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Contents

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JOURNAL OF ONCOLOGY PHARMACY PRACTICE

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CAPhO Conference 2024 Abstract Book

Administration

100

Evolving models of care for ambulatory systemic treatment in Ontario, Canada

Daniela Gallo-Hershberg[1,2], Aliya Pardhan[1], Apurva Shirodkar[1], Nicole Montgomery[1], Nicole Fedorowicz[1], Sharmilaa Kandasamy[1], Lauren Della Mora[1], Simron Singh[1,3], Leta Forbes[1,4] and Kathy Vu[1,2]

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Objective: The demand for systemic treatment in Ontario has increased due to an aging population and treatment advances, leading to increased volumes and more complex care. The delivery of ambulatory systemic treatment has been impacted by health human resource shortages and challenges exacerbated by the COVID-19 pandemic. In response, Ontario Health (Cancer Care Ontario) developed recommendations to optimize ambulatory systemic treatment delivery.

Design: To ensure evidence-based recommendations, a targeted literature review was conducted. A current state survey and follow-up interviews were conducted with 16 systemic treatment facilities in Ontario. Patient and provider focus groups were held to gather direct feedback on the challenges and facilitators of ambulatory systemic treatment. Jurisdictional scans were conducted, interviewing cancer agencies and programs in Canada and abroad. Engagement sessions were held with diverse equity-deserving groups, to understand their specific needs, experiences, and barriers to care.

Results: The developed recommendations address various aspects of ambulatory systemic treatment delivery and highlight the importance of evidence-based, person-centred care, timely access, effective collaboration, technological advancements, and addressing existing inequities for equity-deserving groups.

Conclusion: The recommendations aim to overcome challenges faced by providers and patients, ensure equitable access to care, and improve the well-being of providers involved in delivering cancer services.

101

Implementing an environmentally friendly medication vial for outpatient dispensing of cancer medications

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Objective: Climate change is a global crisis that may cause illness, mental health impacts and death. Healthcare systems account for 4%–10% of global CO_2 emissions. Oncology Pharmacy is a large consumer of disposable supplies required for handling hazardous medications. Our objective was to reduce the pharmacy's impact on the environment by considering the implementation of a more environmentally friendly medication vial.

Design: Research was conducted to identify medication vials that use less plastic and emit less CO_2 while also having a child-safe cap and protect against UV rays and photo-degradation. The cost was also considered. Staff and patient input were solicited to test vial acceptability and ease of use.

Results: Implementation proceeded successfully in one centre and additional feedback was obtained. Time was required to teach patients the new opening technique. The new vials have been positively received and there is a perceived value in the reduced environmental impact.

Conclusion: A patient-centred approach to implementing change is well received. Even in a practice area where reducing the carbon footprint is challenging, it is possible to implement an option that is more environmentally friendly.

102

Lessons learned from the development of two biosimilars massive open online courses for patients and healthcare providers

Kathy Vu[1,2], Annalise Mather[1], Jessica Aria[2] and Andrea Adamic[2]
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[2]*Ontario Health Cancer Care Ontario, Canada*

Objective: We aim to present the key lessons learned from a large-scale MOOC (Massive Open Online Course) project, focusing on the challenges and successes encountered during the development and implementation phases.

Design: The MOOC project involved collaboration between the University of Toronto and external partners to develop and deliver two Biosimilar MOOCs. A survey was sent to the Advisory Committee and content developers before the launch of the MOOCs (summer of 2023). Feedback was collected anonymously and the results were thematically compiled by the team.

Results: The findings reveal a range of challenges encountered, including resourcing issues, turnover of project staff, content development complexities, and accreditation management. However, the project also yielded positive outcomes, such as valuable support from external partners, the dynamic and cohesive nature of the project team, and the establishment of beneficial partnerships. The results emphasize the importance of clear communication, expertise in assessment development, and the need for sustainable budget allocation.

Conclusion: Insights gained from this project can guide future initiatives in the development and delivery of MOOCs, emphasizing the need for clear guidelines, transparent review processes, and sustainable budget allocation. Actionable recommendations are provided, ultimately contributing to the advancement of online education and learning experiences.

103

Adverse drug reaction reporting in oncology patients – What numbers don't tell us

Stephanie Woo and Tonya Ng
BC Cancer Agency, Canada

Background: Despite national and organizational standards on reporting and documenting serious adverse drug reactions (ADRs), actual practices may be inconsistent among clinicians.

Objective: To characterize how clinicians currently report and document serious ADRs at BC Cancer.

Design: A quality improvement project using a plan-do-study-act (PDSA) approach: (1) retrospective chart review of ADRs reported through the Patient Safety Learning System (PSLS) from January 2022 to April 2023; (2) review results with patient partners, prescribers, and Medication Safety Subcommittee; and (3) report to Systemic Therapy Program.

Results: Of the 34 ADR reports submitted, 71% (24/34) were infusion-related reactions. All ADRs (100%; 34/34) were documented in medical chart progress notes. 38% (13/34) of the ADRs were documented in the allergy section, per the organization's recommended workflow. Patient partners felt it was important that (1) providers could easily identify a previous serious ADR in the chart and (2) patients are given clear communication on which drug caused the serious ADR, whether the drug should be used again, and whether patients should update their personal records.

Conclusion: Serious ADR reporting was low. We also identified gaps in the documentation and communication of ADRs with patients. Patient partners' perspectives added depth and acceptability to our recommendations.

104

Cost avoidance opportunity of dose rounding strategies at product launch

Loreena Pang, Jane de Lemos, Christopher Venner and Kim Schaff
BC Cancer, Canada

Background: Many expensive oncology agents are dosed according to weight resulting in drug wastage if a dose-rounding policy is not used. At BC Cancer, daratumumab was the highest expenditure drug, accounting for 70 million dollars (9.9% of total expenditure) in 2022/2023. Using daratumumab as an example, this work was performed to develop a dose-rounding policy and illustrate its potential impact.

Objectives: (1) To develop a dose-rounding policy for intravenous (IV) daratumumab and (2) to estimate potential cost avoidance had the policy been implemented at product launch.

Methods: A retrospective evaluation of dispensing data for IV daratumumab used for multiple myeloma across six Regional BC Cancer sites, 1 February 2019 to 31 March 2023. Potential dose-rounding policies were developed based on literature evaluation and environmental scanning. Two were selected by expert end-users to permit cost-avoidance comparison.

Results: Applying [1] dose down-rounding to −10% variance, and [2] dose banding to +5%, −10% variances to eligible doses (8420), direct cost-avoidance (due to unopened vials) was $4.6 million and 2.2 million dollars over 4 years, respectively.

Conclusions: A dose-rounding policy would lead to significant cost avoidance. The approach used to develop the policy can be applied to any expensive oncology agent at product launch.

