RESIDENT RESEARCH DAY
2022

Tuesday, November 15th, 2022
Theatre A & Joe Doupe Concourse
THE DEPARTMENT OF INTERNAL MEDICINE GRATEFULLY ACKNOWLEDGES THE PARTICIPATION OF THE FOLLOWING:

PODIUM JUDGES

Dr. Karthik TENNANKORE
Associate Professor, Division of Nephrology

Dr. Brett HOUSTON
Assistant Professor, Section of Hematology/Oncology

Dr. Navdeep TANGRI
Associate Professor, Section of Nephrology

POSTER JUDGES

Dr. Nabiha FAISAL
Assistant Professor, Section of Hepatology

Dr. Shuangbo LIU
Assistant Professor, Section of Cardiology

Dr. Jean-Eric GHIA
Professor, Department of Immunology

BEST PUBLISHED PAPER JUDGES

Dr. Allen GARLAND
Professor, Medicine and Community Health Sciences

Dr. Navdeep TANGRI
Associate Professor, Section of Nephrology
DEPARTMENT OF INTERNAL MEDICINE
RESIDENT RESEARCH DAY

TOPIC: DESTINATION UNKNOWN? MY ONGOING RESEARCH PATH AND HOW TO NAVIGATE YOUR OWN

DATE: Tuesday, November 15, 2022
TIME: 8:00 am
LOCATION: Theatre A

https://medicine.dal.ca/departments/department-sites/medicine/divisions/nephrology/our-people/faculty/karthik-tennankore.html

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CANADIAN CANCER CENTRE RESPONSE TO COVID-19 PANDEMIC: A NATIONAL AND PROVINCIAL RESPONSE
Rebekah Rittberg, Anmol Mann, Danielle Desautels, Craig C. Earle, Sri Navaratnam & Marshal Pitz
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Article

Canadian Cancer Centre Response to COVID-19 Pandemic: A National and Provincial Response

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Abstract: Background: COVID-19 has spread rapidly, requiring health delivery systems to undertake dramatic transformations. To evaluate these system changes, we undertook one of the first Canadian health delivery system reviews and the first Canadian cancer centre evaluation of pandemic system modifications. Methods: Questionnaires were distributed to the Canadian Association of Provincial Cancer Agencies (CAPCA) members in order to assess changes to cancer centre services and patient management. Documentation relating to COVID-19 from the CAPCA electronic space was accessed, and all publicly available cancer centre documentation related to COVID-19 was reviewed. Results: Seven provinces completed the questionnaire and had documentation available from the CAPCA electronic space. All screening programs across Canada were suspended. In most provinces surveyed, ≥50% of outpatient appointments were occurring virtually, with <25% using video platforms. Generally, the impact on diagnostic imaging and new patient referrals correlated with the impact of COVID-19. Most provinces had a reduction in operating room availability, with chemotherapy and radiation treatments continuing. Public health modification, including personal protective equipment and screening staff, varied across the country. Conclusion: Canadian cancer centres underwent a rapid and aggressive transformation of services in response to COVID-19, with many similarities and differences across provinces. In part, this response was facilitated by communication under a national association, which in Canada remains unique to cancer. This response may serve to inform changes in other jurisdictions or disease states now and in future waves of the pandemic, as well as a record of changes for future health services and patient outcome research.

Keywords: coronavirus; COVID-19; health service research; healthcare delivery; operations; pandemic; oncology; public health practices; treatment; telemedicine

1. Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and its resulting illness, COVID-19, was first recognised in December 2019 in Wuhan, China. COVID-19 spread globally, with the first case identified in Canada on 15 January 2020 [1–3]. With variable presentations and severities of illness, COVID-19 can be an unpredictable and lethal virus [1,4,5]. In early phases of the pandemic, it became
apparent that elderly patients and those with underlying health conditions were more commonly and severely affected [6,7]. Cancer patients may carry an additional risk if receiving immunomodulating or immunosuppressive treatment [8–10]. Additionally, cancer patients receiving treatment are exposed to healthcare workers that may be infected by COVID-19. These workers may be asymptomatic or mildly symptomatic, allowing for continued work while unknowingly being infective [11].

In response to the COVID-19 pandemic, cancer care delivery has undergone rapid transformation [12,13]. Although journals are ensuring rapid peer review and publication of articles pertaining to COVID-19, most explore presentation, treatment and outcome, while little has been published about system-level responses [14]. Understanding how healthcare systems have adapted, the impact on non-COVID-19 infected patients and implications for patients with cancer is integral to ensuring optimal patient care during the pandemic. Documenting these changes will also provide context for understanding health services and patient outcome research moving forward [15,16].

In March 2020, at the onset of Canada’s COVID-19 pandemic, Canadian cancer centres underwent a rapid and aggressive transformation in patient care delivery. These changes were undertaken at a provincial level with some national coordination. The Canadian Association of Provincial Cancer Agencies (CAPCA) is a Canadian interprovincial organisation comprised of senior members from each provincial cancer program, whose aim is to strengthen national cancer care delivery. CAPCA allows for regular communication between cancer centres, and its members meet on a weekly basis to discuss changes, successes and challenges from the onset of the pandemic. The national framework of CAPCA allows for a unique review of national trends not possible in other medical specialties.

As we continue to adjust our practices to the ongoing COVID-19 pandemic, we must acknowledge and study the impact of these drastic measures. We undertook one of the first national health delivery system reviews and the first evaluating Canadian cancer centre responses to the COVID-19 pandemic. We sought to describe the changes that occurred as a basis for a broader discussion of health system responses to the pandemic in Canada and abroad, to understand the immediate challenges resulting from those changes and to facilitate the interpretation of future health services and patient outcome research in the context of changes made as a result of the pandemic.

2. Methods

With University of Manitoba Health Research Ethics Board approval, we distributed a questionnaire to CAPCA members. This research project has University of Manitoba Health Research Ethics Board approval. The ethical code number is HS23999 (H2020:275). Approval date is 15 May 2020 and expiry date is 15 May 2021. The questionnaires were answered by cancer centre Chief Executive Officers (CEOs), with input from delegates based on the required information. The questionnaire considered modifications taken by cancer centres across Canada resulting from the COVID-19 pandemic. Specific areas of interest included: cancer screening, cancer diagnostics, outpatient appointments, inpatient services, treatments (surgery, chemotherapy, and radiation), cancer centre operations, trainee management and research; see Supplemental Appendix 1. All questions had categorical answers and considered the extent to which normal centre operations had been affected as well as the methods employed to deal with the impact. Responses included both measured outcomes and estimates across multiple different cancer centres within a single province.

The CAPCA electronic space, a private cloud used by members to share documents relating to the coordinated management of the cancer system, was accessed and all documentation relating to COVID-19 was reviewed. This was available for British Columbia (BC), Alberta (AB), Saskatchewan (SK), Manitoba (MB), Ontario (ON), Quebec (QC) and Nova Scotia (NS). Each Canadian cancer centre website was reviewed for public documentation pertaining to COVID-19. Authors (RR, AM and DD) reviewed the CAPCA electronic space and cancer centre websites. A descriptive analysis was completed to evaluate similarities and differences between provincial responses.
3. Results

Completed questionnaires were received from seven provinces: BC, AB, SK, MB, ON, QC and Newfoundland and Labrador (NL); see Table 1. Canadian provincial cancer centres publicly provided varying amounts of COVID-19 pandemic response information online. This public information was reviewed, as well as the CAPCA electronic space; see Supplemental Table S1. The absence of a specific provincial response only indicates that the information is not available.

3.1. Screening Programs

Most cancer centres across Canada suspended cancer screening programs for breast, cervical and colon cancer in mid-March 2020. The intent of the closure was to support physical distancing measures and to aid in the redeployment of essential healthcare workers. Patients who had recently undergone screening, prior to program closures, were triaged based on acuity. Patients who had recently undergone screening with results highly suspicious for malignancy were evaluated for a biopsy or additional investigations. Patients with an abnormal screening result not highly suspicious for malignancy had follow-up appointments delayed. Cancer screening programs started to reopen in June 2020.

3.2. Outpatient Appointments

A decrease in new patient referrals occurred across Canada, with a >20% decrease in SK, ON and QC. MB experienced a 10–20% reduction in referrals and noted a decrease in incoming pathology reports, from approximately 1000 during the week of 16 March 2020, and dropping to as low as 600 in the week of 6 April 2020.

Appointments moved toward the telemedicine/virtual space across the country to minimise in person appointments and maximise efficiency in a resource strained environment. Of the seven provinces that responded to the questionnaire, six indicated that ≥50% of outpatient appointments are occurring virtually, with the initial patient consultation being most likely to occur in person. Provinces restricted family members/friends from accompanying patients to appointments. Exceptions were permitted, including (but not limited to) minors being assessed, patients with language barriers or patients with physical or cognitive impairments.

On treatment appointments continued and at least 50% of appointments used virtual tools. Changes were relatively homogenous across Canada. Follow-up visits for patients not on active treatment were deferred at the discretion of the treating physician and utilised virtual tools 50–75% of the time. Video conferencing accounted for <25% of virtual appointments and platforms included Zoom, Pexip, Microsoft Teams, Reacts and Jabber. Patients were notified of upcoming appointments by letter sent by Canada Post or telephone, with only ON using a patient portal.
Table 1. Provincial responses to COVID-19 pandemic questionnaire.

<table>
<thead>
<tr>
<th>Screening Programs:</th>
<th>British Columbia</th>
<th>Alberta</th>
<th>Saskatchewan</th>
<th>Manitoba</th>
<th>Ontario</th>
<th>Quebec</th>
<th>Newfoundland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which screening programs were cut back or closed during the height of the COVID-19 Pandemic?</td>
<td>Breast, Colorectal and Cervical</td>
<td>Breast, Colorectal and Cervical</td>
<td>Breast, Colorectal and Cervical</td>
<td>Breast, Colorectal and Cervical</td>
<td>Breast, Colorectal and Cervical</td>
<td>Breast and Colorectal</td>
<td>Breast and Cervical</td>
</tr>
<tr>
<td>Which screening programs are to be re-opened in the next 4 weeks?</td>
<td>Reopening has begun</td>
<td>Reopening has begun</td>
<td>Reopening has begun</td>
<td>Reopening has begun</td>
<td>Reopening has begun</td>
<td>Reopening has begun</td>
<td>Reopening will soon begin</td>
</tr>
<tr>
<td>Diagnostics:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What degree of reduction have the following diagnostic services experienced?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT</td>
<td>↓↓</td>
<td>↓↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓↓</td>
<td>↓↓</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>↓↓</td>
<td>↓↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓↓</td>
<td>↓↓</td>
</tr>
<tr>
<td>MRI</td>
<td>↓↓</td>
<td>↓↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓↓</td>
<td>↓↓</td>
</tr>
<tr>
<td>Nuclear Medicine</td>
<td>↓↓</td>
<td>↓↓</td>
<td>↓↓</td>
<td>↓</td>
<td>↓</td>
<td>↓↓</td>
<td>↓↓</td>
</tr>
<tr>
<td>Echocardiography</td>
<td>↓</td>
<td>↓</td>
<td>None</td>
<td>↓</td>
<td>↓</td>
<td>↓↓</td>
<td>↓↓</td>
</tr>
<tr>
<td>CT/Ultrasound guided biopsy</td>
<td>↓↓</td>
<td>↓</td>
<td>Variable depending on disease site</td>
<td>↓</td>
<td>↓</td>
<td>↓↓</td>
<td>↓↓</td>
</tr>
<tr>
<td>Has the reduction been for a specific indication?</td>
<td>N/A</td>
<td>Routine outpatient imaging studies and procedures</td>
<td>Follow-up</td>
<td>Unknown</td>
<td>Follow-up</td>
<td>N/A</td>
<td>Staging</td>
</tr>
<tr>
<td>How long do you expect diagnostic restrictions to be in place?</td>
<td>&lt;4 weeks</td>
<td>&gt;8 weeks</td>
<td>&lt;4 weeks</td>
<td>N/A</td>
<td>4–8 weeks</td>
<td>&gt;8 weeks</td>
<td>4–8 weeks</td>
</tr>
<tr>
<td>Have there been any changes in location that blood work is being completed?</td>
<td>British Columbia</td>
<td>Alberta</td>
<td>Saskatchewan</td>
<td>Manitoba</td>
<td>Ontario</td>
<td>Quebec</td>
<td>Newfoundland</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>No change</td>
<td>Shift away from cancer centre</td>
<td>Shift away from cancer centre</td>
<td>Shift away from cancer centre</td>
<td>Shift away from cancer centre</td>
<td>Varied by centre</td>
<td>No change</td>
<td></td>
</tr>
</tbody>
</table>

