standard nursing practice, (3) feedback sessions with direct-care nurses and patient and family partners, (4) development of educational resources, (5) pilot testing the new ACP nursing practice, and (6) evaluating our success and planning for sustainability.

RESULTS: Since January 2024, the ACP Nursing Working Group has engaged nurses across all six regional BC Cancer Centres through engagement sessions, integrating feedback to understand the gap and the supports needed to carry out ACP conversations. Patient and family partner focus groups further informed the development of patient-facing educational resources. By August 2025, all six centres have completed ACP education sessions tailored to the needs of both nurses and patients, incorporating relevant resources, tools, and education. January 2025 baseline survey results (n=210) compared to August 2025 evaluation survey results (n=212) showed a 14% increase in confidence in discussing ACP with patients, a 24% increase in reported sufficient knowledge about ACP, and a 31% increase in reported access to sufficient resources/supports to discuss ACP in the workplace.

DISCUSSION: A key lesson learned was through strong organizational partnerships and co-creation with direct care nurses, patient and family partners, and nursing leaders, the ACP working group was able to ensure ACP workflow, tools, resources, and education were relevant and feasible in clinical practice. This engagement (1) empowered nurses to lead ACP change from the outset of co-creating a nursing workflow (2) established a knowledge mobilization pathway from issue identification to implementation, and (3) fostered a learning community that is committed to improving patient care. By meaningfully engaging with those most impacted, the team has had success unlocking nurses' motivation for change.

The authors declared no potential conflict of interest with respect to the research, authorship, and/or publication of this abstract. This work was funded by Michael Smith Health Research BC/BC Nurses Union Reach award, RA-2023-3456.

30D BREAST RESEARCH IN SURGICAL TREATMENT (BREST) REGISTRY TO IMPROVE CLINICAL PRACTICE IN THE INTERIOR OF BRITISH COLUMBIA

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BACKGROUND AND OBJECTIVE: Breast cancer is the most common malignancy affecting women in British Columbia. Most patients require surgery as a central part of their treatment. Procedures are performed across multiple hospitals, involving numerous surgeons, with variability in surgical care an issue of concern. As standards evolve, ongoing evaluation is essential to ensure that clinical practice aligns with established standards of care. To address this, the BC Cancer Surgical Oncology Research Program (SORP) has developed the Breast Research in Surgical Treatment (BREST) Registry, a comprehensive database to support continuous quality improvement in breast cancer care. Focused on patients undergoing breast cancer surgery within the Interior Health region, the BREST registry will provide high quality and accessible data to evaluate care delivery, identify gaps, and inform quality improvement initiatives.

METHODS/DATA COLLECTION: The BREST Registry data collection has begun, and will capture detailed information on patient demographics, tumor characteristics, surgical procedures, treatment modalities, perioperative factors, and outcomes. Both retrospective and prospective data will be included, starting in October 2020. Areas of investigation informed by the registry include, monitoring complication rates following surgery, tracking breast conservation and reconstruction rates, wait times from diagnosis to surgery, assessment of regional disparities in outcomes, the impact of social determinants of health, and the integration of patient reported outcomes into multidisciplinary care reviews. While being used for research, there is intent to identify gaps that will enable quality improvement.

IMPLICATIONS: The BREST registry will be the first population based, comprehensive breast cancer surgical database in British Columbia, which will enable health services research. By enabling real time data queries and generating actionable insights, the registry will fill a critical gap in breast cancer health services research, ultimately improving patient care within Interior Health. There is potential for this registry to be expanded province-wide, as well as foster collaboration amongst other researchers.

31A ADVANCING EQUITY-ORIENTED CANCER CARE THROUGH CLINICAL NURSE SPECIALIST INNOVATION AT BC CANCER – VANCOUVER

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AFFILIATIONS: [1]BC Cancer

ABSTRACT

BACKGROUND: People with lived and living experience of health and social inequities (PWLE-HSI) are disproportionately impacted by disparities in cancer incidence, prevalence, mortality, survival, survivorship, and co-morbidities. Many of these people also impacted by intersecting social determinants of health including but not limited to age, race, ethnicity, geographic location, gender identity, sexual orientation, im/migration status, income, substance use, and mental health status. These inequities are especially prevalent in Vancouver's urban core, one of Canada's most concentrated areas of extreme poverty. We sought to build upon the foundations of team-based care (TBC) at BC Cancer – Vancouver regional centre to integrate equity-oriented practices into cancer care delivery.

METHODS: The Equity-Oriented Model of Cancer Care (E-MOC) project aims to reduce disparities for PWLE-HSI by embedding culturally safe, trauma- and violence-informed, and harm reduction-based approaches into clinical practice and workflows. Spanning from 2023-2027, this project includes three phases: planning, implementation, spread and scale. The planning phase (2023-2024) involved consultation and involvement of community-based health and social service providers and PWLE-HSI through workshop dialogue and clinical observations. Three PWLE-HSI were selected to be advisors on the project steering committee to co-create intervention elements for the implementation phase.