105

Evaluating pharmacy student competence, confidence, and perceived barriers during specialized community oncology clinical rotations improves students' learning outcomes and experiences

May Nguyen, Jason Wentzell and Lauren Hutton
Extend Pharmacy, Ottawa, ON, Canada

Objective: Canadian pharmacy students' perceptions of competence, confidence, and barriers related to providing oncology pharmacy care in the community setting are not known and may differ significantly between students. We describe a novel survey-based evaluation and the results of the survey after distribution to academic rotation pharmacy students in a specialty oncology community practice.

Design: Retrospective evaluation of survey results from four pharmacy students completing an academic rotation at a specialized oncology community pharmacy.

Results: The survey assesses students' competence, confidence, and barriers to providing comprehensive care to patients with cancer receiving take-home cancer drugs (THCDs). Students' confidence in assessing an oncologic medication regimen and managing cancer treatment toxicities increased during the rotation from 75% and 50% of students feeling "not comfortable" at the beginning of the rotation, respectively, to 75% and 100%, feeling "very comfortable" by the end of the rotation. Students reported overcoming barriers to providing compassionate, empathetic, and inclusive care after focused, individualized, education on these topics during the rotation.

Conclusion: Routinely evaluating student confidence, competence, and barriers to providing care at three points during a rotation allows the adaptability of the rotation site to meet individual learning needs in a specialized community cancer setting.

106

Measuring the impact of new systemic therapy for cancer treatments

Joanne Houlihan, Carolyn Fifield, Bruce Colwell, Helmut Hollenhorst, Marilyn Landry, Kelly Leadbeater, Jill Petrella, Joy Tarasuk, Erin Wentzell and Ian Wilson
NS Health Cancer Care Program, Halifax, NS, Canada

Objectives: New cancer therapies have historically been introduced without assessment or understanding of the operational impact on the healthcare system and without a corresponding increase in staffing resources (oncology, nursing, and pharmacy) or the number of treatment chairs. We aimed to better understand the impacts of the introduction of new cancer therapies in Nova Scotia.

Design: Working with a multi-disciplinary group including medical ethics, pharmacy, pathology, and diagnostic imaging, the Nova Scotia Health Cancer Care Program built a tracking database via Smartsheet, to estimate the anticipated operational net impact for all new treatments, including key calculations for chair time, clinic time, and pharmacy time.

Results: Since April 2021, the introduction of new systemic therapies has added an estimated 11,000 h of chair time, 4300 h of clinic time, and 10,000 h of pharmacy resource in Nova Scotia. Proactively reviewing new treatments has also provided an opportunity to streamline our approach to patient/staff education and Standard Order Set development.

Conclusion: The new tracking database has led to the development of a clearer understanding of the demand for multi-disciplinary resources. We anticipate that this work will improve advocacy for resources to support the increasing demand for systemic therapy for cancer provincially.

Pharmacy practice (non-research based)

200

Implementation of a remote oncology pharmacist in an oncology patient support program setting

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Sentrex, Markham, ON, Canada

Objective: An oncology-trained pharmacist is well equipped to support patients with unique drug counselling, drug–drug interaction checks, and side effect management of cancer drugs. Hospitals can benefit from additional contact with all patients to meet their specialized needs. A remote oncology pharmacist on a patient support program provides this support.

Design: Hospital Cancer centre trained oncology pharmacists were hired for the Haven oncology patient support program as the program's single point of contact to provide specialized counselling, follow-up calls, and additional clinical services for an extensive list of oral and injectable cancer medications.

Results: There were 276 patients enrolled in the Haven program between 1 May 2023 and 31 December 2023 (8 months). A total of 17 different drugs were enrolled for support from 42 clinics across Canada. Relevant interventions were addressed, and patient compliance, safety, and other measurable outcomes were assessed.

Conclusion: An experienced oncology pharmacist on a cancer drug patient support program allows patients and their healthcare providers an additional level of support through relevant communication with the cancer centre and enhanced patient satisfaction and safety while going through treatment.

201

A real-world analysis evaluating total drug cost in patients with metastatic melanoma achieving a complete response with ipilimumab–nivolumab combination therapy

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Objective: The optimal duration of therapy in metastatic melanoma (MM) with ipilimumab–nivolumab (I-N) remains to be defined. Our objective is to try to define the duration of therapy and associated costs.

Design: We did a retrospective drug utilization review between July 2018 and June 2023 of I-N in MM achieving a complete response (CR). Our strategy is to treat until CR, stop therapy, then monitor. We evaluated treatment doses, duration of therapy, and drug cost.

Results: A total of 46 patients with MM achieved a CR with I-N. In the first-line setting, patients received 13.9 cycles, and 23 patients (59%) received at some time the reversed dose combination therapy. The total treatment cost per patient was 150,005.54$. The cost per cycle was 14,216.39$. Our patient cost is 38.5% < 2 years treatment with nivolumab, 39% < 2 years treatment with pembrolizumab, and 55% < 2 years treatment with I-N (44.8% less if reversed dose I-N). Metastatic survival time (MS) is the time the patient is diagnosed metastatic until either death or the end of the observation time. MS in the first line setting was 31.8 months.

Conclusion: Our population in CR achieved a cost-efficient durable response that was sustained despite stopping immunotherapy and monitoring the patients once CR was declared.

202

A descriptive example using quality improvement frameworks to develop, implement and evaluate a novel ambulatory oncology pharmacy practice model

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[4]*Extend Pharmacy, Ottawa, ON, Canada*

Objective: Describe the application of the plan-do-study-act quality improvement framework in the development, implementation, and evaluation of a novel pharmacy practice model in ambulatory oncology.

Design: Prospective, observational quality improvement research design using the plan-do-study-act methodology.

Results: Four iterations of the plan-do-study-act framework were completed to develop a patient-facing, pharmacist-led, ambulatory oncology clinic program. The clinic provided care to patients with prostate cancer on oral anticancer therapy. Metrics were collected throughout all stages of development to inform target processes for improvement. The pharmacist saw 136 patients between July 2019 and January 2023, resulting in 464 total encounters. The pharmacist provided clinical interventions and counseling to patients newly starting on oral anticancer therapy and those established on therapy using a longitudinal model of care.

Conclusion: Application of the plan-do-study-act quality improvement framework to a novel pharmacy practice model supported the development, evaluation, and sustainability of a pharmacist-led ambulatory oncology clinic providing care to patients with prostate cancer on oral anticancer therapy.

203

Drug interaction between abiraterone and spironolactone in a patient with metastatic castrate-sensitive prostate cancer

Hayley Underhill[1,2], Tiffany Tozer-MacMillan[1] and Lauren Hutton[1,3]
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[2]*Dalhousie University, Halifax, NS, Canada*,
[3]*Extend Pharmacy, Ottawa, ON, Canada*

Objective: Describe a patient case in which temporal biochemical changes are observed related to a drug–drug interaction between abiraterone and spironolactone.

Design: Observational case report.