**Outpatient Appointments:**

<table>
<thead>
<tr>
<th>Has there been a decrease in new referrals to your cancer centre?</th>
<th>10-20% decrease</th>
<th>&lt;10% (regional cancer centres), 10–20% (tertiary cancer centres)</th>
<th>&gt;20% decrease</th>
<th>10–20% decrease</th>
<th>&gt;20% decrease</th>
<th>&gt;20% decrease</th>
<th>10–20% decrease</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Are you expecting a surge of new referrals once you re-open?</th>
<th>&lt;10% increase</th>
<th>10–20% increase</th>
<th>&gt;20% increase</th>
<th>10–20% increase</th>
<th>10–20% increase</th>
<th>Yes, but cannot provide estimate</th>
<th>10–20% decrease</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Are you screening/testing patients prior to entering the cancer centre?</th>
<th>Screening questions</th>
<th>Screening questions and temperature</th>
<th>Screening questions and temperature</th>
<th>Screening questions</th>
<th>Screening questions and temperature</th>
<th>Screening questions and temperature</th>
<th>Screening questions and temperature</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Have you asked patients to come alone?</th>
<th>Yes (with exceptions)</th>
<th>Yes (with exceptions)</th>
<th>Yes (with exceptions)</th>
<th>Yes (with exceptions)</th>
<th>Yes (with exceptions)</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>What percentage of outpatient appointments are occurring virtually (video or telephone)?</th>
<th>↓↓↓ ↓↓↓ (CCI, CACC), ↓↓↓ (TBCC, JACC)</th>
<th>↓↓↓</th>
<th>↓↓↓</th>
<th>↓↓↓</th>
<th>↓↓↓</th>
<th>↓↓↓</th>
<th>↓↓↓</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>New patient appointments</th>
<th>↓↓</th>
<th>↓</th>
<th>↓↓</th>
<th>↓</th>
<th>↓</th>
<th>↓</th>
<th>↓</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>On treatment appointments</th>
<th>↓↓↓ ↓↓↓ (CCI, CACC), ↓↓↓ (TBCC, JACC)</th>
<th>↓↓</th>
<th>↓↓</th>
<th>↓</th>
<th>Unknown</th>
<th>↓↓</th>
</tr>
</thead>
</table>

Unknown
<table>
<thead>
<tr>
<th>Table 1. Cont.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>British Columbia</strong></td>
</tr>
<tr>
<td><strong>Follow up appointments</strong></td>
</tr>
<tr>
<td><strong>For virtual appointments, what percentage are delivered by video conferencing?</strong></td>
</tr>
<tr>
<td><strong>For video virtual appointments, which platform is being used?</strong></td>
</tr>
<tr>
<td><strong>How are you communicating with patients about upcoming appointments?</strong></td>
</tr>
<tr>
<td><strong>Inpatient Wards/Consult Service:</strong></td>
</tr>
<tr>
<td><strong>Have admissions to inpatient units decreased?</strong></td>
</tr>
<tr>
<td><strong>Has staffing of inpatient units changed?</strong></td>
</tr>
<tr>
<td><strong>Are patients being screened or tested for COVID-19 prior to admission?</strong></td>
</tr>
</tbody>
</table>
Table 1. Cont.

<table>
<thead>
<tr>
<th></th>
<th>British Columbia</th>
<th>Alberta</th>
<th>Saskatchewan</th>
<th>Manitoba</th>
<th>Ontario</th>
<th>Quebec</th>
<th>Newfoundland</th>
</tr>
</thead>
<tbody>
<tr>
<td>How are you handling suspect or confirmed COVID-19 patients on your oncology wards?</td>
<td>Separate unit</td>
<td>Separate unit</td>
<td>Separate unit</td>
<td>Separate unit and negative pressure rooms</td>
<td>Separate unit</td>
<td>Separate unit and positive patients sharing rooms</td>
<td>Separate unit</td>
</tr>
</tbody>
</table>

**Surgery:**

<table>
<thead>
<tr>
<th>Have there been any delays or deferral of cancer surgeries?</th>
<th>None</th>
<th>&lt;4 weeks</th>
<th>&lt;4 weeks</th>
<th>Minimally impacted, unknown duration</th>
<th>6–8 weeks</th>
<th>Surgery volume was reduced/unclear duration</th>
<th>&gt;8 weeks (urgent and emergent cases proceeded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have cancer surgeries been prioritized?</td>
<td>No change</td>
<td>Prioritization within disease sites</td>
<td>No change</td>
<td>Prioritization within disease sites</td>
<td>Prioritization within disease sites</td>
<td>Prioritization within disease sites</td>
<td>Prioritization within disease sites</td>
</tr>
</tbody>
</table>
Table 1. Cont.

<table>
<thead>
<tr>
<th>Radiation:</th>
<th>British Columbia</th>
<th>Alberta</th>
<th>Saskatchewan</th>
<th>Manitoba</th>
<th>Ontario</th>
<th>Quebec</th>
<th>Newfoundland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have there been any changes to the delivery of radiation therapy?</td>
<td>No change</td>
<td>No change</td>
<td>Changes to dose or fractionation schedule</td>
<td>Changes to dose or fractionation schedule</td>
<td>Changes to dose or fractionation schedule</td>
<td>Changes to dose or fractionation, prioritization within disease site and clinical indication</td>
<td>No change</td>
</tr>
<tr>
<td>How are you planning for increased volume once restrictions are eased?</td>
<td>No change</td>
<td>No change</td>
<td>Increased clinic hours</td>
<td>No change</td>
<td>No change</td>
<td>Increase in hours, use modified dose schedule, prioritization to specified disease sites and clinical indications</td>
<td>No change</td>
</tr>
</tbody>
</table>

Systemic Therapy:

<p>| Have there been any changes to the administration of chemotherapy or supportive therapy? | No change | Varied depending on site: may have had changes to schedule, delayed where possible or no change | Changes to schedule (frequency, dose, density) | Changes to schedule (frequency, dose, density) | Changes to schedule (frequency, prioritization within disease sites, disease type and clinical) | Generally no change. Few cases had change to schedule (frequency, dose, density) |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>British Columbia</th>
<th>Alberta</th>
<th>Saskatchewan</th>
<th>Manitoba</th>
<th>Ontario</th>
<th>Quebec</th>
<th>Newfoundland</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What additional systemic therapy considerations have been used?</strong></td>
<td>No change</td>
<td>No change</td>
<td>Favour neoadjuvant and oral therapy, stopping maintenance therapy and G-CSF use</td>
<td>Favour oral therapy and G-CSF use</td>
<td>Favour oral therapy</td>
<td>Favour oral therapy and G-CSF use</td>
<td>No change</td>
</tr>
<tr>
<td><strong>Have you had to adjust the drug approval process/policy to allow more flexibility in choosing regimens?</strong></td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>Drug access liberalized for pandemic</td>
<td>Disease site-specific liberalization access granted</td>
<td>No change</td>
</tr>
<tr>
<td><strong>Have you modified the use of satellite chemotherapy sites?</strong></td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td><strong>What changes have occurred in the treatment room?</strong></td>
<td>No change</td>
<td>Distancing patients, no escorts</td>
<td>Distancing patients, no escorts</td>
<td>Distancing patients, no escorts</td>
<td>Distancing patients, no escorts</td>
<td>Distancing of patients, no escorts and modified hours</td>
<td>Distancing patients</td>
</tr>
<tr>
<td><strong>Are you testing patients prior to systemic therapy?</strong></td>
<td>No</td>
<td>No</td>
<td>Offered, not required if asymptomatic</td>
<td>No</td>
<td>Yes, prior to cycle 1</td>
<td>Offered, not required if asymptomatic</td>
<td>No</td>
</tr>
<tr>
<td><strong>Will you be testing patients prior to systemic therapy?</strong></td>
<td>No</td>
<td>No</td>
<td>Offered, not required if asymptomatic</td>
<td>No</td>
<td>Yes, prior to cycle 1</td>
<td>Offered, not required if asymptomatic</td>
<td>No</td>
</tr>
<tr>
<td><strong>Have you experienced any medication shortages?</strong></td>
<td>No</td>
<td>Regional Cancer Centres experienced shortages with supportive care</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Advanced Care Planning (ACP):</td>
<td>British Columbia</td>
<td>Alberta</td>
<td>Saskatchewan</td>
<td>Manitoba</td>
<td>Ontario</td>
<td>Quebec</td>
<td>Newfoundland</td>
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</tr>
<tr>
<td>Has there been direction to physicians to emphasize ACP or end of life care discussions in preparation for changes to access to ICU care?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Have you used video appointments for psychosocial oncology care?</td>
<td>50-75%</td>
<td>&lt;25%</td>
<td>25-50%</td>
<td>&gt;75%</td>
<td>25-50%</td>
<td>Unknown</td>
<td>None</td>
</tr>
<tr>
<td>Has the volume of psychosocial visits increased during this time?</td>
<td>No change</td>
<td>Decreased</td>
<td>&lt;20% increase</td>
<td>Unknown</td>
<td>&lt;20% increase</td>
<td>Unknown</td>
<td>No change</td>
</tr>
</tbody>
</table>

| Cancer Centre Operations: | | | | | | | |
| What platforms are being used for case conferences? | Zoom | Zoom | Hybrid in person and video, Pexip, Webex | Microsoft Teams | Zoom | Zoom, Reacts | Microsoft Teams |

<p>| Once restrictions ease, what services do you expect to continue long term? | Telephone visits, video visits, electronic communications with patients, video case conferences | Telephone visits, video visits, electronic communications with patients, video case conferences | Telephone visits, video visits, electronic communications with patients, video case conferences | Telephone visits, video visits, electronic communications with patients, video case conferences | Telephone visits, video visits, video case conferences | Telephone visits, video visits, video case conferences | Telephone visits, video visits, video case conferences |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>British Columbia</th>
<th>Alberta</th>
<th>Saskatchewan</th>
<th>Manitoba</th>
<th>Ontario</th>
<th>Quebec</th>
<th>Newfoundland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are some staff members working from home?</td>
<td>&lt;20% Physicians, nurses, health records, administration, allied health</td>
<td>20–50% Physicians, administration</td>
<td>20–50% Physicians, allied health</td>
<td>20–50% Physicians, health records, allied health</td>
<td>20–50% Physicians, administration</td>
<td>Unknown percent Physicians, nurses, health records</td>
<td>&lt;20% Physicians, nurses, health records, administration, allied health</td>
</tr>
<tr>
<td>What is the biggest barrier to working from home?</td>
<td>Paper/in-person workflow, lack of remote access, lack of devices</td>
<td>Paper/in-person workflow, lack of remote access</td>
<td>Paper/in-person workflow</td>
<td>None</td>
<td>Paper/in-person workflow</td>
<td>Paper/in-person workflow, lack of devices</td>
<td>Initially lack of devise, but this was resolved</td>
</tr>
<tr>
<td>Are patients or staff required to wear PPE?</td>
<td>All staff (masks)</td>
<td>All staff and patients (masks)</td>
<td>All staff and patients (masks)</td>
<td>All staff (surgical masks), patients may wear cloth masks</td>
<td>All staff and patients (masks)</td>
<td>All staff and patients (masks)</td>
<td>All staff and patients (masks)</td>
</tr>
<tr>
<td>What PPE are you using during a routine clinical encounter?</td>
<td>Eye protection and surgical/procedure mask</td>
<td>Surgical/procedure mask</td>
<td>Surgical/procedure mask</td>
<td>Eye protection and surgical/procedure mask</td>
<td>Surgical/procedure mask</td>
<td>Eye protection, surgical/procedure mask, gown and gloves</td>
<td>Surgical/procedure mask</td>
</tr>
<tr>
<td>Research:</td>
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<tr>
<td><strong>Are clinical trials currently open at your cancer centre?</strong></td>
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<tr>
<td>Yes, all trials are in phase to be open or are open</td>
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<tr>
<td>Majority are open and only a small number of sponsor-driven trials were suspended</td>
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<tr>
<td>Yes, all trials are open</td>
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<tr>
<td>Yes, but not open to recruitment</td>
<td></td>
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<tr>
<td>Yes, halted new patients on trials and new trials for adults, open for children</td>
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<tr>
<td>Yes, but not open to recruitment</td>
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</tbody>
</table>

| Has non-clinical trial research continued?                              |
| Yes, Non-clinical research at 30–50% in person capacity                |
| All research suspended                                                 |
| All research suspended                                                 |
| Clinical research suspended                                            |
| Laboratory wet bench research suspended                                 |
| All research suspended                                                 |

<table>
<thead>
<tr>
<th>Trainee Management:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Have there been modifications to clinic or teaching for oncology residents?</strong></td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>Reduced outpatient oncology exposure</td>
</tr>
<tr>
<td>Reduced inpatient and outpatient exposure</td>
</tr>
<tr>
<td>None</td>
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<tr>
<td>Reduced outpatient oncology exposure</td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>Reduced inpatient and outpatient exposure</td>
</tr>
<tr>
<td>Do you have off service residents completing oncology rotations?</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
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<tr>
<td>Unchanged</td>
</tr>
</tbody>
</table>

Abbreviations: CT = computed tomography, MRI = magnetic resonance imaging, N/A = not applicable, PPE = personal protective equipment, CCI = Cross Cancer Institute, CACC = Central Alberta Cancer Centre, TBCC = Tom Baker Cancer Centre, JACC = Jack Ady Cancer Centre, G-CSF = granulocyte-colony stimulating factor, ACP = Advanced Care Planning, ICU = intensive care unit. Questionnaire completed: BC on June 23/20, AB on June 22/20, SK on June 26/20, MB on July 3/20, ON on Aug 25/20, QC on July 10/20, NL on July 4/20. Legend: ↓ = <25%, ↓↓ = 25–50%, ↓↓↓ = 50–75%, ↓↓↓↓ = >75%.
3.3. Treatment

Cancer treatments were affected across all provinces. Internal strategies were developed and adopted by disciplines and disease site groups to provide guidance for providers. Most provinces saw a reduction in operating room availability, and elective surgeries were postponed. Oncologic surgeries were delayed at the discretion of treating physicians. Preference was given to neoadjuvant strategies, including approaches such as neoadjuvant endocrine therapy for hormone receptor positive breast cancer. In some provinces, surgical wait times decreased due to the reduction in cancer screening, diagnostic imaging and referrals.