RESULTS: Co-creation and planning resulted in an advanced nurse-led quality improvement project comprised of three components: (1) a knowledge mobilization toolkit of resources and tools to support staff to build knowledge and skills, (2) consultative and at-the-elbow mentorship support for TBC staff and clinicians at BC Cancer – Vancouver from a Clinical Nurse Specialist with expertise in equity-oriented health care, and (3) interdisciplinary, intersectoral care conferences to plan more equitable, collaborative, and comprehensive person-centred approaches to cancer care for PWLE-HSI. This model will be piloted and evaluated (2024-2027) with TBC teams at BC Cancer – Vancouver's ambulatory systemic and radiation therapy programs.

KEY MESSAGE: By leveraging the advanced practice nursing leadership of Clinical Nurse Specialists and meaningfully engaging with PWLE-HSI in co-creation, our E-MOC project presents a uniquely embedded approach to tackling inequities in cancer care

The authors declared no potential conflict of interest with respect to the research, authorship, and/or publication of this abstract. This study was funded by the Canadian Partnership Against Cancer under agreement #13267.

31B HEMORRHAGE AFTER RADIOTHERAPY IN BRAIN METASTASES: A RETROSPECTIVE ANALYSIS OF PREDICTIVE FACTORS

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PURPOSE: To describe the rate of hemorrhage after radiotherapy (RT) for brain metastasis (BM) in British Columbia (BC) between 2017 and 2022.

METHODS: Patients who received RT for BM from 2017-2022 were identified from the BC Cancer registry. Of these patients, those with primary cancer histology associated with higher rate of intracranial hemorrhage based on literature review were selected. These included melanoma, renal, colorectal (CRC), hepatocellular, head and neck, germ cell tumors and sarcoma. Demographic and clinical information, treatment characteristics, and post-treatment outcomes were retrospectively reviewed.

RESULTS: 314 patients were identified. The median age at BM RT was 64 years. The median follow up period from the initial diagnosis of BM was 4 months with the median overall survival (OS) from the first BM RT being 3 months. At the time of RT, the most common primaries were melanoma (41%), kidney (20%), rectum (13%), and colon (12%). Median ECOG and KPS scores were 1 and 90 respectively. At the time of RT, 131 (42%) patients had hypertension, 38 (12%) reported excessive alcohol use, 25 (8%) had a history of stroke, 22 (7%) had kidney disease, and 11 (4%) had liver disease. 148 (47%) patients received whole brain RT, 131 (42%) focused RT, 25 (8%) focused RT with surgery, and 10 (3%) whole brain RT with surgery. Overall, 51 (16%) patients developed post-RT hemorrhage and 41 (80%) of them died. The most common primary associated with post-RT hemorrhage was melanoma (61%). 74 (24%) patients were taking medications that increased bleeding risk and 13 (18%) of them went on to develop post-RT hemorrhage. Of the 240 (76%) patients that did not take such medications, 38 (16%) of them went on to develop post-RT hemorrhage. 91 (29%) patients had pre-RT hemorrhage and 20 (22%) of them went on to develop post-RT hemorrhage. Of the 223 (71%) patients that did not have pre-RT hemorrhage, 31 (14%) went on to develop post-RT hemorrhage.

CONCLUSION: Population-based data from 2017-2022 showed that post-RT brain hemorrhage occurred in 16% of patients with histology associated with intracranial hemorrhage and are associated with poor prognosis. Patients that experienced pre-RT hemorrhage are at risk of developing post-RT hemorrhage. Further statistical data analysis will identify factors associated with post-RT brain hemorrhage.

CONFLICTS OF INTEREST: None.

FUNDING STATEMENT: Funding for this work was provided by the BC Cancer and the University of British Columbia's Faculty of Medicine, Summer Student Research Program.

31C BASELINE EQUITY ASSESSMENTS FOR VANCOUVER CENTRE: PLANNING FOR AN EQUITY-ORIENTED MODEL OF TEAM-BASED CARE

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AFFILIATIONS: BC Cancer

BACKGROUND: People facing health and social inequities are disproportionately affected by inconsistent and inequitable access to cancer care. Access to person-centered health care that is culturally safe, trauma- and violence-informed (TVIC), and prioritizes harm reduction can support better outcomes and experiences for patients facing health and social inequities. An embedded BC Cancer nursing research team has received funding from the Canadian Partnership Against Cancer to develop, pilot and evaluate a novel equity-oriented model of interdisciplinary care aimed at supporting patients facing complex and structurally reinforced barriers in care. As part of the planning phase of the Equity-Oriented Model of Care (E-MOC) project, we set out to conduct a baseline assessment of knowledge and beliefs about equity-oriented health care practices for BC Cancer—Vancouver staff and clinicians.

METHODS: A total of 132 staff and clinicians completed the baseline assessment via online survey from August – October 2024. The survey combined questions from peer-reviewed literature, as well as investigator-developed and -adapted questions about TVIC, cultural safety, anti-racism, substance use health, and demographics. Responses were collated and cleaned before being analyzed with descriptive statistics.

FINDINGS: Respondents were mainly female and represented a variety of professional roles and years of experience working at BC Cancer. Baseline assessment revealed opportunities and gaps for training in TVIC (36% received training) and harm reduction (34% received training), with slightly higher completion of training in principles of cultural safety and anti-racism (60% received training). Responses also identified targeted areas for improvement with respect to staff confidence in handling biases or prejudice in clinic, recognizing the signs and symptoms of trauma, and perceptions of time in the workday to counter discrimination.