Results: We report a case of a male in his 70s with metastatic castrate-sensitive prostate cancer and comorbid heart failure who experienced biochemical disease progression of prostate cancer while on abiraterone therapy likely due to the initiation of concurrent spironolactone. After discontinuing spironolactone, the patient's biochemical progression was reversed, and the patient did not progress to castrate-resistant disease. Case reports detailing this drug interaction in other patients are summarized, and a description of discrepancies across electronic resources providing information on drug interactions is presented.

Conclusion: Diligent drug interaction assessment by oncology pharmacists and knowledge of the interaction between abiraterone and spironolactone may result in avoidance of a drug interaction that could potentially lead to premature disease progression in patients with prostate cancer.

204

CDK4/6 inhibitors treatment use in women treated for advanced breast cancer: Integrating ASCO/NCODA patient-centered standards in a community pharmacy

Mélanie Provost, Alexandre Marineau and Catherine St-Pierre
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Background: Outpatients treated with oral anti-cancer drugs, including CDK4/6 inhibitors, may benefit from a pharmacy practice setting adapted to support proper oral anti-cancer drug monitoring. This real-world study aimed to characterize patient-centered pharmacy practice aligned with ASCO/NCODA standards and to describe its impact on CDK4/6i treatment use.

Methods: This retrospective study included women with confirmed HR+/HER2− advanced breast cancer treated with CDK4/6 inhibitors combined with letrozole or fulvestrant. Pharmacists collected patient characteristics, clinical activities, and treatment patterns using data from the pharmacy chart. CDK4/6i treatment adherence rates were estimated based on medication claims data. Time-to-treatment discontinuation was assessed using the Kaplan-Meier estimate.

Results: A total of 65 patients were included in this study. An average of seven pharmaceutical care activities per patient per cycle was documented. The mean proportion of days covered was 89.6%. The median time-to-treatment discontinuation was estimated at 44.2 months in patients treated with CDK4/6i+ letrozole and 17.0 months in patients treated with CDK4/6i+ fulvestrant.

Conclusion: A structured patient-centered pharmacy practice model integrating the ASCO/NCODA patient-centered standards and ongoing communication with patients and healthcare providers ensures timely refills, and close monitoring, and allows patients to achieve high adherence and persistence rates comparable to those reported in clinical trials.

205

Ambulatory oncology antibiotic prescribing patterns: A retrospective descriptive analysis

Crystal Cheng[1], Stephanie Woo[1], Shirley ST Yeung[1], Tonya Ng[1] and Alastair McAlpine[2]
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Objective: There is limited literature or real-world experience with antimicrobial stewardship (AMS) in outpatient oncology settings. This project characterized local outpatient antibiotic prescription patterns as the first step to developing an outpatient AMS program at BC Cancer.

Design: We conducted a retrospective descriptive analysis of outpatient antibiotics prescribed at BC Cancer Vancouver Center between 1 October 2022 and 30 November 2022.

Results: We reviewed 232 antibiotic prescriptions in 208 patients. Overall, medical oncology provided 39% (90/232) of prescriptions and dentistry provided 38% (89/232). 56% (130/232), 20% (46/232), and 24% (56/232) were for treatment, prophylaxis, and unknown indications, respectively. Of the treatment prescriptions, medical oncology provided 42% (54/130), dentistry provided 30% (39/130), and radiation oncology provided 17% (22/130). The most common treatment indications were medication-related osteonecrosis of the jaw (MRONJ) with 18% (24/

130), urinary tract infections with 15% (19/130), and skin/soft tissue infections with 12% (15/130). For prescriptions with unknown indications, dentistry provided 88% (49/56) of prescriptions.

Conclusion: Most antibiotic prescriptions were provided by dentistry and medical oncology, where dentistry was prescribed for unknown indications and MRONJ, while medical oncology prescribed for varied indications. The next steps would involve liaising with these groups to clarify prescribing indications and identify potential AMS-related collaborations.

206

Trastuzumab dose banding and outsourcing of sterile compounding improves efficiency in the Sunnybrook Odette Cancer Systemic Therapy program

Jonathan Shloush, Sean Hopkins, Ivan Tyono and Lauren Charbonneau
Sunnybrook Health Sciences Centre, Toronto, Canada

Objective: Standardized doses through dose banding can facilitate the advance production of chemotherapy infusions. Banding doses of monoclonal antibodies within 10% of ideal doses is endorsed by HOPA and UK-NHS regardless of treatment intent. We evaluated the impact on the efficiency of dose banding trastuzumab across all disease sites coupled with outsourcing production to Baxter-CIVA.

Design: Pre-outsourcing, we standardized the rounding of trastuzumab regimens to ~ 42 mg with physician consultation. CPOE, booking, and pharmacy-verification systems provided data from 1 June to 31 December 2023. Metrics assessed included compounding turnaround times, patient visit times, percentage of trastuzumab doses outsourced, and staff satisfaction assessed by surveys.

Results: A total of 87% of trastuzumab doses were captured by seven dose bands included in the outsourcing contract. Preparation times decreased from 36 to 14 min, and patient wait times were reduced by 40% for single-agent bookings. The initiative was rated favourably across pharmacy and nursing staff. On average, 136 compounds per month were removed from the compounding queue.

Conclusions: The dose rounding coupled with outsourced compounding allowed for improved efficiencies across multiple aspects of the systemic therapy workflow. We expect efficiencies to be realized for other regimens as a result of improved chair turnover and reduced queueing in the preparation workflow.

207

Development and implementation of a pharmacist-led gynecology oncology poly (ADP-ribose) polymerase inhibitor clinic in Nova Scotia Health, central zone

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Objectives: Given the overburdened healthcare system and the gap in patient care that exists for individuals receiving oral systemic therapy for cancer (STC) in Nova Scotia, we aimed to (1) incorporate pharmacists into the multidisciplinary team to deliver care to patients receiving oral PARP inhibitors, (2) enhance the quality of care provided to these patients, and (3) offload oncologist/nurse workload.

Design: A pharmacist-led clinic was developed and implemented to provide care to patients with ovarian cancer who were receiving one of two oral PARP inhibitors: olaparib or niraparib. Patient encounters and clinical pharmacy services provided were documented.

Results: Pharmacist encounters occurred on an alternating schedule in collaboration with gynecology oncology. There were 223 patient encounters between December 2022 and 2023: 42 were considered enhancements to patient care, 152 replaced oncologist/nurse visits, and 29 deflected calls from the nursing phone line. Pharmacists provided patient education and adherence checks, identified 98 drug-therapy problems, and made 100 interventions.

Conclusion: The clinic has (1) allowed more patients taking oral STC to receive care from an oncology pharmacist, (2) enhanced patient care through the provision of patient education, medication adherence checks, and close monitoring and follow-up, and (3) offloaded approximately two-thirds of physician/nurse-patient encounters.