Administration of chemotherapy and radiation faced minimal or no changes. However, provinces prepared prioritisation guidelines for each disease site to prepare for a possible worsening of the pandemic. Hypofractionated and short course radiation treatments were recommended where possible, to reduce resource consumption and minimise patient exposure [17]. Similarly, the longest possible chemotherapy cycle length and protocols with the fewest number of appointments were considered. QC also recommended transitioning to longer cycles for immunotherapy, such as administration of nivolumab every 4 weeks as opposed to every 2 weeks. SK, ON and QC offered COVID-19 testing to asymptomatic patients on treatment. Several provinces indicated that supportive therapies such as adjuvant bisphosphonates for breast cancer should be deferred and monthly bisphosphonates for metastatic disease be converted to every 3 months. Multiple provinces suggested adding granulocyte colony stimulating factor as primary prophylaxis to reduce emergency room visits for febrile neutropenia.

Patient cards were issued in SK and NS to ensure that patients on chemotherapy were easily identified in Emergency Departments. The intent was to serve as a reminder, in the era of COVID-19, that a fever in a patient receiving chemotherapy is febrile neutropenia until proven otherwise.

3.4. COVID-19 Positive Patients

Cancer patients who tested positive for COVID-19 were restricted from entrance to cancer centres during the infective period, unless extenuating circumstances were present. Inpatient oncology patients with suspected or confirmed COVID-19 were admitted to a separate unit.

BC developed a test-based strategy for the resumption of cancer treatment subsequent to COVID-19 infection. Treatment may be resumed when all of the following criteria are met: resolution of fever (without use of antipyretics), resolution of all symptoms, two negative nasopharyngeal swabs (at least 24 h apart) and discussion with the Medical Health Officer at Public Health. Similarly, AB recommended the resumption of cancer treatment after resolution of symptoms, at least 14 days from onset of symptoms and with two negative nasopharyngeal swabs (7 days apart). Delay in initiation of chemotherapy of >3 months was considered reasonable in low-risk patients, up to 3 months for intermediate-risk patients and no delay for high-risk patients.

3.5. Investigations (Diagnostic Imaging and Phlebotomy)

Elective imaging was postponed to various degrees across Canada. BC and ON published guidelines on the prioritisation of imaging based on disease type and stage to be used if resources became limited. Investigations for cancer screening, low-risk post-treatment surveillance and treatment planning for slow growing tumors was considered low priority. Impact on diagnostic imaging varied across the country, with MB and SK having a <25% reduction in volume of computed tomography (CT), magnetic resonance imaging (MRI) and ultrasound, while QC and NL experienced a 50–75% reduction.

Some provinces experienced changes to phlebotomy services, including reduced blood draws for stable indications and the redirection of patients to community laboratories. NS launched an in-home phlebotomy service for patients who were unable to leave their home due to mobility issues, chronic disease or isolation for COVID-19.
3.6. Cancer Centre Operations

Across Canada, healthcare professionals required COVID-19 daily symptom screening before entering cancer centres. Variation was seen in screening protocols for staff, with AB using a daily self-completed questionnaire, while MB screened employees at the cancer centre entrance with questions and temperature monitoring. PPE practices for low-risk asymptomatic patient encounters also varied. Masks were required in all provinces, with the addition of eye protection in BC, MB and QC. The use of a gown/lab coat was only required in QC.

Patients entering a cancer centre were screened for COVID-19 symptoms, travel history and COVID-19 exposure. Screening occurred either at the entrance, over the phone the day before or both.

Meetings between healthcare professionals took place using many platforms, including Zoom, Pexip, Microsoft Teams and Reacts. Some cancer centre employees, including physicians, nurses, administrators and allied health workers, were able to work from home. This varied across Canada, with <20% of institutional staff for BC and NL and 20–50% in AB, SK, MB and ON working from home.

3.7. Advance Care Plan (ACP)

Many provinces provided additional direction to physicians to emphasise the importance of Health Care Directives and end of life discussions in oncology clinics to reduce downstream health system, patient and provider burden. BC highlighted the importance of an early goals of care conversation, with particular exploration of patient wishes around end of life due to the added risk of COVID-19. ON acknowledged that COVID-19 may result in an increased burden on Palliative Care resources and that other frontline workers will be required to help manage these patient needs.

3.8. Academics

Clinical trials were affected to various degrees across the country. Clinical trials remained open in most circumstances, but patient accrual was paused provincially in MB, QC and NL, while some local sites were also paused in other provinces. Non-clinical trial research was entirely suspended in surveyed provinces, with the exception of BC, experiencing a 30–50% reduction. Data capture occurred in all cancer centres evaluating the volume of new patient referrals, follow-up appointments (including psychosocial oncology appointments) and treatment administered, allowing for this research to occur.

BC and QC experienced no modifications to trainee management, with the remaining provinces reporting a reduced exposure to inpatient and outpatient oncology.

4. Discussion

Canada has a publicly funded universal healthcare system with prioritisation based on medical need and not the recipient’s ability to pay. Consequently, our system generally has longer wait times than a private healthcare system, highlighting the importance of efficiency [18]. Importantly, this also facilitates the coordination of the health system at the regional, provincial and national level. Cancer is a unique disease entity in this regard, and each Canadian province has an overarching organisational and administrative structure governing the care of patients with cancer based on provincial administration and funding of the health system. The fact that the provincial cancer agencies can respond in a similar manner is a result of CAPCA, and similar national associations should be encouraged for non-oncologic diseases. Collecting and reporting on positive and negative healthcare system changes due to the COVID-19 pandemic is critical in order to guide future health system policy, permit optimal planning for future waves of the pandemic and determine which positive changes might be sustainable in the long term. This evaluation of Canadian cancer centre modifications serves as a foundation for future research looking at cancer patient-related outcomes and interpretation of health system changes during the COVID-19 pandemic.

Across Canada, as the pandemic developed, an immediate goal was to decrease traffic in cancer centres in order to limit exposure and protect both patients and cancer centre employees from
COVID-19. This was accomplished through multiple interventions. First, most medical appointments were converted to virtual, with certain necessary exceptions. Second, family members/friends were prevented from accompanying patients to appointments. Third, staff were encouraged to work remotely where possible. Fourth, non-urgent diagnostic imaging and bloodwork was reduced.

These physical distancing measures continue to be extremely important as we increasingly recognise the risk of asymptomatic COVID-19 carrying healthcare workers to patients. As the pandemic has progressed, we have learned the importance of not only screening patients but also healthcare workers [11,19]. As an additional method to reduce the risk of asymptomatic spread from healthcare workers to vulnerable patients, some healthcare institutions completed periodic rapid antigen screening of healthcare workers, which successfully identifies asymptomatic carriers. Although not completed at any Canadian cancer centres, periodic rapid antigen screening may be a future method employed if the risk of asymptomatic COVID-19 carrying healthcare workers is felt to be high [20].

A 10–20% decrease in referrals was observed in most provinces, with SK, ON and QC observing a >20% reduction. This was likely due to a reduction in access to primary healthcare providers, screening programs and/or diagnostic services, leading to a reduction in new cancer diagnoses, in addition to patient hesitation to seek medical care out of fear of infection. There was a variable reduction in diagnostic imaging, generally mirroring the severity of COVID-19 pandemic. One of the first measures taken by cancer programs was the temporary closure of cancer screening programs. This was generally perceived as a low-risk measure; however, the consequences of screening program closures and resulting backlog will not be fully understood for years. It is unclear to what degree later stage/more advanced malignancies will be diagnosed due to the interruption in cancer screening and possible delay in seeking medical attention [21]. Having these system changes well-documented is critical to provide future context for population-based outcomes.

Telemedicine has been employed with success in past pandemics, including SARS-CoV (severe acute respiratory syndrome-associated coronavirus) and Ebola [22,23]. It has also been validated in heart failure and diabetic patients [24]. While not commonly used prior to the pandemic, in part due to the absence of provincial physician billing codes and privacy concerns, telemedicine has quickly become integral to cancer care. At the height of the COVID-19 pandemic, virtual appointments (video or telephone) made up 50–75% of oncology clinic schedules. While the use of video also allows for a limited examination, video platforms made up <25% of virtual appointments. Telemedicine has limitations, including technical issues, accessibility, inability to complete a full physical examination and privacy considerations. However, there are added benefits to patients, including reduced time commitment and financial strain of transportation and parking, thereby potentially reducing some inequity in access to services. Interestingly, no Canadian cancer centre reported communicating with patients using an electronic patient portal.

We observed many similar trends across provinces, and although these decisions were made independently, they demonstrate a degree of homogeneity and coordination in Canadian practice. The rate of conversion of outpatient appointments to occur virtually was similar across Canada, with new patient appointments occurring most commonly in person, with virtual means used more frequently for on treatment and follow-up appointments. Generally, radiation and systemic therapy treatments required less modification and continued largely unaffected in most provinces. Surgery was impacted to a greater degree due to surgical resources directly competing with pandemic resources (including ventilators, large volumes of PPE and hospital rooms for patient recovery). Interestingly, more variation between provincial practices pertained to public health practices and not oncology-specific practices. There was no consistency between provinces in PPE use for asymptomatic patients or staff and patient screening.

Early in the COVID-19 pandemic, it became apparent that cancer patients likely had a higher incidence of infection and higher risk of mortality compared to patients without a cancer diagnosis [9,10]. This changed the risk–benefit considerations of treatment and reinforced the importance of discussing
goals of care and ensuring a realistic understanding of the severity of medical illnesses [25]. Globally, resources were stretched, resulting in restrictions in intensive care admission in some countries based on age and comorbidity. With the added threat of COVID-19, many provinces recommended that physicians undertake early goals of care conversations, with a particular focus on patient wishes around end of life.

Transparency in cancer centre modifications and potential resource restrictions was extremely variable between provinces; see Supplemental Table S1. The larger cancer programs, including BC, AB and ON, provided some of the most comprehensive publicly available clinical management guidelines. Other provinces only provided documentation immediately applicable to patients and their care, including appointment changes, management of new symptoms or availability of additional mental health resources.

We were limited by the extent of information available online and through the CAPCA electronic database. Not all provinces completed questionnaires, but we received robust responses from seven provinces, including the largest provinces. For larger provinces, the responses may be overall estimates for the entire province and may not be specifically representative of an individual cancer centre. Questionnaires were completed by cancer centre CEOs with input from delegates, resulting in the most complete information. However, respondents may have been limited by the data available to them. Importantly, we have not captured patient or provider experiences. We also lack complete information regarding the extent of the impact on clinical trials, which is a critical component of oncology care. Additionally, although we know that follow-up appointments, diagnostic imaging and oncologic surgeries were deferred, and treatment approaches were modified, we do not have a true measure of the proportion of patients affected or differences between provinces.

At the time of submission, we enter the seventh month of the COVID-19 pandemic and provinces are in various stages of reopening. However, we are also beginning to recognise the chronicity of this pandemic. Which modifications are sustainable in the long term is not yet clear; however, many may be required until a vaccine is developed or herd immunity is established [16]. Many measures taken, including closure of cancer screening programs and delay of thousands of surgeries, were extreme and the true repercussions of these decisions may not be known for many years.

5. Conclusions

Due to the COVID-19 pandemic, Canadian cancer centres undertook drastic changes to protect their vulnerable population. This transformation was in part coordinated by regular communication between provincial cancer agencies through CAPCA and highlights the importance of provincial, regional and national organisations in coordinating a response of this magnitude. To date, in Canada, we have minimal objective health system data documenting changes undertaken resulting from the pandemic and this research serves as an important foundation.

We found many similarities between provinces, including closure of screening programs, transition to telemedicine and reductions in diagnostic imaging and new referrals. Differences also existed including public health practices, platforms used for virtual appointments and transparency. Many of these changes will be in place for months to come, and it is highly likely that we will require many years to fully understand the repercussions of the extreme measures used in response to the first wave of COVID-19.

Supplementary Materials: The following are available online at http://www.mdpi.com/1718-7729/28/1/26/s1, Table S1: Public provincial cancer centre and CAPCA electronic space information considering cancer screening, appointments, treatment and cancer centre operations changes.

Author Contributions: Study design and methodology were done jointly between R.R., A.M., and M.P. Data acquisition was facilitated by all and primarily performed by R.R., A.M., D.D., and C.C.E. Analysis and synthesis was performed by R.R., A.M., and M.P. First draft manuscript was prepared by R.R., A.M., second draft by M.P., with review and editing of final draft performed by all authors. All authors have read and agreed to the published version of the manuscript.