CONCLUSION: Baseline survey findings represent a snapshot of where staff and clinicians from Vancouver Centre are at with respect to equity-oriented practices and knowledge. Identified opportunities and gaps from the survey will be applied directly to develop, pilot, and evaluate the new equity-oriented model for implementation.

The authors declared no potential conflict of interest with respect to the research, authorship, and/or publication of this abstract. This study was funded by the Canadian Partnership Against Cancer under agreement #13088.

31D EXPLORING PATIENT AND CLINICIAN PERSPECTIVES FOR HOMOLOGOUS RECOMBINATION DEFICIENT (HRD) BIOMARKER TESTING TO GUIDE PRECISION MEDICINE FOR ADVANCED OVARIAN CANCER TREATMENT: A QUALITATIVE STUDY

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BACKGROUND: Homologous recombination deficiency (HRD) is the result of a dysfunctional DNA repair process, leading to apoptosis of cancer cells. HRD testing can provide diagnostic information to guide the management of advanced ovarian cancer, particularly in informing the use of a PARP inhibitor (poly (ADP-ribose) polymerase; PARPi). Currently, HRD testing is not publicly funded for all Canadians due to concerns of clinical validity and uncertainties surrounding the direct impact of testing on patients' treatment decision-making.

OBJECTIVE: To explore the knowledge, attitudes, and experiences of advanced ovarian cancer patients and clinicians regarding HRD testing.

METHODS: We conducted pan-Canadian one-to-one, semi-structured interviews with patients and clinicians (i.e. oncologists providing direct treatment for advanced ovarian cancer patients). The interview topic guide was co-developed with patient research partners and guided by our earlier literature review. Interview topics included current knowledge of HRD testing, experience interpreting and understanding test results, barriers and facilitators of testing, and suggestions for future test rollout. Interviews were transcribed and thematically analyzed to find common themes among participant groups.

RESULTS: Interviews were conducted with patients (n=15) and clinicians (n=10) across five provinces. Both participant groups regarded HRD testing positively in its ability to guide informed decision-making for treatment options. Participants perceived the seamless testing and diagnostic processes (e.g., use of existing biopsied tumours, no patient out-of-pocket costs) as facilitators in lowering barriers to testing. Clinicians desired reflex, in-house testing to streamline the process within Canada and ensure efficiency and timeliness to inform treatment decisions. The views of the HRD test results were enhanced by the level and mode of communication between the patient and the clinician, as patients expressed a great deal of trust in the recommendation by their clinicians. Both groups expressed desire for educational resources to aid in interpreting test results to guide informed treatment decision-making. While HRD test results were important to guide treatment decisions, both patient and clinicians' preferences towards PARPis seemed to impact treatment choices such that the HRD tests results were sometimes irrelevant. Underlying beliefs affecting treatment choices included clinicians' bias towards specific PARPis and patients' preferences for quantity versus quality of life.

CONCLUSION: Findings will inform future research action plans, including the improvement towards standardizing the nationwide HRD testing process. By increasing awareness and equitable access to HRD testing across Canada, this will improve informed patient decision-making.

ACKNOWLEDGEMENT: This study is supported by Marathon of Hope Cancer Centres Network Patient Voices in Research Award, grant number 3205-04.

CONFLICT OF INTEREST: The authors declare no conflicts of interest.

32A THE BC CANCER HEREDITARY CANCER PROGRAM HIGH RISK CLINIC

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The BC Cancer Hereditary Cancer Program Hereditary High Risk Clinic (HRC) provides consultation and risk management follow up for eligible adults in BC and the Yukon whose genetic test results, or those of their immediate family, indicate a high risk of developing certain cancers. This is an overview of population characteristics and outcomes of the 2,458 patients seen since the clinic's inception in 1997.
BRCA1 and BRCA2 mutations account for 73% of the patients seen. With a mean age of 49 at the time of first consult, 22% of patients had unfortunately already had a cancer by the time they were referred for genetic testing. New cancers were diagnosed in 14.5% of patients while being followed, of which 58% were breast cancers and 13% were ovarian, fallopian or peritoneal cancers. Prophylactic procedures, including mastectomies and salpingo-oophorectomies have been performed in 56% of patients. Currently, 1259 patients are under active follow up, with 24% of the original patients having been discharged due to completion of prophylactic mastectomies.
At this time, 326 patients who have been referred for prophylactic mastectomy have not yet had their surgery. As well, 37 patients are waiting for their gynecologic surgery. This highlights the critical need to increase secondary resources to care for this patient population as the new patient referral rate to the HRC has been increasing exponentially, particularly in the last decade.

No conflicts of interest

32B INTERVAL FECAL IMMUNOCHEMICAL TEST (FIT) IS ASSOCIATED WITH POST-COLONOSCOPY COLORECTAL CANCER IN A POPULATION-BASED COLON SCREENING PROGRAM

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INTRODUCTION: Colorectal cancer (CRC) is a leading cause of death in the world. Screening has been shown to decrease CRC incidence and mortality. Many organized screening programs use the fecal immunochemical test (FIT) followed by a colonoscopy if the FIT is positive. If a precancerous lesion (PCL) is found, ongoing surveillance with a colonoscopy is recommended. The interval depends on the findings at the most recent colonoscopy. However, the optimal management of patients undergoing surveillance is not well understood when a patient has an unplanned FIT (i.e., interval FIT) before they are due for their next screening. The objective of this study is to understand the association between an interval FIT and post-colonoscopy CRC (PCCRC) risk to better inform patient management in an organized screening program setting.