209

The complementary alternative medication versus anti-cancer therapy e-catalog: A comprehensive quick-access guide to complementary and alternative medicine management in oncology pharmacy

Kelsey Mar[1,2], Bhawani Jain[1,2], Katie McDonald[3,4], Victoria Bugaj[1], Yoonna Lee[1], Gloria Choi[1], Nita Lakhani[1], Alezeh Allidina[1,2], Maria Marchese[1], Matthew Bui[1,2], Isabella Chan[1,2], Mary Garas[1,2], Celine Huab[1,2], Lynn D'Souza[1,2], Camille Huo[1,2], Joseph Caragan[1,5], Vanessa Bisson[1,5], Jennifer Huynh[1,2], Joyce Ayad[1,2],

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[2]School of Pharmacy, University of Waterloo, ON, Canada,
[3]Sunnybrook Research Institute, Sunnybrook Health Sciences Centre, Toronto, ON, Canada,
[4]Department of Medical Sciences, University of Western Ontario, Canada,
[5]Leslie Dan Faculty of Pharmacy, University of Toronto, ON, Canada

Objective: Improve pharmacist efficiency and confidence in assessing potential complementary alternative medication versus anti-cancer therapy (CAM-ACT) interactions by creating a comprehensive quick-access electronic resource.

Design: A list of 51 commonly encountered CAMs was developed. Information regarding antioxidant, thrombotic, hormonal, pharmacokinetic, pharmacodynamic, and traditional/purported use properties was extracted from clinical tertiary and non-tertiary resources. The content was reviewed for clinical relevance and correctness. Google Sites was used to create a simple and easily accessible webpage containing all approved content.

Results: The CAM-ACT e-Catalog (https://sites.google.com/view/cam-act-catalog/cams) summarizes chemotherapy-relevant information on ashwagandha, American mistletoe, alpha-lipoic acid, Astragalus, acetyl-l-carnitine, aloe (oral), beta-carotene, biotin, burdock, coenzyme Q10, chaga mushroom, CBD, collagen, chondroitin sulfate, chlorophyll, dandelion, DHEA, echinacea, European mistletoe, evening primrose, flaxseed, glutathione, ginger, glucosamine, green tea, garlic, ginkgo, indole-3 carbinol, Indian rhubarb, lutein, Lactobacillus, milk thistle, melatonin, noni, omega-3 DHA, papain, propolis, Panax ginseng, quercetin, reishi mushroom, selenium, sorrel, slippery elm, THC, turmeric, vitamin A, vitamin B1/B2/B3/B6/B9/B12, vitamin C, vitamin D, and vitamin E. Sunnybrook Odette Cancer Centre Pharmacy staff use the e-Catalog in daily practice and report improved quality and efficiency of CAM-ACT interaction assessments.

Conclusion: Pharmacy staff found the CAM-ACT e-Catalog helpful and reported improved quality and efficiency of pharmaceutical care.

210

Implementation of a pharmD student-facilitated digital hypertension clinic for patients prescribed potentially hypertension-inducing take-home cancer drugs at a specialty oncology pharmacy

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Objective: To develop a digitally enabled PharmD student-led hypertension clinic to provide proactive education and monitoring for patients prescribed potentially hypertension-inducing take-home cancer drugs (THCDs).

Design: Patients newly initiating lenvatinib, axitinib, sunitinib, cabozantanib, abiraterone, enzalutamide, apalutamide, or darolutamide therapy were enrolled in a PharmD student-facilitated hypertension clinic. Patients received structured verbal and written teaching about blood pressure (BP) monitoring, hypertensive symptoms, and appropriate use of their BP monitor. Patients were enrolled in a digital symptom and BP monitoring platform, Cancer Connect PhC. PharmD students monitored the patient's BP and provided structured follow-up, patient guidance, and interdisciplinary communication based on a clinical monitoring rubric. Patients participated in the clinic for 2 months.

Results: All 13 patients enrolled between 21 November 2023 to 15 January 2024, were successfully able to record BP readings digitally with PharmD student support. Eight patients had a history of hypertension at baseline. The PharmD student facilitated BP medication-related interventions in 46% (n = 6) of patients. The clinic was well received by participants.

Conclusion: Individualized, digitally enabled hypertension education and monitoring for patients prescribed potentially hypertension-inducing THCDs by a dedicated pharmacy student is an effective strategy to promote safety and identify hypertension-related toxicities early in treatment.

211

Conception and impact of the oral anticancer medication clinical pharmacy co-operative education program at the Sunnybrook Odette Cancer Centre

Christine Peragine[1], Geoffery Ng[1,2], Stephanie Lo[1,2], Ziyu He[1,2], Valentina Pham[1,2], Pariya Vegdani[1,2], Carmilia Sun[1], Victoria Bugaj[1], Nita Lakhani[1], Susan Singh[1], Alezeh Allidina[1], Jamie Park[1], Christina Mychaskiw, Jeanne Chu, Gloria Choi[1], Carlo DeAngelis[1,2] and Flay Charbonneau[1]
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Objective: Develop a unique and high-value PharmD co-operative education learning opportunity focused on

oral anticancer medication (OAM) management and increase capacity for clinical and non-clinical services offered by the Sunnybrook Odette Cancer Centre Pharmacy (SOCCP) OAM Program.

Design: The SOCCP OAM Clinical Co-op Program launched in the fall of 2022 and is in its fifth successful term. Each four-month academic semester, one University of Waterloo pharmacy student works and trains with the SOCCP OAM Team. The student assists with BPMH + DDI activities, OAM baseline counselling, proactive/reactive telephone follow-up, assessment and management of OAM adherence and toxicity DTPs, and OAM program quality assurance activities.

Results: Workload tracking data suggests the co-op student increased capacity for OAM Clinical Pharmacy Services (CPS) by +0.5 RPh FTE. The average patient satisfaction score for CPS provided by OAM trainees was 9.6/10 ($n = 29$). Program graduates endorse the OAM co-op and confirm it's a valuable learning experience that fills a gap in undergraduate pharmacy training.

Conclusion: The SOCCP OAM Clinical Co-op Program is a unique RPh-led initiative that supports OAM education, knowledge translation, and practice-based research. The OAM co-op program reduced the CPS workload for front-line OAM-RPh, helped trainees develop fundamental medication management skills, and maintained OAM Program CPS quality.

212

Updating antiemetic regimens at a Canadian cancer centre according to current guidelines

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Objective: To update the antiemetic regimens used with anticancer therapy regimens at the Sunnybrook Odette Cancer Centre according to current evidence to assure the quality of chemotherapy-induced nausea vomiting (CINV) prevention.

Design: The process of evaluating current antiemetic regimens used at this cancer centre is described. An ad hoc group was formed to compile the list of anticancer regimens within the order entry system. The emetogenic potential of each anticancer regimen in the order entry system was evaluated according to the most recent NCCN and MASCC guidelines. Based on this evaluation, the proposed changes to antiemetic regimens will be reviewed with each disease site group prior to implementation.