Funding: This work received no external funding.
Acknowledgments: We would like to thank all CAPCA members that completed the questionnaire, allowing for this research to be possible.

Conflicts of Interest: We have read and understood Current Oncology’s policy on disclosing conflicts of interest and declare that we have none.

References
2. Webster, P. Canada and COVID-19: Learning from SARS. Lancet 2020, 395, 936–937. [CrossRef]


25. Block, B.L.; Smith, A.K.; Sudore, R.L. During COVID-19, Outpatient Advance Care Planning is Imperative: We need All Hands on Deck. J. Am. Geriatr. Soc. 2020, 1–3. [CrossRef]

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PODIUM PRESENTATIONS

Podium Presentation will be held in Theatre A, Basic Medical Sciences Bldg
*** Time will be strictly adhered to - 15 minutes per presentation, inclusive of question period ***

9:10 am  INTRODUCTORY REMARKS
Dr. Navdeep Tangri
Chair, Department of Internal Medicine Resident Research Day

9:15 am  Original investigation
COURSE AND OUTCOME OF LUPUS NEPHRITIS IN VULNERABLE PATIENTS
PRESENTED BY:  Dr. Matthew Thiessen, PGY3 - Internal Medicine
SUPERVISOR:  Dr. Christine Peschken

9:30 am  Original investigation
THE PROGNOSTIC VALUE OF NON-INVASIVE VENTRICULAR RESERVE MEASUREMENTS IN PATIENTS WITH PULMONARY ARTERIAL HYPERTENSION
PRESENTED BY:  Dr. Lauren Bath, PGY3 - Internal Medicine
SUPERVISOR:  Dr. David Christiansen

9:45 am  Original investigation
URBANITY AND INFLUENZA VACCINATION RATES AND PERCEPTIONS AMONG INDIVIDUALS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE
PRESENTED BY:  Dr. Samuel Quan, PGY5 – Geriatric Medicine
SUPERVISOR:  Dr. Phil St. John, Dr. S. Shooshtari

10:00 am  Original investigation
THE IMPACT OF PATIENT-PROVIDER LANGUAGE DISCORDANCE IN PRIMARY CARE: A RETROSPECTIVE COHORT STUDY OF HOME CARE RECIPIENTS IN ONTARIO, CANADA
PRESENTED BY:  Dr. Michael Reaume, PGY2 - Internal Medicine
SUPERVISOR:  Dr. Peter Tanuseputro

10:15 am  Original investigation
DELAYED SYMPTOM ONSET-TO-FIRST MEDICAL CONTACT IN ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION IS ASSOCIATED WITH MORTALITY
PRESENTED BY:  Dr. David Nelson, PGY2 – Internal Medicine
SUPERVISOR:  Dr. Shuangbo Liu

10:30 am  BREAK
Location: Joe Doupe Concourse
10:45 am  Original investigation
THE EFFECT OF COVID-19 ON SEIZURE CHARACTERISTICS IN A CANADIAN TERTIARY CARE EMERGENCY DEPARTMENT
PRESENTED BY: Dr. Angela Young, PGY4 - Neurology
SUPERVISOR: Dr. Marcus Ng

11:00 am  Original investigation
PREVALENCE OF CHRONIC SPONTANEOUS URTICARIA REQUIRING OMALIZUMAB THERAPY IN MANITOBA’S INDIGENOUS AND NON-INDIGENOUS POPULATION
PRESENTED BY: Dr. Brian Lee, PGY3 - Internal Medicine
SUPERVISOR: Dr. Chrystyna Kalicinsky

11:15 am  Original investigation
PATIENT CHARACTERISTICS, AND OUTCOMES IN MYOCARDIAL INFARCTION WITH NONOBSRUCTIVE CORONARY ARTERY DISEASE (MINOCA) IN MANITOBA
PRESENTED BY: Dr. Magda Zawadka, PGY2 – Internal Medicine
SUPERVISOR: Dr. Shuangbo Liu

11:30 am  Original investigation
TICAGRELOR AS COMPARED TO CLOPIDOGREL FOR PREVENTION OF MAJOR ADVERSE CARDIOVASCULAR EVENTS FOLLOWING PERCUTANEOUS CORONARY INTERVENTION FOR ACUTE CORONARY SYNDROME
PRESENTED BY: Dr. Evan Wiens, PGY6 - Cardiology
SUPERVISOR: Dr. Ashish Shah

11:45 am  Original investigation – Quality Improvement
STREAMLINING PRE-PROCEDURAL WORKUP FOR FISTULOGRAMS AND TUNELLED LINES IN MANITOBA, A QUALITY IMPROVEMENT INITIATIVE
PRESENTED BY: Dr. Izabella Supel, PGY3 - Internal Medicine
SUPERVISOR: Dr. Jay Hingwala

12:00 pm  Original investigation
COSTS ASSOCIATED WITH TREATMENT OF METASTATIC NON-SMALL CELL LUNG CANCER IN MANITOBA
PRESENTED BY: Dr. Lana Tennenhouse, PGY2 - Internal Medicine
SUPERVISOR: Dr. David Dawe

12:15 pm  Original investigation
MATERNAL AND FETAL OUTCOMES OF PREGNANCY IN THE SETTING OF MATERNAL CARDIOVASCULAR DISEASE, MANAGED BY MULTIDISCIPLINARY CARE IN MANITOBA
PRESENTED BY: Dr. Sarah Gibbs, PGY3 – Internal Medicine
SUPERVISOR: Dr. Robin Ducas
12:30 pm  Best Published Paper Derived From 2020 Resident Research Day

CANADIAN CANCER CENTRE RESPONSE TO COVID-19 PANDEMIC: A NATIONAL AND PROVINCIAL RESPONSE
Rebekah Rittberg, Anmol Mann, Danielle Desautels, Craig C. Earle, Sri Navaratnam & Marshal Pitz
Current Oncology 2021, 28, 233-251; doi:10.3390/curroncol28010026

1:00 pm  LUNCH
Location: Joe Doupe Concourse

1:45 pm  Original investigation
PROTON-PUMP INHIBITOR USE BEFORE AND AFTER A DIAGNOSIS OF INFLAMMATORY BOWEL DISEASE
PRESENTED BY:  Dr. Noreen Singh, PGY5 - Gastroenterology
SUPERVISOR:  Dr. Charles Bernstein

2:00 pm  Original investigation
METABOLIC ACIDOSIS IS ASSOCIATED WITH ACUTE KIDNEY INJURY IN PATIENTS WITH CKD
PRESENTED BY:  Dr. Antonia Zhu, PGY3 - Internal Medicine
SUPERVISOR:  Dr. Navdeep Tangri

2:15 pm  Original investigation
CONCURRENT SEXUALLY TRANSMITTED AND BLOOD BOURNE INFECTIONS (STBBIs) AMONG PEOPLE LIVING WITH HIV IN MANITOBA, 2018-2022
PRESENTED BY:  Dr. Megan Sorokopud-Jones, PGY2 - Internal Medicine
SUPERVISOR:  Dr. Yoav Keynan
POSTER PRESENTATIONS

Posters will be displayed in the Joe Doupe Concourse

*** Time will be strictly adhered to - 10 minutes per presentation, inclusive of question period ***

9:20 am  Research proposal
ANALYSIS OF COMMUNITY SARS-COV-2 VIRAL LOAD CYCLE THRESHOLD VALUES TO PREDICT PANDEMIC WAVE TRAJECTORY
PRESENTED BY: Dr. Matthew Bzura, PGY2 - Internal Medicine
SUPERVISOR: Dr. Jared Bullard

9:30 am  Research proposal
EVALUATION OF INFECTIOUS COMPLICATIONS IN PATIENTS WITH MYELODYSLASTIC SYNDROMES: A PROSPECTIVE COHORT STUDY FROM THE CANADIAN MDS REGISTRY
PRESENTED BY: Dr. Shivani Mathur, PGY2 - Internal Medicine
SUPERVISOR: Dr. Brett Houston

9:40 am  Research proposal
THE IMPACT OF COVID-19 ON INDIGENOUS TRAUMATIC BRAIN INJURY AND INPATIENT REHABILITATION
PRESENTED BY: Dr. Melissa Creelman, PGY5 – PM&R
SUPERVISOR: Dr. Jennifer Salter

9:50 am  Research proposal
PREVALENCE OF SARCOIDOSIS IN NORTHWESTERN ONTARIO: A CROSS-SECTIONAL STUDY
PRESENTED BY: Dr. Kaitlin Quinlan, PGY2 - Internal Medicine
SUPERVISOR: Dr. Azadeh Mofid

10:00 am  Original investigation
ACQUIRED HEMOPHILIA A: A 15-YEAR POPULATION-BASED REVIEW OF INCIDENCE RATE, PATIENT DEMOGRAPHICS, AND TREATMENT OUTCOMES
PRESENTED BY: Dr. Chantal Tian, PGY5 - Hematology
SUPERVISOR: Dr. Ryan Zarychanski/Dr. Emily Rimmer

10:10 am  Original investigation
ONE-YEAR OUTCOMES IN PATIENTS WHO UNDERWENT CORONARY INTRAVASCULAR SHOCKWAVE LITHOTRIPSY FOR HIGHLY-CALCIFIED CORONARY LESIONS
PRESENTED BY: Dr. Sarah Gibbs, PGY3 – Internal Medicine
SUPERVISOR: Dr. Kunal Minhas

10:20 am  Original Investigation – Quality Improvement
MANAGEMENT OF STAPHYLOCOCCUS AUREUS BACTEREMIA IN AN ACUTE CARE HOSPITAL – A QUALITY IMPROVEMENT PROJECT
PRESENTED BY: Dr. Carmen Tse, PGY3 - Internal Medicine
SUPERVISOR: Dr. Terry Wuerz
10:30 am  BREAK  Location: Joe Doupe Concourse

10:45 am  Research proposal
DISSEMINATED GONOCOCCAL INFECTION IN MANITOBA: A DESCRIPTIVE STUDY
PRESENTED BY:  Dr. Meagan Deviaene, PGY2 – Internal Medicine
SUPERVISOR:  Dr. Terry Wuerz

10:55 am  Research proposal
INTRA-OBSERVER AND INTER-OBSERVER VARIABILITY IN CORRECTED QT INTERVAL MEASUREMENT AMONG ADULT PATIENTS WITH LONG QT SYNDROME
PRESENTED BY:  Dr. David Nelson, PGY2 - Internal Medicine
SUPERVISOR:  Dr. Clarence Khoo

11:05 am  Case Report
MEDICAL MANAGEMENT OF EMPHYSEMATOUS GASTRITIS: A CASE REPORT
PRESENTED BY:  Dr. Farshad Ghasemi, PGY3 - Internal Medicine
SUPERVISOR:  Dr. Aditya Sharma

11:15 am  Research proposal
OUTCOME OF COVID-19 VACCINATION FOLLOWING ALLERGY CONSULTATION RECOMMENDING VACCINATION AT A WINNIPEG COMMUNITY SITE
PRESENTED BY:  Dr. Pratik Shah, PGY2 - Internal Medicine
SUPERVISOR:  Dr. Chrystyna Kalicinsky

11:25 am  Research proposal
DOES SYSTEMIC FOLLOW-UP IMPROVE OUTCOMES IN INDIVIDUALS WITH LYNCH SYNDROME: A POPULATION-BASED STUDY
PRESENTED BY:  Dr. Yiwen Liu, PGY2 – Internal Medicine
SUPERVISOR:  Dr. Harminder Singh

11:35 am  Research proposal
OUTCOMES OF MEDICOLEGAL CASES INVOLVING COLONOSCOPY IN A NATIONAL CANADIAN LEGAL DATABASE FROM 2011-2021
PRESENTED BY:  Dr. Dov Kagan, PGY2 - Internal Medicine
SUPERVISOR:  Dr. Harminder Singh

11:45 am  Research proposal
THE ASSOCIATION BETWEEN PRE-EXISTING DIABETES AND STILLBIRTH AND PERINATAL MORTALITY: A SYSTEMATIC REVIEW AND META-ANALYSIS
PRESENTED BY:  Dr. Anna Blankstein, PGY2 - Internal Medicine
SUPERVISOR:  Dr. Jennifer Yamamoto

11:55 am  Case report
ASSESSING CORRELATION BETWEEN AXITINIB AND INTRACRANIAL HEMORRHAGE IN RCC BRAIN METASTASIS
PRESENTED BY: Dr. Pedram Hassan-Tash, PGY3 - Internal Medicine
SUPERVISOR: Dr. Amiya Chakraborty

12:05 pm  Research proposal
A RETROSPECTIVE ANALYSIS OF THE ETIOLOGY AND OUTCOMES OF BACTERIAL SKIN AND SOFT TISSUE INFECTIONS IN HIV-POSITIVE INDIVIDUALS IN MANITOBA
PRESENTED BY: Dr. Nicole Zaki, PGY2 - Internal Medicine
SUPERVISOR: Dr. Yoav Keynan

12:15 pm  Original investigation
MANITOBAS’S HIV SYNDVIC: IDENTIFYING THE INTERSECTION OF SUBSTANCE USE DISORDER, HOUSELESSNESS, AND OTHER COMORBIDITIES IN PEOPLE LIVING WITH HIV
PRESENTED BY: Dr. Alex Sharp, PGY2 - Internal Medicine
SUPERVISOR: Dr. Yoav Keynan, Dr. Zulma Rueda