METHODS: This was a population-based, retrospective cohort study looking at patients who had a colonoscopy through the British Columbia Colon Screening Program (BCCSP). Data was extracted from the BCCSP information system and the BC Cancer Registry. The cohort was created by using the most recent colonoscopy (i.e., index colonoscopy) that was not suboptimal from 2013 to 2021. The outcome was PCCRC and was assessed until the end of 2022. A Cox proportional hazard model with shared frailty for the index colonoscopist was utilized. Patients were assigned to no interval FIT (i.e., control), interval FIT (negative), and interval FIT (positive). Assignment was treated in the model as a time-varying exposure to minimize immortal time bias. Age, sex, family history, income, rurality, index colonoscopy pathological results, and history of prior colonoscopies, and post-index colonoscopies (treated as time-varying) were adjusted for in the model. Study was approved by the University of British Columbia Research Ethics Board.

RESULTS: 169,117 patients were included, where 53.3% were men and the mean age was 62.7 years (SD 6.8). Patients had a median follow-up of 47.7 months (IQR 29-64). There were 25,438 (15.0%) interval FITs, with a 15.7% positivity rate. PCCR was identified in 275 patients. Among the stageable PCCRs, the proportion in stage I or II were 43.2% (95% CI 28.7-59.1%) for interval FIT (positive), 50.0% (95% CI 26.9-73.1%) for interval FIT (negative), and 53.3% (95% CI 45.4-61.0%) for no interval FIT. The unadjusted cumulative incidence function for PCCRC was 3.0% (95% CI 1.8-4.8%), 0.2% (95% CI 0.1-0.3%), and 0.5% (95% CI 0.4-0.6%) for interval FIT (positive), interval FIT (negative), and no interval FIT respectively (Gray's test $p<0.0001$). The adjusted conditional hazard ratio (HR) for interval FIT (positive) compared to no interval FIT was 6.2 (95% CI 4.5-8.5), while the interval FIT (negative) group had a HR of 0.5 (95% CI 0.3-0.9). Robustness of the results were verified by running a Cox model with generalized estimating equations (GEE), which produced similar adjusted marginal HRs.

CONCLUSION: Patients with an interval positive FIT following a recent colonoscopy are at increased risk of PCCRC. Although screening with FIT between rounds of colonoscopy surveillance are not recommended by the program, when this does occur, these findings support BCCSP's practice of facilitating colonoscopy after a positive interval FIT. These findings are also informative for other organized colon screening programs.

32C INCREASING PRIMARY CARE PROVIDERS' KNOWLEDGE AND CAPACITY TO ASSESS PATIENT ELIGIBILITY FOR LUNG CANCER SCREENING IN BC

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POSTER CATEGORY: Population Health & Health Services

ABSTRACT:
In 2022, BC Cancer launched the first province-wide lung cancer screening program in Canada. Unlike the other three provincial cancer screening programs in BC, the Lung Screening Program is a risk model-based program recommended for people at high-risk for lung cancer: this includes people aged 55 to 74 with a significant history of smoking commercial tobacco, currently or in the past. When a patient either self-refers or is referred by a primary care provider for lung screening, the Lung Screening Program conducts a comprehensive eligibility assessment to confirm the patient's risk and thus their eligibility for a low-dose CT (LDCT) scan. In early 2024, an increasing number of primary care providers inquired about the eligibility criteria and assessment process. Many providers sought information about why certain patients were deemed ineligible when they met the smoking history criteria; how they can ensure they are referring the most-likely eligible patients and thus minimize unnecessary referrals; and how to manage patients' expectations about the process and address their questions if they were ineligible. Recognizing the key role that primary care providers play to support patients to participate in lung screening, the Lung Screening Program prioritized reviewing the smoking history criteria and clarifying the guidelines to providers. The goals of this quality improvement opportunity were to: increase transparency about the eligibility assessment process; manage patient and provider expectations about the assessment process; and support providers to refer more likely-eligible patients. After reviewing, clarifying, and updating the smoking history criteria, the Lung Screening Program consulted a group of 10 diverse primary care providers from across BC to review existing resources and develop new learning opportunities about the entire lung screening process. As a result, the Lung Screening Program created a Fact Sheet summarizing the eligibility criteria and how patients are deemed at high-risk; updated the Eligibility Assessment Request Form (formerly LDCT Scan Referral Form) to clarify that patients are first assessed and not immediately referred for an LDCT scan; established an online Risk Calculator for providers to input their patients' characteristics and assess the likelihood of their eligibility; and delivered a case-based webinar, where subject matter expects illustrated the lung screening process, from eligibility assessment to results follow-up, using sample patient scenarios. Because of this strategy, the Lung Screening Program has been able to develop relevant, practical and effective resources that equip health care providers with the information they need to confidently recommend likely-eligible patients for a lung screening eligibility assessment, and ultimately improve patients' lung screening experience.