Results: The emetogenic potential of each anticancer regimen in the order entry system will be mapped out. The emetogenic potential of anticancer regimens containing carboplatin AUC ≥ 4 will be reclassified according to the updated guidelines. In addition, a primary NK1 receptor antagonist (aprepitant vs. NEPA) will be chosen.

Conclusion: Continuously evolving guidelines and the emergence of new antiemetic agents necessitate that a systematic process be employed to evaluate and implement updates to antiemetic strategy on an ongoing basis. Agreement from physician groups and the larger oncology team facilitates a seamless implementation of updates.

Research – Clinical

300

Real-world characterization of immune-related adverse events in Nova Scotia patients treated with pembrolizumab or durvalumab and adherence to toxicity management guidelines

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Background: Despite efficacy, immune checkpoint inhibitors pose the risk of immune-related adverse events (irAEs) in any organ or tissue. Prompt identification and management of irAEs is crucial to avoid morbidity and mortality.

Objectives: The primary objectives were to characterize irAEs and describe adherence to toxicity management guidelines across Nova Scotia (NS).

Design: This multi-centered retrospective chart review included adult medical oncology patients receiving treatment with pembrolizumab or durvalumab within NS, from 2010 to 2021. Data from electronic medical records were collected, including patient demographics and treatment/irAE details. Descriptive statistics and logistic regression were employed.

Results: Among 292 patients, 44.8% experienced at least one irAE. Altogether, 204 irAEs were identified: 47% were treated with systemic corticosteroids, 25% resulted in an emergency room visit and 16% led to hospital admission.

The top three irAEs were dermatitis, colitis, and hypothyroidism. Overall, irAE management adhered to guidelines in 67.6% of cases. Adherence varied across the province, with lower rates observed in more rural areas of NS.

Conclusion: This study offers insights into the characterization and management of irAEs in patients treated with pembrolizumab or durvalumab. The findings can help guide clinical decision-making and enhance patient outcomes by identifying opportunities for improvement in irAE management.

301

The impact of moderate cytochrome-P450 or P-glycoprotein inhibitor/inducer drug interactions on the use of direct oral anticoagulants in oncology patients: A systematic review

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Objective: This systematic review aims to address the uncertainty regarding interactions between direct oral anticoagulants (DOACs) and moderate cytochrome P450 and/or P-glycoprotein inhibitors/inducers.

Design: A literature search was conducted using OVID/EMBASE, PubMed, and Cochrane. Titles and abstracts were independently screened by two reviewers and a consensus was reached. A full-text review of the remaining studies was conducted, and after the full extraction, along with a manual citation search of studies to include any missed articles.

Result: A total of 52 interactions were identified with DOACs (apixaban, rivaroxaban, dabigatran, and edoxaban) through moderate cytochrome P-450 or P-glycoprotein inhibition and/or induction. Thirty-five interactions had conflicting evidence between the studies evaluated. Eight interactions were not clinically significant. Seventeen interactions recommended avoiding use, but 14 of these interactions had conflicting evidence which also suggested cautious use may be considered. Thirty-six pharmacokinetic interactions were determined by the proportion of change in AUC and Cmax of the DOAC. For these interactions, clinical significance was undetermined, but monitoring or using the combination cautiously was recommended.

Conclusion: Future research is needed to determine the clinical significance of using DOACs in combination with moderate inhibitors and/or inducers. The results of this review should aid in analyzing interactions between DOACs and moderate inhibitors/inducers.

302

Safe and reliable inpatient chemotherapy administration: Impact of an ambulatory oncology pharmacist

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Objective: Analysis of inpatient chemotherapy-related incidents at Trillium Health Partners between May 2019 and April 2021 revealed gaps in coordination of care, provider ordering practices, and communication between different clinical teams. The project aimed to achieve a 50% reduction in inpatient incidents. Secondary goals included improving interdisciplinary communication and coordination of care between providers.

Design: A dedicated inpatient oncology pharmacist role, staffed by an ambulatory oncology pharmacist, was implemented from August 2021 to July 2022. Three data elements were collected: the number and severity of incidents, types of pharmacist interventions (PI), and provider satisfaction. The impact of PI was assessed by a multidisciplinary team using the validated CLEO tool.

Results: Incidents decreased by 80% per 100 doses of administered inpatient chemotherapy. Chemotherapy coordination, dose adjustments, and adapting orders for inpatient use were the most common PIs showing major and moderate clinical impact and a positive organizational impact. Provider satisfaction surveys showed a 52% increase in satisfaction.

Conclusion: Implementing a dedicated ambulatory oncology pharmacist in an inpatient setting facilitated the safe administration of inpatient chemotherapy. This model demonstrates the value of utilizing the niche outpatient clinical knowledge of oncology pharmacists, applied to inpatient roles, especially in hospitals without dedicated inpatient oncology pharmacists.

303

Subcutaneous daratumumab for the management of multiple myeloma and amyloid light chain amyloidosis: A retrospective analysis of infusion-related reactions to evaluate the appropriateness of a 4-hour observation period following first dose administration

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Objective: This study aimed to characterize infusion-related reactions (IRRs) and evaluate the appropriateness of the four-hour observation period duration following the first-time administration of subcutaneous daratumumab (Dara-SC) in patients at the Victoria General Hospital (VG).

Design: This retrospective chart review included adult patients with multiple myeloma or amyloid light chain amyloidosis who received their first cycle of Dara-SC at the VG between October 2021 and April 2023. Data was collected from medical records. Descriptive statistics were used to analyze the data.

Results: The average age of participants was 69 years and 85.9% were diagnosed with multiple myeloma. Patients received Dara-SC in combination with a variety of drug regimens. Of the 78 patients reviewed, five (6.4%) IRRs were identified. All IRRs were categorized as grade 1 or 2, except for a single grade 3 IRR. The median time of IRR onset was 105 min (range 37–245) and the median time to resolution was 124 min (range 33–240+). Two (2.6%) injection site reactions were also identified.

Conclusion: These findings will help to guide decision-making regarding the length of the observation period and provide insight into considerations regarding whether chair time may be reduced to allow patients to be treated in a timelier manner.

304

A retrospective chart review of niraparib-induced toxicity

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Objective: Evaluate the frequency and severity of niraparib-induced adverse events (AEs) and determine niraparib therapy duration in a real-world sample of ovarian cancer patients.

Design: A retrospective one-arm cohort design was used. All Sunnybrook Odette Cancer Centre patients prescribed niraparib between 10 January 2019 and 30 November 2022 were identified and their charts reviewed. Descriptive statistics were used to summarize demographic and clinical characteristics, medication toxicities, and length of niraparib therapy.