12:30 pm  Best Published Paper Derived From 2020 Resident Research Day
CANADIAN CANCER CENTRE RESPONSE TO COVID-19 PANDEMIC: A NATIONAL AND PROVINCIAL RESPONSE
Rebekah Rittberg, Anmol Mann, Danielle Desautels, Craig C. Earle, Sri Navaratnam & Marshal Pitz
Current Oncology 2021, 28, 233-251; doi:10.3390/curroncol28010026

1:00 pm  LUNCH
Location: Joe Doupe Concourse

1:45 pm  Research proposal
REAL WORLD EXPERIENCE WITH VENETOCLAX AND OBINUTUZUMAB: THE MANITOBA CHRONIC LYMPHOCYTIC LEUKEMIA CLINIC EXPERIENCE
PRESENTED BY: Dr. Ortenc Hoxha, PGY2 – Internal Medicine
SUPERVISOR: Dr. Lin Yang

1:55 pm  Research proposal
THE EFFECT OF SORAFENIB AND OTHER SYSTEMIC TREATMENTS ON SURVIVAL IN PATIENTS WITH HEPATOCELLULAR CARCINOMA (HCC)
PRESENTED BY: Dr. Mohamed Soufi, PGY2 - Internal Medicine
SUPERVISOR: Dr. Vallerie Gordon

2:05 pm  Research proposal
RHEUMATOLOGISTS’ PERCEPTIONS ON PREVENTATIVE INTERVENTION IN RHEUMATOID ARTHRITIS – A CANADIAN PERSPECTIVE
PRESENTED BY: Dr. Raman-deep Sambhi, PGY2 – Internal Medicine
SUPERVISOR: Dr. Liam O’Neil
POSTERS DISPLAYED IN ABSENTIA

Original investigation - Quality Improvement
EVIDENCE BASED EVALUATION AND REDESIGN OF THE RENAL BIOPSY PROCESS AT WINNIPEG HEALTH SCIENCES CENTRE
PRESENTED BY: Dr. Anirudh Agarwal, PGY2 - Internal Medicine
SUPERVISOR: Dr. Jay Hingwala

Original Investigation
RETROSPECTIVE REVIEW OF THE MANIFESTATION AND MANAGEMENT OF HEREDITARY ANGIOEDEMA IN PREGNANCY
PRESENTED BY: Dr. Maine Bi, PGY3 - Internal Medicine
SUPERVISOR: Dr. Chrystyna Kalicinsky

Original investigation
HOST GENE VARIANTS ASSOCIATED WITH PNEUMONIA IN PATIENTS LIVING WITH HUMAN IMMUNODEFICIENCY VIRUS – A REVIEW OF THE LITERATURE
PRESENTED BY: Dr. Roy Hutchings, PGY3 - Internal Medicine
SUPERVISOR: Dr. Yoav Keynan, Dr. Zulma Rueda

Original investigation
PRESCRIPTION PATTERNS OF SODIUM AND CALCIUM POLYSTYRENE SULFONATE IN PATIENTS WITH HYPERKALEMIA AND CHRONIC KIDNEY DISEASE
PRESENTED BY: Dr. Hongru Ren, PGY3 - Internal Medicine
SUPERVISOR: Dr. Navdeep Tangri

Original investigation
IDENTIFYING SOCIAL FACTORS THAT MAY LIMIT EARLY DISCHARGE IN LOW-RISK ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION
PRESENTED BY: Dr. Sandeep Krishnan, PGY5 - Cardiology
SUPERVISOR: Dr. Shuangbo Liu

Original investigation
EFFECTIONS OF A LONGITUDINAL, PEER-LED, MUSCULOSKELETAL ULTRASOUND CURRICULUM ON CANADIAN PHYSICAL MEDICINE AND REHABILITATION RESIDENTS
PRESENTED BY: Dr. Brett Cameron, PGY4 – PM&R
SUPERVISOR: Dr. Davyd Hooper
ABSTRACTS

Abstracts are organized in alpha order by resident’s last name
EVIDENCE BASED EVALUATION AND REDESIGN OF THE RENAL BIOPSY PROCESS AT WINNIPEG HEALTH SCIENCES CENTRE
Agarwal, A1, Wozny, L2, Hingwala J1,2
1Department of Internal Medicine, University of Manitoba, Winnipeg, MB, Canada
2Manitoba Renal Program, Winnipeg, MB, Canada

Introduction: Native renal biopsy is a useful tool in determining the etiology and providing clinical information in the management of both acute and chronic kidney diseases. The biopsy process has evolved throughout the years and with the involvement of imaging modalities and refinements in the core-retrieval process, it is generally a well-tolerated procedure. However, due to the vascular nature of the kidney, care must be taken to both identify and mitigate possible complications of the procedure, as they can confer morbidity and mortality.

Objectives: (1) Identify guidelines and evidence-based practices which should be informing our approach to renal biopsy (2) Liaising with stakeholders: develop a new renal biopsy package to reduce unnecessary testing, redundancies, and ensure the process is in line with best practices (3) Evaluate the efficacy of the new package.

Methods: Initial literature review was undertaken to identify best practices, established guidelines, as well as interventions used to pre-empt complications in other centers. Data was collated and summarized in a narrative format. A process map was created to establish current practices at Health Sciences Centre, to help identify stakeholders, and examine current forms. With this information and stakeholder input, a novel set of forms for the renal biopsy process including pre-biopsy medication management, necessary testing, admission orders and discharge instructions was generated. Upon agreement by the stakeholders, the new forms will be tested using human-factors engineering with a set of fictional patients to identify flaws. The package will then be implemented on a temporary basis to evaluate its performance, including successful completion rate of biopsy packages, time to completion, staff satisfaction with the new process, and evaluation of unintended complications as a result of the process change.

Results: Literature review has identified (1) A target blood pressure of under 150/100 for patients reduces bleeding complications (2) Periprocedural management of anticoagulation is largely guideline driven in the absence of large randomized trials (3) An observation period of 8 hours post biopsy has been shown to capture a majority of complications post-biopsy (4) While the use of DDAVP and additional hemostatic methods has been tried, there is no good evidence to support it as regular practice.

Conclusion: At this stage, the process of implementing the forms is underway, and data collection and analysis are pending. As such, the final conclusions of the biopsy process reform are yet to be seen.
THE PROGNOSTIC VALUE OF NON-INVASIVE VENTRICULAR RESERVE MEASUREMENTS IN PATIENTS WITH PULMONARY ARTERIAL HYPERTENSION
Dr. L Bath, Dr. D Christiansen, Dr. Ashish Shah

1Department of Internal Medicine, University of Manitoba, Winnipeg, MB, Canada
2Project Supervisor. Department of Internal Medicine, Section of Respiratory Medicine, University of Manitoba, Winnipeg, MB, Canada
3Department of Internal Medicine, Section of Cardiology, University of Manitoba, Winnipeg, MB, Canada

Introduction: Patients with pulmonary arterial hypertension (PAH) have a reduced ability to increase cardiac index (CI) in response to exercise due to impaired right ventricular reserve. Whether this impaired CI augmentation correlates with quality of life (QoL), or the risk of clinical deterioration in PAH is unknown. Impedance cardiography (ICG) can accurately and noninvasively measure CI in PAH.

Objectives: In patients with PAH, does the change in CI (ΔCI) with exercise, assessed with ICG, predict clinical worsening at 1 year?

Methods: Patients with WHO Group 1 PAH were recruited and performed a 6MWT according to ATS standards. A Non-invasive Cardiac System (NICaS, NIMedical) ICG was used to measure the cardiac index at rest and immediately post-test. The primary analysis will be the association between ΔCI and clinical worsening at 1-year. This interim analysis describes the association between ΔCI and 6MWD, QoL (using emPHasis-10 score), and REVEAL 2.0 risk score using Pearson correlation.

Results: 19 patients completed the 6MWT (mean±SD: age 60±12 years, disease duration 37±30 months, number of PAH-targeted therapies 1.9±0.8). Mean resting CI was 2.72±0.5 L/min/m². Following the 6MWT, the mean increase in CI was 1.36±1.09 L/min/m² (range -0.02-3.03 L/min/m²), due to increases in heart rate (13.2±11.4bpm, range -1 to 41bpm) and stroke volume (9.5±10.1ml, range -22.7ml). ΔCI was not associated with walk distance (r=0.26, p=0.14), REVEAL 2.0 risk score (r=0.12, p=0.33), or emPHasis-10 (r=0.24, p=0.16). CI at end-exercise was associated with walk distance (r=0.41, p=0.039). A greater heart rate augmentation was associated with poorer quality of life (r=0.41, p=0.039) and higher-risk REVEAL score (r=0.44, p=0.029), although this was not explained by a compensatory increase for impaired stroke volume augmentation.

Conclusion: In PAH, the change in cardiac index with exercise was not associated with 6MWD, NT-pro-BNP, QoL, or clinical risk score. Greater tachycardia with exercise was associated with worse QoL and clinical risk score. A 1-year follow-up is planned to determine whether this ΔCI has any potential role in predicting PAH progression.
RETROSPECTIVE REVIEW OF THE MANIFESTATION AND MANAGEMENT OF HEREDITARY ANGIOEDEMA IN PREGNANCY

Bi M¹, Kalicinsky C¹
Department of Internal Medicine, University of Manitoba, Winnipeg, MB, Canada

Introduction: Hereditary angioedema (HAE) is a genetic condition that results in attacks of painful and debilitating swelling, sometimes precipitated by specific triggers but often at random. Management of HAE comprises of the goals of resolving acute attacks, short-term prophylaxis for predictable triggers, and long-term prophylaxis for symptoms not adequately managed with on-demand treatment. Pregnancy adds an additional level of complication to HAE management, with the uncertain effect of pregnancy on the physiology of HAE, and greater limitations in available treatments due to a paucity of trials including pregnant women. It is uncertain whether the severity of angioedema attacks or the frequency alters in pregnancy with variable reports in observational studies, or whether HAE confers increased risk during pregnancy with regards to maternal/fetal adverse events.

Objectives: 1) Determining how pregnant HAE patients are managed in Canadian clinical practices, through documenting the use of different treatments for both acute attacks as well as for short- and long-term prophylaxis of HAE. 2) Determining how HAE presents during pregnancy. 3) Determining the rate of adverse events experienced during pregnancy by women with HAE.

Methods: Women over 18 years of age who have experienced at least 1 pregnancy after HAE diagnosis were screened for inclusion in the study. Patients were screened from the HAE treatment list in the adult allergy and immunology program at the University of Manitoba. Patient charts were reviewed for the frequency and characteristics of HAE attacks, any HAE treatments used during pregnancy, and adverse events in pregnancy & immediately postpartum. Data not able to be obtained by chart review was collected through patient interviews.

Results: Data collection and analysis are ongoing; results will be presented at Internal Medicine Research Day.

Conclusions: Data collection and analysis are ongoing; conclusion will be presented at Internal Medicine Research Day.
THE ASSOCIATION BETWEEN PRE-EXISTING DIABETES AND STILLBIRTH AND PERINATAL MORTALITY: A SYSTEMATIC REVIEW AND META-ANALYSIS
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²Department of Internal Medicine, University of Calgary, Calgary, AB, Canada

Introduction: Diabetes is one of the most common pre-existing maternal conditions complicating pregnancy. As the prevalence of diabetes continues to increase, primarily a consequence of the obesity epidemic and increased maternal age, the number of pregnancies affected by diabetes is also increasing. Pre-existing diabetes in pregnancy is associated with a higher risk of adverse outcomes, such as preterm delivery, large for gestational age neonates, and caesarean section, as well as increased rates of congenital anomalies, stillbirth, and early neonatal death. Studies have demonstrated that pregnant women with pre-existing diabetes have a four- to five-fold increased risk of stillbirth and perinatal death. Despite this well-recognized association between pre-existing diabetes and stillbirth, there remain gaps in our knowledge about the risk for stillbirth, including its incidence across different populations, and factors that may predict its occurrence.

To address this knowledge gap, and to synthesize the current available evidence, a systematic review and meta-analysis to examine the relationship between type 1 and 2 diabetes and the incidence of stillbirth, as well as factors predictive of this adverse outcome, is in process.

Objectives: The aim of this review is to investigate the relationship between pre-existing diabetes and the risk of stillbirth and perinatal mortality, and to identify independent maternal and fetal factors predictive of this outcome.

Methods: Using keywords related to diabetes and pregnancy outcomes, a search strategy was developed in collaboration with a medical librarian. The study protocol was registered in PROSPERO. The databases searched included Medline, EMBASE, Cochrane Database of Systematic Reviews, and Cochrane Central Register of Controlled Trials. Covidence software is being used to support citation screening, full-text review, removal of duplicates, and exportation of data and references. Titles and abstracts of all references identified from the initial search were screened based on specific inclusion and exclusion criteria. Full-text articles of potentially relevant publications are being reviewed, and inclusion criteria will be applied to identify eligible articles. Then, relevant information from each eligible study will be extracted using a pre-specified standardized extraction form. If sufficient data are available, a meta-analysis will be conducted using random-effects models.