32D SCALING COMMUNITY-BASED HEALTH PROMOTION: INSIGHTS FROM 20 MONTHS OF CANCER SCREENING AND PREVENTION OUTREACH IN BC

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POSTER CATEGORY: Population Health & Health Services

ABSTRACT:
Community-based health promotion remains a key strategy for increasing uptake of cancer screening and prevention services in British Columbia. While 92% of BC residents are interested in cancer screening and prevention, awareness gaps remain, particularly among women ages 18-34 for breast and cervical screening, and adults ages 50-70 for colon and lung screening. Research has shown that in-person community engagement can bridge these gaps through information sharing and fostering a sense of connection. Building on a successful pilot in 2024, BC Cancer's Prevention, Screening and Hereditary Cancer Program has scaled its community engagement program consisting of event-based booth activations and tailored community workshops. The program provides key information on breast, cervix, colon and lung screening, and prevention strategies addressing commercial tobacco use, alcohol consumption, sun safety, nutrition, radon and air pollution. Booth activations focus on broader outreach and public visibility, travelling to large-scale, high-traffic local events such as marathons, health expos, and the PNE fair, as well as trusted community hubs including libraries and food banks. Booths are staffed by BC Cancer's health promotion team and trained post-secondary co-op students. Activities feature an educational trivia wheel, translated resources, and call-to-action giveaways such as screening postcards and UV colour-changing stickers. Workshops offer a targeted, in-depth approach to engagement by collaborating with community partners to support specific sub-populations eligible for screening. The sessions leverage interactive presentations, on-site screening services and trusted co-facilitators. Wellness activities and supports to reduce logical barriers like food and childcare are often offered, to meet communities where they are at and increase participation. Evaluation data is collected through post-event reporting, community partner feedback surveys and testimonials. As of September 2025, the program has brought the booth to 124 local events and facilitated approximately 27,331 meaningful interactions, with the public reporting increased screening and prevention awareness and appreciation of BC Cancer's presence in community settings. Since the program's launch of the workshop initiative, 75 workshops have been delivered alongside community health centers, newcomer, immigrant and refugee services, and cultural, faith-based, and equity-focused organizations. Over 100 screening mammograms and 210 cervix self-screening kits have been provided, often including first-time access by never-screeners. A notable program innovation has been the addition of the Sun Safety booth, offering timely, seasonal outreach aligned with skin cancer prevention goals. Screening workshop models also continue to evolve delivery formats, from standardized to co-designed approaches, to meet organizational capacity and acknowledge participant needs and cultural context. With increasing demand for adaptations, future programming will focus on building a community of practice, co-development, and continued integration of provincial screening services. By leveraging community strengths, the program aims to deepen its impact and support equitable access among those eligible for breast, cervix, colon and/or lung screening in British Columbia.

Declarations of conflict of interest and acknowledgement of funders: None.

33A A FRAMEWORK FOR THE ROUTINE REPORTING OF REAL-WORLD UTILIZATION AND OUTCOMES FOR CANCER THERAPY IN BRITISH COLUMBIA

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BACKGROUND: With the rising cost of therapeutics and uncertainty in evidence at the time of initial reimbursement, health care organizations must fill the evidence gap to better understand the value of newly-funded therapies. To meet this need, we developed a framework for the routine reporting of real-world utilization and outcomes for systemic therapies at BC Cancer.

METHODS: We reviewed published frameworks for real-world evidence (RWE) and previous research reports to identify study design features and commonly-reported outcomes. We worked with senior leaders in the Provincial Systemic Therapy Program to understand their needs, and to iteratively review the proposed framework.

RESULTS: The framework is organized around three dimensions of study designs: (1) Perspective: population level or individual level; (2) Type of analysis: descriptive or comparative; and (3) Scope: within organization or health system level.
To adequately characterize real-world utilization and outcomes, minimum reporting will be done at both the population and individual level, using descriptive analysis, with data from within BC Cancer. For some interventions, where adverse events or health resource use are of particular concern, the scope will be broadened to include health system data. Where feasible within data, time, and resource constraints, comparative analysis will also be done to estimate comparative effectiveness, cost, and safety.

CONCLUSIONS: The framework presents a straightforward set of minimum outcomes that can be generated for any therapeutics of interest at BC Cancer. This framework is being applied to high-priority drug programs at BC Cancer this year, and will serve as template to facilitate the generation of timely and policy-relevant evidence for the organization.

KEYWORDS: real-world evidence; real-world data; post-market evaluation; life-cycle HTA

33B CHARACTERISTICS AND OUTCOMES OF BREAST CANCERS DIAGNOSED IN PATIENTS WITH GERMLINE HEREDITARY MUTATIONS - THE BC CANCER HIGH RISK CLINIC EXPERIENCE

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BACKGROUND. Individuals with hereditary mutations in breast cancer (BCa) pre-disposition genes are at significantly higher risk of developing BCa during their lifetime compared to the general population. In British Columbia, patients identified as carrying a deleterious mutation are followed through the Hereditary Cancer Program (HCP) High Risk Clinic (HRC) for appropriate management of their increased BCa risk. This study evaluates the clinical and pathologic features, as well as outcomes, for BCa diagnosed in hereditary mutation carriers in the HRC.