Results: Of the 118 patients identified (mean age 63 years and 84% postmenopausal), 61% had a delay(s) due to toxicity, and 44% required dose reduction. Slightly lower rates of Grade $\geq$ 3 thrombocytopenia (24%) and anemia (20%) were found compared to clinical trial data (29%–34% and 25%–31%, respectfully); but similar rates of severe neutropenia, nausea, and hypertension were identified. Overall median duration of therapy was shorter (33 weeks) than reported in clinical trials (47–48 weeks). Patients without dose delay/reductions remained on therapy for slightly longer (36 weeks).

Conclusion: Similar to clinical trials, real-world data suggests a significant burden of niraparib-associated hematological AEs. Therapy modifications due to toxicity occur frequently. The impact on treatment duration remains unclear. Future research will investigate the reduced time-on-therapy observed for Sunnybrook patients and explore demographic and clinical characteristics that predispose them to toxicity.

305

Monitoring of asparaginase levels in adult leukemic patients

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Background: Pediatric-inspired treatment protocols using asparaginase are being used with increasing frequency in adult patients with leukemia. Despite guideline recommendations for monitoring asparaginase activity to optimize patient outcomes, the practice is not universally applied. We describe our experience with monitoring asparaginase activity in a group of adult leukemic patients.

Objective: Describe the experience of monitoring serum asparaginase activity in adult leukemic patients.

Design: We reviewed our roster of patients treated with asparaginase between May 2019 and December 2023. We document the frequency of asparaginase activity monitoring and whether the results lead to changes in therapy.

Results: We identified 43 patients who received a dose of asparaginase. Asparaginase activity was measured initially on day 21 after the second dose of asparaginase in 28/43 (65%) patients. Asparaginase activity levels resulted in 11 (39%) patients having their asparaginase dose modified.

Conclusion: Asparaginase activity levels were measured in a majority of adult patients receiving asparaginase; however, the number of patients monitored could be increased. When activity levels were ordered, asparaginase dose modifications were common. A more consistent protocol may increase the number of levels monitored.

306

Granulocyte colony-stimulating factor prescribing patterns in breast cancer patients following the Introduction and change in funding status of biosimilar granulocyte colony-stimulating factors

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Objective: The introduction of biosimilar granulocyte colony-stimulating factors (G-CSFs) prompted changes in funding for filgrastim and pegfilgrastim in Ontario. Filgrastim funding criteria were removed in Q3 2016, followed by the addition of pegfilgrastim to the provincial formulary in Q2 2019. This project describes patterns of G-CSF prescribing in breast cancer patients pre- versus post-introduction of and funding changes to biosimilar filgrastim and pegfilgrastim

Design: Breast cancer patients prescribed G-CSFs between 1 January 2015 and 31 December 2021 were identified from Sunnybrook's chemotherapy CPOE. Patient charts were reviewed for demographics, treatment setting, and G-CSF prescription details. Patterns of total G-CSF use pre- and post-biosimilar funding changes were compared.

Results: A total of 1283 patients were identified (median 55 years). The total rate of new G-CSF starts/month remained constant post-funding changes for biosimilar filgrastim and pegfilgrastim (15.6 pre-biosimilar introduction, 14.7 post-introduction of biosimilar filgrastim, and 15.6 post-introduction of biosimilar pegfilgrastim). There was a significant increase in pegfilgrastim prescribing (8.5 vs.12.9 new starts/month, $p = 0.00024$), and a corresponding significant decrease in filgrastim prescribing (7.0 vs. 2.7 new starts/month, $p = 0.00017$) following the addition of pegfilgrastim biosimilar to the provincial formulary.

Conclusion: Removal of funding barriers for pegfilgrastim led to a dramatic shift away from filgrastim prescribing in breast cancer patients.

308

Use of growth factors (e.g. granulocyte colony-stimulating factor) in patients receiving myelosuppressive targeted oral anti-cancer agents for the prevention or treatment of febrile neutropenia: A narrative review

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Objective: Existing guidelines for granulocyte colony-stimulating factor (G-CSF) use focus on the supportive treatment of febrile neutropenia prevention with intravenous chemotherapies, with limited guidance on its application in targeted oral anti-cancer agents. We conducted a narrative review of the literature regarding the use of G-CSF in patients receiving targeted oral anti-cancer agents to identify administration guidelines and gather efficacy and safety data.

Design: We searched PubMed and EMBASE to identify literature involving patients receiving G-CSF concurrently with 19 targeted oral anti-cancer treatments known to cause neutropenia.

Results: There was a clear expert opinion stating that the use of G-CSF with imatinib may enhance imatinib efficacy by allowing for the use of imatinib at therapeutic doses. Venetoclax also garnered consensus for the use of G-CSF as a supportive treatment, where G-CSF use was noted to aid in the effectiveness of venetoclax and maintenance of dose intensity. Other drugs like abemaciclib, palbociclib, trifluridine/tipiracil, and ibrutinib or zanubrutinib had insufficient evidence for concurrent use with G-CSF.

Conclusion: Of the 19 drugs searched, only nine had mentions of concurrent G-CSF use in the literature. Therefore, there is currently insufficient high-quality evidence to provide guidance around the use of G-CSF in preventing or treating febrile neutropenia with targeted oral anti-cancer agents.

Research – Non-clinical

400

Treatment satisfaction and persistence with aromatase inhibitor therapy in post-menopausal breast cancer survivors

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Objective: To investigate relationships between treatment satisfaction and persistence with adjuvant aromatase inhibitor (AI) therapy and elucidate factors influencing treatment satisfaction.

Design: A secondary analysis was done using data from a 2014 cross-sectional University of Michigan survey, that invited 600 post-menopausal women with ER+ breast cancer prescribed adjuvant AI therapy. The survey included the Treatment Satisfaction Questionnaire for Medication version II, HRQOL SF-12® Health Survey, Functional Assessment of Cancer Therapy Endocrine Symptom subscale, PHQ-8 depression scale, and Assessment of Survivor Concerns. Non-persistence was self-reported and was a negative response to whether respondents were currently taking an AI. Binary logistic regression was used to predict persistence, and multiple regression was used to predict treatment satisfaction.

Results: Data were available for 279 respondents and 19.7% were non-persistent. Greater global satisfaction was associated with statistically significantly greater odds of persistence (OR 1.075; $p < 0.001$). A significant proportion of non-persistent women (71%) reported dissatisfaction with the aromatase inhibitor's effectiveness versus 5% of persistent women (chi-square 124.187; $p < 0.001$). Side effect burden was a consistent, negative, and statistically significant predictor of treatment satisfaction.

Conclusion: Persistence with adjuvant aromatase inhibitors was related to treatment satisfaction in post-menopausal breast cancer survivors, and side effects influenced satisfaction.

401

Incidence of taxane infusion reactions at an outpatient oncology clinic in New Brunswick

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Objective: To determine the incidence of infusion reactions (IRs) to taxanes at the Saint John Regional Hospital, and to identify contributing patient and treatment factors.