Results: 7,780 citations were identified through the database search. Following the title and abstract screen, 403 studies have been selected for the full text review. Data collection and analysis is ongoing.

Conclusions: Data collection and analysis is ongoing.
ANALYSIS OF COMMUNITY SARS-COV-2 VIRAL LOAD CYCLE THRESHOLD VALUES TO PREDICT PANDEMIC WAVE TRAJECTORY

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\textsuperscript{d} Cadham Provincial Laboratory, Manitoba Health, Winnipeg, Manitoba, Canada

Introduction: Monitoring and forecasting coronavirus disease 2019 (COVID-19) pandemic wave trajectory is crucial for the informed development of sound public health response measures. We sought to determine whether collective severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) community viral load (CVL) as represented by aggregate reverse transcription polymerase chain reaction (RT-PCR) envelope gene (E-gene) cycle threshold (Ct) values could be used as a dependable factor in the assessment of the current status and trajectory of a wave of COVID-19 in a population.

Objectives: (1) to collect all positive E-gene Ct value sample data corresponding over the course over five pandemic waves; (2) to represent that data as a weekly mean of a defined pandemic wave so as to represent a weekly CVL; (3) to further categorize each weekly CVL as a function of age with a weekly pandemic wave; (4) to compare and seek any dependable relationship between weekly pandemic CVL data and provincial epidemiologic and surveillance incidence curves.

Methods: E-gene Ct value sample data from positive SARS-CoV-2 detections in Manitoba were collected from Cadham’s Laboratory Information Management System over the course of five pandemic waves. Ct values were then aggregated as a weekly mean of the defined pandemic wave and further categorized by age to represent CVL within each particular wave. This aggregate data would then be compared to Manitoba Health’s COVID-19 Epidemiologic and Surveillance incidence curves.

Results: Pending completion of data collection and analysis.

Conclusion: Pending completion of data collection and analysis.
EFFECTS OF A LONGITUDINAL, PEER-LED, MUSCULOSKELETAL ULTRASOUND CURRICULUM ON CANADIAN PHYSICAL MEDICINE AND REHABILITATION RESIDENTS

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3Department of Human Anatomy and Cell Science, University of Manitoba, Winnipeg, MB, Canada

Introduction: The utility of musculoskeletal ultrasound (MSUS) for diagnostic and therapeutic purposes has led to its rise in use among Physical Medicine and Rehabilitation (PM&R) physicians. In Canada, the lack of preceptors using ultrasound and lack of formal ultrasound teaching have been barriers to resident MSUS education. Existing research on implementing MSUS education into PM&R residency training has highlighted different approaches for delivering an effective educational experience, however, all have utilized some degree of faculty involvement.

Objectives: (1) to develop and implement an exclusively peer-led MSUS curriculum and (2) to evaluate its educational effects and reception among PM&R residents.

Methods: This study was a prospective cohort study following medical trainees as they participated in a peer-led MSUS curriculum over one postgraduate academic year. Participants consisted of first to fifth-year residents in the PM&R program at the University of Manitoba. All PM&R residents from the institution were eligible for the study. The peer-led MSUS curriculum consisted of 22 educational sessions incorporating didactic and hands-on MSUS instruction. The main outcome measures were a multiple-choice question test assessing participants’ MSUS knowledge and confidence and a Likert-scale survey that addressed participants’ perceptions of knowledge, exposure, and interest in MSUS.

Results: There were eight PM&R residents training at the initiation of the study with seven participants completing the study. 20 of the 22 educational MSUS sessions were completed as intended, for a total of 17.5 hours of content. Six out of the seven participants attended at least 15 of the 20 sessions while one participant participated in 8 sessions. There was a statistically significant increase in test scores from the pre-curriculum mean score of 11.0/20 (55.5%) to the post-curriculum mean score of 13.4/20 (67.1%) (paired t-test, p=0.035). Confidence in MSUS knowledge improved with participants indicating “I know” to an average of 5.6 questions on the pre-curriculum test compared to 11.7 questions on the post-curriculum test (t-test, p=0.003). Survey responses revealed a significant increase in self-perceived MSUS knowledge with completion of the curriculum (Wilcoxon signed-rank test, p=0.036). There was a significant improvement in confidence in ultrasound assessments of: hip (Wilcoxon signed-rank test, p=0.016), knee (p=0.009), ankle (p=0.013), shoulder (p=0.044), elbow (p=0.017), and wrist (p=0.027).

Conclusions: Our study demonstrated the effectiveness of an entirely peer-led PM&R MSUS curriculum in delivering educational sessions that improved resident knowledge and confidence in MSUS without the guidance of a subject expert. By establishing an MSUS curriculum we identified key components to a peer-led MSUS curriculum and provided a foundation which will foster further growth in MSUS knowledge within the residency program. Our experience may serve to inspire other residency programs lacking proficient MSUS staff to progress their MSUS learning through a peer-led learning model.
THE IMPACT OF COVID-19 ON INDIGENOUS TRAUMATIC BRAIN INJURY AND INPATIENT REHABILITATION.
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2EPI Research Inc., Winnipeg, MB, Canada
3First Nations Social Worker & Health Advocate, Winnipeg, MB, Canada

Introduction: Indigenous peoples’ vulnerability to medical conditions is established. Traumatic Brain Injury (TBI) is defined by the Centers for Disease Control and Prevention (CDC) as a head injury that disrupts brain function. In Canada, the most common mechanisms for TBI are falls, motor-vehicle accidents (MVA) and less commonly, assault. Alcohol use is the most prevalent modifiable risk factor. Indigenous data shows increased TBI incidence and increased assault and alcohol use, greater occurrence in rural locations and decreased personal protective equipment use. The first wave COVID-19 neurosurgical data shows decreased TBI incidence, increased falls, decreased car accidents and probable increased assault and alcohol use. It is not established if the COVID-19 TBI mechanisms shifts represent new risk factors for Indigenous TBI or if the decrease in TBI incidence is a true phenomenon for this cohort.

Objectives: (1) to clarify if the COVID-19 neurosurgical TBI trends, including mechanism shifts and reduced TBI incidence, are reflected in Manitoba TBI Rehab consults and admissions in the first, three waves of the COVID-19 pandemic; (2) to determine if the current TBI social services are appropriate for the COVID-19 pandemic based on shifts in patient demographics, length of stay or discharge disposition; (3) to identify if Indigenous peoples have an increased TBI incidence or a disparity of discharge disposition during the COVID-19 pandemic; (4) to clarify if there a demographic trend (age, sex, Indigenous status) correlated to need for TBI Rehab and if so, determine the TBI mechanism. By identifying these factors, we can advocate for appropriate intervention and support to mitigate or prevent moderate to severe TBI.

Methods: The Riverview Health Center TBI rehab unit is Manitoba’s only inpatient rehab for moderate to severe TBI. Data will be extracted from the centralized TBI consult and admissions database for the period of when Manitoba’s Public Health Orders were enacted (March 20, 2020) to the end of the third COVID-19 wave (June 30, 2021). Data will be mined from the three-year period prior to the pandemic (2017-2019) for comparison. We will examine demographics (age, gender, ethnicity), Indigenous TBI risk factors (living situation: rural, urban; EtOH use at injury), the TBI (mechanism of TBI, GCS score), and TBI rehab statistics (consult and admission rate, length of admission, discharge disposition, injury date, ICD code).

Results: Data collection and analysis is ongoing.

Conclusions: Pending data analysis completion, permission from the First Nations Health and Social Secretariat of Manitoba Health Information Research Governance Committee and under the direction of the Assembly of Manitoba Chiefs, we will work to understand the significance of Indigenous TBI and identify regional upstream contributing risk factors. This will allow us to move forward in the spirit of reconciliation with Indigenous communities by advocating for meaningful preventative resources and supports that facilitate the safe return of individuals with TBI back to their communities.
DISSEMINATED GONOCOCCAL INFECTION IN MANITOBA: A DESCRIPTIVE STUDY

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2Cadham Provincial Laboratory, Winnipeg, Manitoba, Canada
3Department of Community Health Sciences, University of Manitoba, Winnipeg, Man

Introduction: *Neisseria gonorrhoea* is a gram-negative diplococcal bacterium which is sexually transmitted. A mucosal infection with *N. gonorrhoea* often presents locally with a urethritis, cervicitis, proctitis and or pharyngitis, however when the infection becomes systemic a syndrome referred to as Disseminated Gonococcal Infection (DGI) occurs. Classically, this presentation has been associated with dermatologic lesions, polyarthritis, and a gonococcemia in about 50% of cases. Rare manifestations include endocarditis, meningitis, and osteomyelitis. Development of DGI from a localized infection in various publications is reported between 0.5-3%, and while the incidence of gonorrhea is rising significantly in Canada, the rate of DGI has been increasing at a rate higher than would be expected based on the increase in rate of uncomplicated infections alone. The reasons for this disproportionate increase remain unknown, as the the pathogenesis of the transition from uncomplicated to DGI is incompletely understood and there is a dearth of recent study. It is hypothesized that a prolonged time course without antimicrobial treatment, patient immunologic parameters, and organism pathogen factors relating to strain may predispose to development of DGI.

Objectives: The goal of this project is to conduct a descriptive analysis of confirmed DGI in Manitoba cases since 2016, to help better understand the cause of this changing epidemiology. More specifically, we are investigating the following: (1) Characterizing the epidemiology, including incidence and prevalence and how these are trending over time (2) Describing the symptomatology and clinical presentation associated with DGI (3) Outlining the diagnosis of DGI, and treatments received (4) Use laboratory molecular genotypic data to explore whether gonococcal strains causing DGI are associated with specific identifiable virulence factors.

Methods 136 cases of DGI occurring between January 1, 2016 and June 30, 2022 have been identified through data linkage with Cadham Provincial Laboratory, which processes all *N. gonorrhoeae* positive isolates (through culture, nucleic acid antigen testing, or both). Chart review of both the paper and electronic medical records from Health Sciences Centre, St. Boniface Hospital, as well as the Community Intravenous Program in Winnipeg, MB is in progress. Variables being collected include demographic data, case presentation, risk factors, comorbidities, diagnostic testing performed, and treatment received. Descriptive statistical analyses as well a determination of prevalence and incidence of infection will be performed used R statistical software.

Results: Analysis is ongoing.

Conclusions: To our knowledge, this is the largest descriptive study of DGI, which will contribute to the understanding of these infections globally. Locally, this study will have the impact of describing the recent epidemiologic trends regarding DGI in Manitoba.
MEDICAL MANAGEMENT OF EMPHYSEMATOUS GASTRITIS: A CASE REPORT
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²Department of Diagnostic Radiology, University of Manitoba, St. Boniface Hospital, Winnipeg, Manitoba, Canada

A 95-year-old man presented to hospital with altered mental status, sepsis, and coffee-ground emesis. His chest X-ray showed gas along the lesser curvature of the stomach prompting abdominal computed tomography which demonstrated intramural gastric air. This patient’s clinical presentation and CT findings were suggestive of emphysematous gastritis (EG). He was successfully managed with intravenous proton pump inhibitor and broad-spectrum antibiotics. Details of the case are presented to encourage the early diagnosis of EG which may make conservative management more successful.

Background: Emphysematous gastritis (EG) is a potentially fatal medical condition that involves the invasion of the gastric wall by gas-producing bacteria. The most common EG causing bacteria include Streptococcus species, Escherichia coli, Enterobacter species, Clostridium species, Pseudomonas aeruginosa, Staphylococcus aureus. EG presents as sepsis or shock with associated abdominal pain and carries an estimated 60 percent mortality rate. EG was first reported in 1889 by Fraenkel, and to date is considered an extremely rare medical condition lacking standardized treatment protocols.

Objective: Timely diagnosis and medical management of EG can result in more favorable patient outcomes, avoid the need for emergent surgery, and prevent post-operative complications. Herein, we describe a case of EG with successful conservative management.
ONE-YEAR OUTCOMES IN PATIENTS WHO UNDERWENT CORONARY INTRAVASCULAR SHOCKWAVE LITHOTRIPSY FOR HIGHLY-CALCIFIED CORONARY LESIONS
Sarah Gibbs¹, Evan J Wiens¹,², Kunal Minhas¹,²
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² Section of Cardiology, University of Manitoba, Winnipeg, Manitoba

Introduction: Coronary intravascular lithotripsy (IVL) is a novel technique which delivers localised sonic pressure waves that circumferentially disrupt vascular calcium with minimal soft tissue injury. Minimal data examine the real-world long-term outcomes of patients undergoing IVL outside of a clinical trial setting. We previously published a study examining the immediate and 30-day outcomes in a real-world IVL cohort which found nearly 100% angiographic success and low complications rates at 30 days.

Objective: Define outcomes of the same high risk IVL cohort over a 1-year follow up period.

Methods: We conducted a retrospective review of patients who underwent IVL at a regional referral cardiac catheterization laboratory from September 1, 2019-January 31, 2021. Baseline demographic, procedural, and angiographic data was collected from the catheterization laboratory database. Primary outcome: need for target vessel revascularization (TVR) within the 1-year following the index procedure. Secondary outcomes: cardiovascular mortality; freedom from further coronary intervention on any coronary artery.