METHODS. Patients followed in HRC between 1997-2023 were included in this study. Patients had a confirmed deleterious hereditary mutation, and at least one diagnosis of BCa after enrollment in HCP. Baseline patient and tumor characteristics, detection method, treatment, and survival outcomes were collected. BCa diagnoses were categorized as prevalent (detected on first screening after HCP enrollment) or incident (detected on routine imaging beyond first screening). Prevalent or incident BCa detected within 6 months of a normal screening and outside of the usual screening schedule were characterized as interval cancers.

RESULTS. *Patient Characteristics.* Between 1997-2023, 166 patients were diagnosed with BCa out of 2011 patients (166/2011, 8.3%) seen in HRC. Median age of BCa diagnosis was 45 (23 -86). The most common mutations were *BRCA1* (74, 44.6%) and *BRCA2* (67, 40.4%). Others were *CHEK2* (7, 4.2%), *PALB2* (7, 4.2%), *TP53* (6, 3.6%), *ATM* (4, 2.4%), and *NF1* (1, 0.6%).
Clinico-Pathologic Features. In our cohort, 39 (23.5%) BCa were prevalent, 127 (76.5%) were incident. Twenty-four cases (14.5%) met the criteria for interval BCa diagnosis. Of the 166, MRI was the most common detection modality (84, 50.6%), followed by mammography (44, 26.5%), clinical exam (18, 10.8%), and ultrasound (4, 2.4%). Of note, 16 (9.6%) were diagnosed by prophylactic surgery and were not identified on prior imaging. Among all BCa diagnoses on final pathology, 37 cases (22.3%) were in-situ disease only, and 129 (77.7%) had invasive disease. Within invasive tumors, 66.7% were stage 1 (86/129), 26.4% stage 2 (34/129), 6.2% stage 3 (8/129), and one patient had de-novo stage 4 disease at diagnosis (0.8%). Incident cancers were more likely to be diagnosed at stage 1 compared to prevalent cancers (71% vs 48%, p=0.023). Invasive tumor subtype distribution was 51.9% (67/129) (hormone receptor positive HER2-negative (HR+HER2-), 32.6% (42/129) triple negative (TNBC), and 14.7% (19/129) HER2-positive. Notably, 52.2% (35/67) of *BRCA1* associated tumors were TNBC (p<0.001), whereas 60.3% (38/63) of *BRCA2* associated tumors were HR+HER2- (p<0.001).
Treatment. The majority (153/166, 92.2%) of patients underwent bilateral mastectomies. Among patients with invasive BCa, 62% (80/129) received chemotherapy in the neo-adjuvant or adjuvant setting. There was no statistically significant association between incident or prevalent BCa and chemotherapy. There is a marginally statistically significant association between interval cancer and receipt of chemo (p=0.067). Approximately 20% (30/166) of all patients received adjuvant radiation therapy, including 17% (26/153) who had bilateral mastectomies. In our cohort, 68.7% (114/166) underwent prophylactic risk reducing bilateral salpingo-oophorectomy.
Outcomes. As of last follow up, there were 8 deaths in the cohort, 6 to metastatic BCa, and 2 to ovarian cancer. An additional 8 patients were diagnosed with recurrent BCa and are undergoing treatment. Three and 5-year overall survival rates in the cohort were 98% and 95.2%.

CONCLUSIONS. BCa patients diagnosed under the HCP program have excellent outcomes. *BRCA* mutations are the most common alteration, and *BRCA1* is enriched for TNBC. Further work is needed to identify clinical and biological features of interval cancers in this population.

33C IMPLEMENTING COMPREHENSIVE POPULATION-WIDE GENOMIC TESTING FOR METASTATIC PROSTATE CANCER IN BRITISH COLUMBIA

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INTRODUCTION: Prostate cancer is the most common cancer in men with over 4,000 new cases and 800 deaths in British Columbia in 2024. Germline and somatic alterations in genes associated with DNA repair are common and have clinical implications for treatment. Tumor and germline testing became available for all British Columbia patients with metastatic prostate cancer through the Cancer Genetics & Genomics Laboratory (CGL) in May 2022. Tumor tissue testing was prioritized with blood based circulating tumor DNA (ctDNA) serving as an alternative where tumor tissue testing failed or there was no tissue available. We reviewed the program to understand uptake, utilization, clinical impact and identify areas of improvement.

METHODS: This multicenter, retrospective observational study included all patients in British Columbia with metastatic prostate cancer who underwent molecular tumor testing at the Cancer Genetics and Genomics Laboratory (CGL) of BC Cancer from the initiation of the program, 24 May 2022 to 24 May 2024. Data was extracted from the CGL database on test type, date, and results, and requesting provider/ hospital. Additional clinical data was collected from electronic medical records on treatments administered, laboratory and diagnostic testing results and patient performance status.

RESULTS: Over the two-year period, 2125 individual patients underwent a total of 2258 tests, with 2018 tissue tests and 240 ctDNA tests. The majority of tests were requested by medical oncologists, with uptake across all health service areas. Median turnaround times from receipt of sample by the laboratory to result date were 31 days, 44 days, and 66 days for ctDNA, tissue and germline tests, respectively. 10.4% (n=235) of tissue tests failed, and 63.8% (n=153) of ctDNA tests had undetectable ctDNA. An estimated 115 of the ctDNA tests with undetectable ctDNA could potentially have been avoided by limiting testing to patients with: 1) metastatic hormone-sensitive prostate cancer on androgen deprivation ≤14 days, and 2) progressive metastatic castration-resistant prostate cancer with a predicted ctDNA fraction of ≥2% using the ctDNA.org tool. Of 95 patients with a BRCA1/2 alteration detected, 48.4% received targeted PARP inhibitor treatment by February 2025, with a further 33.7% remaining eligible while responding to their current treatment.