Design: A prospective observational study was completed to identify and evaluate the incidence of IRs from June 2022 to May 2023 at first and second lifetime exposures to paclitaxel and docetaxel. Information was collected retrospectively on drug administration, indication, premedications, description of the reaction, previous IRs, management, risk factors, and lot and expiry of taxane products. Reactions were graded based on criteria from Common Terminology Criteria for Adverse Events. To calculate the baseline rate of IRs at a treatment facility, data was collected on the total number of first and second-lifetime exposure taxane infusions administered during the same timeframe.

Results: Seventeen taxane infusion reactions and 223 cycles 1 and 2 taxane infusions were identified (nine grade 2, six grade 3, and two grade 4 reactions). One individual had experienced a previous taxane infusion reaction. Thirteen individuals received concurrent platinum therapies. The majority of individuals received dexamethasone as a premedication, with or without other medications such as ondansetron and famotidine.

Conclusion: The incidence of taxane infusion reactions from June 2022 to May 2023 was calculated to be 7.62%.

402

Starting a new oral anticancer drug? We better inform the patient's community pharmacist! But how?

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Polypharmacy can contribute to adverse drug events but may be unavoidable for oral anticancer drugs (OACDs). The Community Pharmacy Engagement Initiative (CPEI) addresses two objectives: Part (1) informing the community pharmacy of a patient starting a new OACD, and Part (2) assessing the knowledge gained when community pharmacists participate in oncology-specific education. Here we present the results of Part 1.

Design: Upon initiation of a new OACD, a drug-specific information package is faxed to the patient's community

pharmacy. The pharmacy is called 2–3 days after faxing to determine the activities triggered by the fax. The primary endpoint is the % of pharmacies that recorded the new OACD in their dispensing system.

Results: Of the 52 pharmacies that faxed information about the new OACD, only 25% recorded the information in their patient's profiles. Many pharmacists were unaware they could update their patient's drug profile with an externally dispensed drug (to leverage interaction checking). Despite the low success rate, faxing was still deemed the best way to communicate with community pharmacies.

Conclusions: Faxing drug information about a new OACD is not effective. Promoting awareness on how to update a community pharmacy's dispensing system, so that drug-interaction checkers can be properly leveraged, is a vital priority.

403

Educating community pharmacists about oral anticancer drugs: Community pharmacy engagement initiative

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Collaborating with a patient's community pharmacy may enhance overall care. The Community Pharmacy Engagement Initiative (CPEI) addresses two objectives: Part (1) informing the community pharmacy of a patient starting a new oral anticancer drug, and Part (2) assessing the knowledge gained when pharmacists participate in oncology-specific education. Here we present the results of Part 2.

Design: Community pharmacists were randomized into a control group or education group and participated in eight virtual oncology education sessions. A pre-session test was completed for each event. The tests involved clinical questions around the oncology subject matter. For the education arm, an additional post-session test was completed. The post-session test scores were compared against the pre-session scores and the control group. At the end of this study, a survey was performed. The primary endpoint is the change seen in pre- and post-session test scores.

Results: Pharmacists in the education arm ($n = 25$) demonstrated an increase in test scores after the sessions. Mean test scores were higher for the education group compared to the control ($n = 25$). Participants felt more comfortable and capable of addressing questions about cancer treatments after completing the education.

Conclusions: Community Pharmacists gained knowledge and feel more capable with oncology after participating in the CPEI.

404

Venetoclax prescription patterns at a large regional cancer centre: A 6.5-year time-series analysis

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Objective: To describe venetoclax prescribing patterns at the Sunnybrook Odette Cancer Centre (SOCC) between 1 January 2017 to 30 June 2023.

Design: Dispensing data from the SOCC Pharmacy database was used to quantify the total number of patients started on venetoclax, total number of prescriptions processed, average number of new patient starts/month, and average number of prescriptions processed/month. Time-series plots were visually inspected, and linear regression was applied to explore changes in the quarterly rate of new patient starts and prescriptions processed.

Results: A total of 193 patients were started on venetoclax and 1526 prescriptions were processed across the 6.5-year study period. A mean of 2.5 new patients were started on venetoclax/month and 19.6 prescriptions were processed/month. Both rates increased significantly across the study period (+0.5 new patients/quarter, $p < 0.001$; +3.6 prescriptions processed/quarter, $p < 0.01$). Venetoclax was first dispensed in Q1-2017 (one new start) but by Q2-2022 $\geq$ 11 new patients were started and > 80 prescriptions were processed each quarter.

Conclusion: Venetoclax demand significantly increased over time and continues to rise. Notable increases coincide with public reimbursement for 3L CLL (monotherapy, Q2 2019), 1L CLL (venetoclax–obinutuzumab, Q2 2022), and 1L AML (venetoclax–azacitidine, Q3 2022), but not with 2L CLL listing (venetoclax–rituximab, Q1 2020).

405

Capecitabine prescribing patterns at the Sunnybrook Odette Cancer Centre: A four-year time-series study

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Objective: Capecitabine is a fluoropyrimidine used to treat breast, gastrointestinal, and other malignancies. This study describes prescription trends for capecitabine at the Sunnybrook Odette Cancer Centre (SOCC) Pharmacy between 1 January 2018 and 1 March 2022.

Design: Prescription processing data from the OCC Pharmacy was used to determine the total number of patients started on capecitabine/study period, the mean number of patients started on capecitabine/month, the total number of prescriptions processed/study period, and mean number of prescriptions processed/month. Time series plots were visually inspected and linear regression was applied to detect trends in quarterly capecitabine rates ($p < 0.05$).

Results: A total of 807 patients started capecitabine (mean 15.8/month) and 5717 prescriptions were processed (mean 112/month). Capecitabine new starts decreased over time (-0.9 new starts/quarter, $p = 0.01$), but no change in prescription processing rates was found ($+0.12$ prescriptions/quarter, $p = 0.92$).

Conclusion: Capecitabine was the second most commonly prescribed oral anticancer medication at the SOCC from 2018 to 2022 (behind bicalutamide). Among the 87 oral oncolytics dispensed at SOCC, capecitabine had the highest average prescription processing rate (mean 112/month). Development and approval of new targeted anticancer therapies may be contributing to the observed decreasing capecitabine demand.

406

Prescribing patterns of Bruton's tyrosine kinase inhibitors at a large regional cancer centre: A time-series study across 8 years

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Objective: To describe BTKI (ibrutinib, acalabrutinib, and zanubrutinib) prescribing patterns at Sunnybrook Odette Cancer Centre (SOCC).

Design: SOCC Pharmacy prescription processing data was used to determine the total number of patients started on BKTIs, the total number of BTKI prescriptions processed, the mean # patients started/month, and the mean # prescriptions processed/month. Linear regression and visual inspection of time series plots were used to validate descriptive statistics and explore trends across the study period.