Results: Of the 50 patients included in the initial cohort, 47 patients (61 lesions) survived index hospitalization and were included in the study. The median age of the cohort was 71 years; 38% of patients were female. 72% of patients presented with non-ST elevation ACS as the indication for initial IVL. 26% of patients underwent IVL for lesions of the left main coronary artery, and 28% underwent IVL for in-stent restenosis (ISR). Of a total of 47 patients (61 lesions), 5 (10%) received repeat PCI within 12 months, primarily for recurrent angina. Of these, the culprit vessel in 3 patients was a vessel which was not previously treated with IVL. The other 2 patients (4% of patients, 3% of lesions) required TVR within 1 year; 96% of patients who underwent IVL remained free from repeat intervention on the same vessel. One patient suffered an MI within 1 year; the culprit vessel in this case had not previously been treated with IVL. Two patients died of non-cardiovascular causes. There was no incidence of cardiovascular mortality in the cohort.

Conclusion: The low rates of TVR in our study support the use of IVL as a sustainable method of treating calcified coronary lesions, even in patients with ACS.
MATERNAL AND FETAL OUTCOMES OF PREGNANCY IN THE SETTING OF MATERNAL CARDIOVASCULAR DISEASE, MANAGED BY MULTIDISCIPLINARY CARE IN MANITOBA

S Gibbs¹, R Ducas², J Hunt³, C Labos⁴

¹Department of Internal Medicine, University of Manitoba, Winnipeg, Manitoba
²Section of Cardiology, University of Manitoba, Winnipeg, Manitoba
³Division of Obstetrics and Gynecology, University of Manitoba, Winnipeg, Manitoba
⁴Queen Elisabeth Health Complex, Montreal, Quebec

Introduction: Access to specialized care can improve outcomes for mother and fetus in the setting of maternal cardiac disease, however distance to care can has not been evaluated in cardio-obstetric outcomes.

Objective: The objective of our study was to characterize the maternal and fetal outcomes at our center, covering a large geographic area.

Methods: A retrospective cohort study for cardio-obstetric patients cared for at the tertiary centre in Winnipeg, Manitoba, Canada between March 2018-March 2021. Data was included for all patients where both maternal and fetal outcome data was available.

Results: We included 112 viable pregnancies and 114 liveborn neonates. Maternal cardiac pathology was found to be relatively balanced with 38% of pregnancies with congenital heart disease and acquired heart disease in 44%. Forty-one (36 %) patients lived outside Winnipeg, where cardio-obstetric care was provided. The average distance from Winnipeg was 381km, with the farthest distance being 1604 km. The most common mWHO score was II (25%). Thirty pregnancies (27%) experienced an adverse cardiac event, with one postpartum maternal death related to peripartum cardiomyopathy. Most infants were born at term (81%). There were no cases of fetal/neonatal death. Twenty neonates (17%) required admission to the neonatal intensive care unit. Six infants (5.2%) experienced an adverse neonatal event. Multivariate analysis demonstrated that the presence of acquired heart disease predicted maternal adverse cardiac events (OR of 6.7, 95% confidence interval 1.48 to 29.84, p = 0.013). In addition, late presentation to care (>20 weeks) predicted adverse fetal outcomes (OR of 3.88, 95% confidence interval 1.08 to 13.89, p = 0.037). Distance from specialized care center was not associated with any adverse outcome.

Conclusion: Patients with acquired heart disease had worse maternal outcomes, while late presentation to care predicted worse fetal outcomes. Distance from our multidisciplinary care site was not associated with worse maternal, fetal or neonatal outcomes in this study.
PREVALENCE OF SARCOIDOSIS IN NORTHWESTERN ONTARIO: A CROSS-SECTIONAL STUDY

Gonzalez, K1, Mofid, A3, Neilipovitz, J2.
1 Max Rady School of Medicine, Winnipeg, MB
2 Northern Ontario School of Medicine, Thunder Bay, ON
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Introduction: Sarcoidosis is a multisystem disorder of unknown etiology and pathogenesis that has a high degree of clinical and epidemiologic heterogeneity12,13. The prevalence of sarcoidosis varies significantly from nation-to-nation. For example, there are countries such as Japan and South Korea which have relatively low rates of sarcoidosis (n= 1 per 100'000) in contrast to nations like Sweden and Canada where the rates are comparatively much higher (n=140 to 160 per 100 00)2. In 2015 the prevalence of sarcoidosis in Ontario was estimated to be 143 per 100 000, which represents an increase of 116% since 19964. The collective clinical experiences of local Thunder Bay physicians pertaining to this multi-organ disease culminated in the desire to investigate what is subjectively felt to be a higher-than-normal prevalence. If there is indeed an increased incidence of sarcoidosis within the Thunder Bay district, our study will serve as a pilot for future research aimed at exploring reasons for this variation.

Objectives: (1) To determine the 10-year incidence of sarcoidosis within northwestern Ontario. (2) To determine differences in prevalence as a function of both age and gender.

Methods: The study design will be in the form of a cross-sectional chart analysis of patients with sarcoidosis in northwestern Ontario spanning over the last 10 years. A priori analysis determined a minimum sample size of 74 participants for this study given a p-value of 0.05. Using the hospital’s electronic record, a participant list will be compiled through the identification of patients who have undergone a diagnostic tissue biopsy. Once we identify patients with non-caseating granulomas, we will gather additional information related to their gender, age demographic, and stage of disease based on CT imaging. Next, we will proceed to data analysis to determine the 10-year incidence of sarcoidosis and either reject or fail to reject the study’s hypothesis. Sub-cohort analysis will also be done to identify inter-group differences in prevalence based on age demographic and gender.

Results: Pending completion of study.

Conclusion: In addition to determining the disease prevalence, we believe that the secondary sub-group analysis of this study could generate exploratory data which is required to advance the current state of knowledge on sarcoidosis.
ASSESSING CORRELATION BETWEEN AXITINIB AND INTRACRANIAL HEMORRHAGE IN RCC BRAIN METASTASIS
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Introduction: Renal cell carcinoma (RCC) more commonly affects older individuals, and it is twice as likely to be seen in males. Risk factors such as obesity, high blood pressure, smoking, and genetics are associated with development of RCC. Relative survival of those affected by distant metastatic kidney cancer is estimated to be around 12% at 5 years. The incidence of brain metastasis in those with RCC is anywhere between 2% to 17%. Initially, RCC brain metastasis is asymptomatic and can only be discovered on screening brain imaging. As the disease progresses about 80% of individuals with RCC brain metastasis develop symptoms such as headache, seizure, and altered consciousness. Symptom development may be due to edema around the tumor. Traditional cytotoxic treatment is not effective in managing RCC brain metastasis due to presence of blood brain barrier. Surgery and radiation therapy are mainstays of treatment. Highly efficacious medical therapy for RCC brain metastasis is currently unavailable. Immunotherapy and vascular endothelial growth factor (VEGF) inhibitor therapy are utilized for treatment of RCC brain metastasis. An uncommon but serious side effect of VEGF inhibitor therapy is hemorrhage at the site of cancer or its metastasis. It is hypothesized that necrosis at tumor site and increased vascular fragility are amongst contributing factors to development of hemorrhage when undergoing VEGF inhibitor therapy. Axitinib is a chemotherapeutic agent that belongs to the VEGF inhibitor family.

Objective: To assess correlation between VEGF inhibitor therapy with intracranial hemorrhage in an individual with RCC metastasis to the brain.

Method: After obtaining permission a retrospective chart review will be conducted.

Results: Results of this study are pending. We aim to report on onset, duration, progression of symptoms, patient presentation, radiological findings, and risk factors in an individual presenting with localizing neurological findings in the setting of RCC brain metastasis that had been started on Axitinib therapy.

Conclusion: An optimal medical treatment for RCC with brain metastasis currently does not exist. VEGF inhibitor therapy is amongst available options for treatment of RCC. In case of RCC brain metastasis VEGF inhibitor therapy carries an infrequent but life-threatening side effect of intracranial hemorrhage. Phase 1 and 2 trials assessing Axitinib in RCC, excluded those with brain metastasis. Clinical trials looking at VEGF inhibitor in those with brain metastasis only included 120 patients and used other VEGF inhibitor agents than Axitinib. Correlation between Axitinib therapy in individuals with RCC brain metastasis is limited to only case studies. Her we set to report a case of an individual with RCC brain metastasis that was started on Axitinib treatment and presented to hospital with localizing neurological symptoms.
REAL WORLD EXPERIENCE WITH VENETOCLAX AND OBINUTUZUMAB: THE MANITOBA CHRONIC LYMPHOCYTIC LEUKEMIA CLINIC EXPERIENCE

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Introduction: Chronic lymphocytic leukemia (CLL) is a common hematological malignancy in Western countries. It has an average age of diagnosis of 72 years with a male predominance. In numerous large and randomized trials, it has been demonstrated that chemotherapy is inferior to novel targeted therapies in treatment of higher risk patients. Emerging evidence has demonstrated that a novel combination of Obinutuzumab (Obin) given monthly for six months combined with Venetoclax (Ven), for a one-year duration, has shown superior and progressive free survival compared to Chlorambucil-Obin in first line treatment of CLL patients who have comorbidities. While effective, the initial Ven monotherapy trials did show limited number of patients developing tumor lysis syndrome (TLS) resulting in death. Thus, initiation of Ven therapy now requires a minimum of a 5-week ramp-up period to reach the maximum dose. Furthermore, the high rates of infusion related reactions and the duration of the infusion with Obin along with the Ven ramp-up can potentially restrict equitable distribution of the Ven-Obin regimen.

Objectives: Given our unique position as the first province in Canada to adopt this novel regimen, we sought to understand the (1) CLL patient demographic being treated with Ven-Obin in Manitoba, (2) to describe the real-life onboarding experience, (3) location of treatment delivery, (4) treatment response (hematologic and clinical response), and (5) treatment side effects outside of the confines of a clinical trial.

Methods: We conducted a retrospective chart review via Cancercare ARIA on twenty-five patients that had started treatment with Ven-Obin. We collected baseline demographics, molecular profiling and cytogenetics, baseline complete blood count and TLS markers, starting Ven dose, Obin transfusion reactions, location of treatment delivery, side effects (including TLS, treatment delays, infections, and cytopenias), and treatment response.

Results: Twenty-five patients started Ven-Obin treatment. The average age of diagnosis was 61 with an average age of 68 at Ven-Obin initiation. 60% (15/25) were male patients with 68% (17/25) being RAI stage II or greater at time of treatment. Most patients (60%, 15/25) had unmutated IGHV status which is associated with a worse prognosis. The most common starting dose of Ven was 20 mg and the overwhelmingly majority received treatment in urban centres (88%, 22/25) in Manitoba. Further data collection and analyses is ongoing.

Conclusions: Most patients in Manitoba are receiving the Ven-Obin treatment protocol in urban centres. Pending full completion of data collection and analyses, we hope our findings will potentially modify and improve the treatment protocol to not only provide more equitable and inclusive care for CLL patients across the province of Manitoba, but also serve as a guide to other Canadian provinces as they adopt Ven-Obin into clinical practice.
HOST GENE VARIANTS ASSOCIATED WITH PNEUMONIA IN PATIENTS LIVING WITH HUMAN IMMUNODEFICIENCY VIRUS – A REVIEW OF THE LITERATURE

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Introduction: People living with human immunodeficiency virus (HIV) have significantly higher rates of morbidity than HIV-negative people, even with strict adherence to anti-retroviral therapy and undetectable viral loads. Lung disease represents a large portion of the burden of non-AIDS chronic diseases in the HIV-infected population. Recurrent pulmonary infections such as Pneumocystis jirovecii pneumonia (PCP) induce permanent lung damage and appear to contribute significantly to chronic lung disease in these patients. However, there is substantial variability in which patients develop pneumonia after exposure to the same microbial environment. The reasons for this are unclear. Differences in host genetics may account for this difference in susceptibility to pneumonia. Identifying the genetic determinants may lead to identification of therapeutic targets to reduce the susceptibility of HIV patients to pneumonia.

Objectives: Review the literature to identify host genetic polymorphisms associated with the development of PCP in patients with HIV.

Methods: PubMed, OVID, and Web of Science databases were searched for quantitative, analytical studies of adult humans with HIV, in which the presence of a host gene mutation was compared against PCP incidence, prevalence, or severity. Hospital-acquired cases were excluded, as were case reports and review articles.

Results: Eight articles met criteria for inclusion. Among these, polymorphisms in a total of 23 genes had been tested for an association with PCP incidence or prevalence in adults living with HIV. Polymorphisms in three genes (MBL, IL4, and SLC40A1) were associated with increased susceptibility with statistical significance in at least one study each.

Conclusions: Common mutations disrupting the synthesis or function of mannose-binding lectin, interleukin-4, and ferroportin appear to be associated with increased susceptibility to PCP in patients with HIV. Further research is required to determine whether these may serve as therapeutic targets to reduce the frequency of PCP in select patients with HIV.
OUTCOMES OF MEDICOLEGAL CASES INVOLVING COLONOSCOPY IN A NATIONAL CANADIAN LEGAL DATABASE FROM 2011-2021
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Introduction: Colonoscopy is the most frequently performed medical procedure with a variety of diagnostic and therapeutic indications. Litigation and medico-legal consequences are a common concern for physicians of all specialities but are of particular concern in the performance of procedures. There have been no research studies in Canada surveying medico-legal cases that have resulted from the performance of colonoscopies. We aim to perform the first Canadian retrospective analysis in this area.