CONCLUSION: Population-wide tumor testing was widely adopted in British Columbia, resulting in identification of actionable alterations and optimizing patients' care, in keeping with national and international guidelines. Education on optimal timing for cfDNA collection is needed to reduce unnecessary testing and improve test yield.

33D OPTIMIZING BREAST CANCER DIAGNOSIS AND TREATMENT IN YOUNG WOMEN: A COMPARATIVE REVIEW OF TWO CLINIC MODELS

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INTRODUCTION: The Fraser Health Authority operates two Breast Health Clinics (BHCs) in Surrey and Abbotsford, each with distinct investigation protocols. In Surrey, medical imaging clerks schedule subsequent investigations based on BI-RADS scores reported by radiologists, whereas in Abbotsford, patients return to their BHC physicians after initial imaging for coordination of further testing. This review compared diagnostic and treatment intervals, as well as factors influencing these timelines, across the two sites.

METHODS: A retrospective review assessed differences in the time from initial imaging to biopsy, histopathological diagnosis, and treatment (surgery or systemic therapy) across the two sites. Eligible patients were female, younger than 40 years at diagnosis (i.e., below screening age), and diagnosed with primary breast cancer at either Surrey or Abbotsford BHC between January 2015 and December 2024. Exclusion criteria included a known pathogenic germline variant, prior chest radiation or breast cancer, or a strong family history of breast cancer on the same side of the family.

RESULTS: A total of 229 patients were included (155 Surrey, 74 Abbotsford). Median age at diagnosis was 36.6 years (IQR 33.8-38.1). At diagnosis, BI-RADS 5 was the most common score in Surrey (33.6%), while BI-RADS 4C predominated in Abbotsford (28.8%). Higher BI-RADS scores were associated with shorter times to biopsy: patients with BI-RADS 5 (n=70) had a median time to biopsy of 5 days (IQR 1-15). The time to biopsy was significantly longer in Abbotsford than in Surrey (median 17 vs. 9.5 days, p=0.0052). A quarter of all patients (25.6%) received external imaging at community clinics, where time to biopsy was significantly longer compared with the two BHC sites (median 20 vs. 10 days, p=0.0004). Among the 157 patients who did not receive neoadjuvant therapy, 61.8% underwent surgery within 28 days (4 weeks) of diagnosis and 81.5% within 42 days (6 weeks). The time to surgery was significantly longer in Abbotsford than in Surrey (median 32 vs. 21 days, p=0.0027). No significant difference was observed in the time to systemic treatment (median 16.5 vs 20 days, p=0.14).

DISCUSSION: Significant inter-site differences were observed, with the Surrey model achieving shorter times to biopsy (median 9.5 vs. 17 days) and surgery (median 21 vs. 32 days) compared with Abbotsford. Potential contributing factors include Surrey's imaging department–driven scheduling model, funding availability, reliance on external imaging, and closer inter-specialty collaboration. These consistent variations underscore the need to investigate structural and workflow factors that may contribute to disparities in timely breast cancer care.

34A NUTRITION AND CANCER PREVENTION: A KNOWLEDGE TRANSLATION ANALYSIS OF INTERNATIONAL GUIDELINES

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ABSTRACT:
Nutrition is one of the most universal yet underestimated tools for cancer prevention. While every individual makes daily dietary choices, nutritional guidance is often fragmented, inconsistent, and underemphasized compared to other lifestyle risk factors. This gap is striking given that 30–50% of cancers are estimated to be preventable through lifestyle modifications, with diet playing a pivotal role. Accessible, evidence-based resources that synthesize recommendations across cancer types and institutions are essential to empower the public to make informed choices.
This project systematically reviewed and synthesized dietary recommendations for cancer prevention from the websites of major cancer organizations. Four cancer types with high prevalence and available nutritional guidelines were selected: breast, prostate, colorectal, and lung cancer. Web-based resources from major North American and international organizations were reviewed, including the American Cancer Society, Canadian Cancer Society, Mayo Clinic, Johns Hopkins Medicine, and the World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR). Extracted recommendations were standardized by food group (fruits/vegetables, grains, proteins, dairy, fats, alcohol, and supplements). Both general cancer prevention guidelines and cancer-specific recommendations were included. Findings were synthesized into a comparative analysis and translated into publicly accessible lay articles. Across all sources, general recommendations emphasized a plant-based diet rich in fruits, vegetables, and whole grains; limiting red and processed meats; moderating or avoiding alcohol; and preferring unsaturated over saturated or trans fats. Frequently highlighted foods included cruciferous vegetables (broccoli, cauliflower, cabbage, Brussels sprouts), garlic for colorectal cancer, flaxseed for breast cancer, vitamin C–rich foods such as citrus and berries for lung cancer, and fish or other omega-3–rich proteins. Whole grains such as oats, brown rice, and quinoa were consistently emphasized over supplements. Soy and dairy were variably recommended depending on cancer site, reflecting heterogeneity in institutional guidance.