Results: A total of 181 patients started on ibrutinib (mean 1.8/month) and 4469 prescriptions were processed (mean 43.8/month). Thirty-six patients started acalabrutinib (mean 0.4/month) and 443 prescriptions were processed (mean 4.3/month). Three patients received zanubrutinib (mean 0.03/month) with 21 prescriptions processed (mean 0.2/month). Ibrutinib new starts declined by -0.2/quarter ($p < 0.01$), acalabrutinib new starts increased by $+0.1$/quarter ($p < 0.001$), with no change in zanubrutinib start rates. The prescription processing rate increased by $+2.8$/quarter for ibrutinib ($p < 0.01$), $+1.9$/quarter for acalabrutinib ($p < 0.001$), and $+0.1$/quarter for zanubrutinib ($p < 0.001$).

Conclusion: Ibrutinib is one of the top 20 most frequently prescribed oral oncolytics at the SOCC but prescribing declined rapidly with the approval of second-generation BTKIs. Acalabrutinib and zanubrutinib rates continue to rise and likely underestimate actual demand as prescriptions sent to Patient Support Programs are not captured in this analysis.

407

Oral cyclophosphamide use at a large tertiary cancer centre: Prescribing patterns over 4 years at the Sunnybrook Odette Cancer Centre

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Objective: Oral cyclophosphamide (OC) as part of cyclophosphamide/bortezomib/dexamethasone (CYBORD) is commonly used pre-transplant as an induction treatment for multiple myeloma. This study describes OC prescription trends at the Sunnybrook Odette Cancer Centre (SOCC) between 1 January 2018 and 1 March 2022.

Design: Prescription processing data from the OCC Pharmacy was used to determine the total number of patients started on OC, the mean number of patients started on OC/month, the total number of prescriptions processed, and the mean number of prescriptions processed/month. Time series plots were visually inspected and linear regression was applied to detect changes in quarterly OC rates.

Results: A total of 170 patients were started on OC (mean 3.3/month) and 932 prescriptions were processed (mean 18.3/month). Regression suggested decreasing OC prescriptions with time (−1.3 OC prescriptions/quarter, $p < 0.01$) but a non-significant change in OC start rates (−0.6 OC new patients/quarter, $p = 0.10$). Maximum rates occurred in Q1-2018 (17 new starts and 75 prescriptions) and minimum rates in Q4-2020 (two new starts and 40 prescriptions).

Conclusion: OC was the 12th most commonly prescribed oral oncolytic at SOCC between 2018 and 2022. No significant change in OC demand was detected, but other findings suggest OC use may be on the decline coinciding with pre-transplant lenalidomide/bortezomib/dexamethasone (RVd) becoming the standard of care after Q2-2022.

408

Prescribing patterns of temozolomide across 4 years: Time-series of prescription processing data from the Sunnybrook Odette Cancer Centre Pharmacy

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Objective: Temozolomide (TMZ) is an oral anticancer medication (OAM) commonly used in combination with radiation for the treatment of CNS malignancies. This study describes TMZ prescription trends at the Sunnybrook Odette Cancer Centre (SOCC) during the COVID-19 pandemic.

Design: Prescription processing data from 1 January 2018 to 31 March was extracted to determine the total number of patients started on TMZ, the mean number of patients started on TMZ/month, the total number of prescriptions processed, and the mean number of prescriptions processed/month. Time-series plots were visually inspected. Linear regression was applied to detect changes in quarterly TMZ rates.

Results: A total of 553 patients were started on TMZ (mean 10.8/month) and 5021 prescriptions were processed (mean 98.4/month). Regression suggested increasing TMZ prescriptions with time (+8.1 TMZ prescriptions/quarter, $p = 0.01$), but no change in quarterly TMZ new start rate. Time series plots exhibit an inverted "V" pattern with a trough at Q2-2022 and peaks in Q1-2018 and Q4-2021.

Conclusion: TMZ was the third most commonly prescribed OAM at the SOCC. COVID-19 lockdowns coincided with declines in TMZ prescribing, but new starts and prescription processing rates steadily increased from Q3-2020 onward when COVID-19 restrictions were loosened. Increased TMZ use may also be related to changes in public funding that occurred in Q2-2021.

409

Evaluating the first Nationwide Canadian Oncology Mentorship Program (2022–2023) by the University of Toronto NCODA chapter

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Background: The National Community Oncology Dispensing Association (NCODA) expanded its mentorship program to Canada through the University of Toronto chapter to enhance professional development in oncology pharmacy.

Purpose: This study assesses the effectiveness of the first Canada-wide NCODA mentorship program and identifies areas for improvement.

Design: A mixed-methods approach using online surveys was employed, involving 28 student mentees and 19 pharmacist mentors. Quantitative data was collected on mentor-mentee engagement, satisfaction, and communication methods. Qualitative feedback was analyzed for thematic patterns. Descriptive and inferential statistical analyses were used to explore relationships between satisfaction indicators and program elements.

Results: High satisfaction was noted among mentees, with more varied responses from mentors. Key indicators of satisfaction included program relevance, achievement of goals, and personal relationships developed. Engagement metrics showed modest levels of interaction. Mentor's satisfaction was correlated to their perceived value of the program, while mentees' satisfaction correlated with program clarity and mentor relationships. Qualitative feedback highlighted the need for more structured guidance, improved scheduling and communication, and increased industry involvement.

Conclusions: The mentorship program significantly benefits student mentees in oncology pharmacy. Future improvements include enhanced mentor-mentee matching based on interests and geography, structured program guidance, and greater industry involvement.

410

Granulocyte colony-stimulating factor prescribing patterns in patients with gastrointestinal cancers following the introduction and change in funding status of biosimilars

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Objective: The introduction of biosimilar granulocyte colony-stimulating factors (G-CSFs) prompted a change in funding for filgrastim and pegfilgrastim in Ontario. Filgrastim funding criteria were removed in Q4-2016, followed by the addition of pegfilgrastim to the provincial formulary in Q3-2019. This study describes patterns of G-CSF prescribing pre- versus post-introduction of biosimilar filgrastim and pegfilgrastim.

Design: Patients with gastrointestinal cancers prescribed G-CSFs between 1 January 2015 and 31 December 2021 were identified from Sunnybrook's chemotherapy CPOE database. Charts were reviewed for demographics, diagnosis, and the G-CSF agent prescribed. Patterns of G-CSF use were assessed pre- and post-biosimilar funding changes.

Results: A total of 594 patients were identified (median age 62, 49% female). A significant increase in total G-CSFs prescribed was found post-funding for biosimilar filgrastim (3.9 vs. 6.3 new starts/month; $p = 0.038$), driven by increased use of filgrastim in the non-curative setting (40% vs. 60%). A further increase was found post-funding for biosimilar pegfilgrastim (10.7 new starts/month; $p = 4.6\times10^{-9}$), driven by increased use of the pegylated moiety (16% vs. 77%). Further analyzed data suggests interesting changes in G-CSF use in the curative and palliative settings.

Conclusion: The removal of funding barriers has led to a dramatic increase in G-CSF use in gastrointestinal cancer patients.