CONCLUSIONS:
This knowledge translation project underscores the value of transforming scattered institutional recommendations into a centralized, lay-accessible format. By clarifying both general and cancer-specific dietary strategies, it advances equitable access to prevention knowledge and highlights nutrition's often overlooked role in oncology. Future work should build on this foundation by harmonizing international guidelines into standardized frameworks to strengthen the role of diet in cancer prevention.

CATEGORY: Clinical/Clinical Research – Population Health & Health Services

CONFLICTS OF INTEREST: None declared

FUNDING: N/A

34B ORAL CANCER INCIDENCE IN BRITISH COLUMBIA AFTER THE COVID-19 PANDEMIC

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OBJECTIVES: Since the start of the COVID-19 pandemic, there have been significant disruptions to cancer services and the incidence of head and neck cancer worldwide. With decreased screening rates and increased contributing factors to oral cancer, we would expect an eventual increase in cases post-pandemic. To our knowledge, there is a research gap on the impacts of the COVID-19 pandemic beyond 2021 on oral cancer incidence, while considering temporal trends. Our research determined whether there is a change in the temporal trend of oral cancer incidence in British Columbia, Canada, after the start of the COVID-19 pandemic.

METHODS: Data on oral cancers diagnosed from January 2010 to December 2022, in British Columbia, were obtained from the BC Cancer Registry. An interrupted time series design was used to determine differences in oral cancer incidence trend post-pandemic (2020 and after) by comparing the post-COVID-19 observed incidence to the expected (counterfactual) post-COVID-19 incidence. The expected post-COVID-19 incidence was based on the pre-COVID-19 trend (2010 to 2019). The pre-COVID-19 trend was calculated as the annual percentage change of age-standardized incidence rates using joinpoint regression. Ratios and 95% confidence intervals of observed versus counterfactual post-pandemic age-standardized incidence rates for 2020, 2021, and 2022 determined differences in pre-and post-pandemic trends. Sex-, age category-, and site-specific analysis will also be completed.

RESULTS: From 2010 to 2022, there were 3039 new cases of oral cancer in British Columbia. There were no significant differences between the pre-and post-COVID-19 oral cancer incidence trend overall and by sex-specific analysis. However, there were much fewer observed compared to expected cases of tongue cancers overall and for females, although not significant. Age category- and site-specific analysis is to be completed.

CONCLUSION: Preliminary results suggest no differences in oral cancer incidence trends post-COVID-19. A post-pandemic period beyond 2022 should be assessed to determine differences.

ACKNOWLEDGEMENT: This work was supported by the Canadian Foundation for Dental Hygiene Research and Education, and Better Outcomes. I.Y. received a CIHR Doctoral Research Award.

CONFLICT OF INTEREST: None

34C BC CANCER SURVEILLANCE ONLINE DASHBOARD 2025: TRENDS IN AGE-STANDARDIZED CANCER INCIDENCE RATES AND INCIDENCE PROJECTIONS ADJUSTED TO EXCLUDE COVID-19-RELATED DISRUPTIONS

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BACKGROUND: Accurate and accessible cancer surveillance tools are essential for public health planning, health system capacity management, and evaluating cancer control strategies. To support this need, BC Cancer developed an interactive Shiny app dashboard that provides timely and customizable access to cancer surveillance data. The COVID-19 pandemic disrupted cancer diagnosis and reporting in 2020, resulting in artificial declines in incidence rates. If uncorrected, these anomalies risk misinforming projections and policy decisions. To ensure accurate monitoring, the 2025 release of the BC Cancer Surveillance Dashboard provides age-standardized cancer incidence rate (ASIR) trends and incidence projections excluding 2020 data, offering a clearer picture of the true cancer burden.

METHODS: ASIR trends from 1970-2023 were analyzed using Joinpoint regression, excluding 2020 diagnosis year data. Cancer incidence projections to 2038 were developed for each cancer site using Poisson regression with the model selection based on the best AIC criteria and supplemented by expert review where needed. Explanatory variables included year, age, sex and health authority. Projections were generated by applying projected rates to BC STATS population forecasts.

RESULTS: Analyses including 2020 showed artificial declines in ASIR across multiple cancer types, masking true underlying patterns. Excluding 2020 restored trend consistency and enhanced projection accuracy. Breast cancer diagnoses declined about 30% in 2020 compared to 2019 or 2021. In recent years prior to COVID-19, the breast cancer ASIR showed increasing trends, which is consistent with the current release of ASIR projections. However, when 2020 data are included, a decreasing trend is observed. Updated projections indicate continued growth in overall cancer incidence, largely due to population growth and aging, with notable regional and sex-specific variation.

CONCLUSION: The 2025 BC Cancer Surveillance Dashboard release provides a robust, interactive platform for exploring cancer incidence trends and projections across cancer sites, sex, age groups, and health authorities. Users can explore interactive charts and tables and export results for further reporting. By explicitly correcting for COVID-19–related disruptions, this work strengthens the reliability of evidence used by policymakers, planners, and clinicians to anticipate future cancer burden. Ultimately, the dashboard supports a learning health system approach—delivering accessible, timely, and transparent data to guide evidence-based cancer control and policy decisions in BC.