Objectives: (1) To evaluate the characteristics of recent litigation in Canada relating to colonoscopies, including the number of cases, reasons for litigation and case outcomes

Methods: The legal database CanLii will be reviewed for litigation relating to the performance of colonoscopies. The database will be searched for the terms “colonoscopy” and “sigmoidoscopy” to find appropriate medicolegal cases, limited to the past decade (2011-2021) to ensure recency. Once identified, cases will be coded for characteristics including the age and sex of the plaintiff, the province where the case was litigated, the specialty of the defendant practitioner, the number of defendants, whether the colonoscopy was performed in a hospital or ambulatory care facility, the reason for the litigation (lack of informed consent, procedural complication, missed lesion, medication error), details of the reasons for the litigation such as anatomic location of any missed lesion, the successful party, and the value of any monetary award to the plaintiff. A logistic regression will be performed evaluating the above characteristics to develop a prediction model for the likelihood of a successful plaintiff outcome.

Results: Data collection & analysis remain ongoing.

Conclusion: Data collection & analysis remain ongoing.
IDENTIFYING SOCIAL FACTORS THAT MAY LIMIT EARLY DISCHARGE IN LOW-RISK ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION

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Introduction: Through the utilization of the Zwolle Risk Score (ZRS) in identifying low risk STEMI and early discharge pathways, patients have been safely discharged within 48 hours.

Objectives: Our study aimed to determine the proportions of low-risk STEMI patients with favorable and unfavorable social parameters for early discharge.

Methods: From an existing provincial cardiac catheterization laboratory database, all patients who presented with STEMI over a 9-month period from November 2019 to July 2020 were reviewed (n=452). Approximately 59% of patients were low-risk STEMI, defined as ZRS ≤3, and included in the study.

Results: From review of individual social variables, patients were analyzed in 2 groups: favorable (n=111, 55%) and unfavorable (n=92, 45%) for potential early discharge. We defined favorable factors as urban location, employed or retired, lives alone or with family/friend, independent mobility or using gait aid, no communication barriers, no homecare or existing client with housekeeping or hygiene assistance, no financial aid or community resources, no concerns at discharge, and demonstrated knowledge, understanding, and adherence to prescribed medications. Of the patients that were unfavorable for early discharge, the most common reason was rural location (n=66, 72%). Additionally, 41% of patients had more than 1 unfavorable factor. Approximately 7.9% of patients were unemployed and 36 (18%) lived alone, in a group home, or assisted living. No patients were wheelchair or bedbound and barriers to effective communication were identified in 4.5%. Homecare services were required in eight patients (3.9%), with four patients requiring daily homecare for medication administration and the other four requiring weekly homecare for hygiene and housekeeping. Seven patients (3.4%) received financial assistance. On admission, 8.4% of patients self-identified concerns regarding discharge and 9.0% of patients did not demonstrate a good understanding of their condition and medications. The composite outcome of 30-day mortality, recurrent MI, unplanned PCI, stroke, and hospitalization occurred in 5 (2.5%) with unfavorable characteristics for early discharge and 6 patients (3.0%) with favorable characteristics for early discharge.

Conclusions: In low-risk STEMI, implementation of an early discharge protocol may be safe with carefully selected social parameters. Additionally, intensified outpatient resources may be directed to support patients without favorable conditions in discharge planning.
PREVALENCE OF CHRONIC SPONTANEOUS URTICARIA REQUIRING OMALIZUMAB THERAPY IN MANITOBA’S INDIGENOUS AND NON-INDIGENOUS POPULATION.

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Introduction: Chronic spontaneous urticaria (CSU) is a common autoimmune disorder that predominantly affects women in their middle age. Although CSU is not a lifespan-limiting condition, its main symptom of pruritus affect functioning and general wellbeing of patients with the disease and can be disabling. It can also impose a significant financial burden to the individual, and by extension, society. Omalizumab is a recombinant monoclonal antibody against immunoglobulin E used when symptoms are inadequately controlled with conventional pharmacologic therapy with high-dose antihistamines. Anecdotally, there appears to be a higher proportion of patients with CSU requiring omalizumab who are of Indigenous descent (i.e., either recognized as having status under the Indian Act, as well as those who self-identify to be of First Nations, Metis, or Inuit descent) compared to those of non-Indigenous descent.

Objectives: This study aims to determine the prevalence of CSU requiring omalizumab therapy in patients of Indigenous descent, compared to the prevalence of CSU requiring omalizumab therapy in the non-Indigenous population that are treated at the Health Sciences Centre (HSC) Allergy and Immunology Clinic from 2018 onwards.

Methods: A list of patients who have been treated with omalizumab for CSU from 2018 onwards as identified on the Accuro electronic medical record (EMR) software was obtained from HSC medical records, as well as a list of First Nations and Inuit patients receiving coverage through the Non-Insured Health Benefits (NIHB) program for omalizumab therapy. Prevalence of CSU requiring omalizumab therapy was calculated for Indigenous and non-Indigenous populations using the 2021 Census data, then stratified based on age and sex. Internal standardization will be performed based on the non-Indigenous population studied. Information such as health region of residence, urban and rural demographics, and efficacy of omalizumab-therapy based on standardized symptom scoring systems was be collected and compared.

Results: 0.002% (n=25) of the non-Indigenous population required omalizumab therapy at HSC since 2018 compared to 0.0004% (n=1) of the Indigenous population. 72% (n=18) of the non-Indigenous population were female; 100% (n=1) of the Indigenous population were female.

Conclusions: The data does not support our hypothesis. However, although the initial data analysis may appear as though the prevalence of patients requiring omalizumab therapy is lower in the Indigenous population, limitations in data specifically in the difficulty of accurately identifying those of First Nations, Metis, or Inuit descent who are not covered by the NIHB program may falsely increase the prevalence of “non-Indigenous” patients and decrease the prevalence of “Indigenous” patients requiring omalizumab therapy.
DOES SYSTEMIC FOLLOW-UP IMPROVE OUTCOMES IN INDIVIDUALS WITH LYNCH SYNDROME: A POPULATION-BASED STUDY.
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Introduction: Lynch syndrome (LS) is an autosomal dominant inherited condition that is associated with lifetime risk of up to 60% for colorectal cancer (CRC) as well as for multiple other cancers. As a result, the diagnosis is often stress-inducing and patients require frequent follow-ups such as screening colonoscopies every 1-2 year beginning from early adulthood. The Hereditary Gastrointestinal Cancer clinic (also known as Lynch Clinic) was initiated at CancerCare Manitoba in February 2018. It is a multidisciplinary clinic that includes medical oncology, gastroenterology, and genetics. Approximately 300 individuals in Manitoba have been diagnosed with LS, and the Lynch clinic follows roughly two thirds of the entire group. It provides regular follow-up and information for Manitoba residents diagnosed with LS. This includes discussion of current information about this condition, ensuring appropriate screening tests are done, providing referrals where needed, and facilitating genetic testing for at-risk relatives. As LS is more than a single disease entity, patients have complex needs and may need extra help to navigate through our complicated medical system. This study is designed to evaluate the impact of the Lynch clinic on patient outcomes and whether systemic follow-up improve patients’ satisfaction and understanding of the condition.

Objectives: (1) to evaluate the impact of the Lynch clinic on patient outcomes in individuals diagnosed with LS. This will include patients’ satisfaction with the health care services they received from the Lynch clinic, patients’ understanding of the Lynch syndrome, their perceived unmet needs as well as their day-to-day functioning (includes stresses related to diagnosis, coping with cancer, bowel function, psychological outcome, health care quality of life etc); (2) to assess whether regular follow-ups improve patients’ adherence to cancer screening, use of aspirin/oral contraceptives and promote healthy lifestyles (ex. smoking cessation, increased physical activity), and (3) to assess the impact of the COVID-19 pandemic on the changes to patients’ access to health care, use of telehealth/virtual appointments, and delays in cancer screening.

Methods: We rely on the combination of self-administered questionaries and electronic medical record (ex. ARIA) for data collection. The questionnaires include demographic information, descriptive questions to assess patients’ satisfaction, understanding of LS, day-to-day function, and their perceived unmet needs, as well as lifestyle factors such as the use of medications, cigarette smoking, alcohol consumption and physical activity. Electronic medical records (ex. ARIA) can be employed to supply additional information (with patients consent) such as type of mutation, duration of diagnosis and cancer diagnosis. Descriptive statistics will be used to describe the demographic characteristics, and characteristics on lifestyle, genetic mutations, and patient satisfaction with the Lynch clinic. Univariate and multivariate logistical regression analysis will be performed to assess independent associations with clinic attendance.

Results: Pending completion of data collection/analysis.
Conclusions: Data collection & analysis is ongoing.
EVALUATION OF INFECTIOUS COMPLICATIONS IN PATIENTS WITH MYELODYSPLASTIC SYNDROMES: A PROSPECTIVE COHORT STUDY FROM THE CANADIAN MDS REGISTRY

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Introduction: Myelodysplastic syndromes (MDS) comprise a spectrum of clonal hematopoietic stem cell disorders characterized by abnormal cell proliferation and differentiation leading to cytopenias and increased risk of progression to acute myeloid leukemia (AML). Infections are a significant cause of morbidity and mortality in patients with MDS. Infection frequency and severity and the use of antimicrobial prophylaxis in the context of newer, less intensive therapies such as hypomethylating agents is limited to small and retrospective studies. Although established guidelines regarding infection prophylaxis exist for patients receiving intensive chemotherapy or bone marrow transplantation, there is a lack of consensus regarding the use of prophylaxis in neutropenic MDS patients treated with less intensive therapies.

Objectives: 1) Describe the prevalence and severity of infectious complications in a Canadian cohort of patients with MDS. 2) Describe patient, disease and treatment factors that increase infection risk in patients with MDS.

Methods: We will evaluate patients with MDS enrolled in the prospective national MDS registry (MDS-CAN) between 2006 to 2021. To evaluate the impact of infection on patients with MDS, we will characterize the percentage of MDS patients who experience fever/infection, antibiotic use, hospitalization for fever/infection, or death due to infection. This will be evaluated in the entire cohort and will be further analyzed by neutropenia status (ie, neutropenic vs. non-neutropenic patients) and MDS treatment. We will also evaluate the time from diagnosis to fever/infection, antibiotic use, hospitalization for fever/infection, death due to infection, and will evaluate the mean/median number of episodes per patient per year. We will perform a cox regression analysis to evaluate the association of patient, disease and treatment factors with infection. The model will include all variables known or hypothesized to be associated with infection risk. We will also conduct a secondary analysis using a competing risk model to account for patients who may not have exposure to the outcome due to competing events such as death from treatment progression or other cause.

Results: Data collection and analysis is ongoing.

Conclusion: Our data will help inform future, prospective studies of targeted infection prophylaxis strategies. To our knowledge, our multi-centre study is the first to characterize infectious events in a Canadian MDS population.
DELAYED SYMPTOM ONSET-TO-FIRST MEDICAL CONTACT IN ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION IS ASSOCIATED WITH MORTALITY

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Introduction: Early reperfusion in ST-segment elevation myocardial infarction (STEMI) improves outcomes. Prior studies have focused on reducing time from first medical contact (FMC) to coronary intervention (FMC-Device). However, the time from symptom-onset to FMC (Sx-FMC) represents a large component of the total ischemic time and is an important contributor to morbidity and mortality.

Objectives: The objective of this study was to analyze how Sx-FMC and FMC-Device times impact 1-year mortality and the need for repeat PCI within 1 year.

Methods: Data for 616 STEMI patients between January 2013 and December 2014 was collected. Patient demographics were recorded via chart review.

Results: The median age was 61 years (IQR 53-70), and 22% of patients were female. Of the total patients, 40% of STEMIs were anterior, 78% of patients presented for primary PCI, while 22% of patients received Tenecteplase (TNK). Median Sx-FMC, FMC-Device, and total ischemic times were 120 minutes (IQR 55-262), 97 minutes (IQR 67-176), and 269 minutes (IQR 146-472), respectively. Shorter total ischemic times (< median) were associated with a reduced 1-year mortality (1% vs 5%, p<0.01). Further, lower odds of 1-year mortality (OR 1.06, 95% CI 1.01-1.10, p<0.01) was associated with a shorter Sx-FMC time, but was not associated with a shorter FMC-Device time (OR 1.02, 95% CI 0.96-1.09, p=0.45).

Conclusions: In this analysis, shorter Sx-FMC times were associated with a reduced 1-year mortality. The Sx-FMC time period should be a key area of focus in order to reduce mortality in STEMI. Educational efforts need to be made to increase public awareness about STEMI symptoms and allow them to promptly seek medical care.
INTRA-OBSERVER AND INTER-OBSERVER VARIABILITY IN CORRECTED QT INTERVAL MEASUREMENT AMONG ADULT PATIENTS WITH LONG QT SYNDROME

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Introduction: The electrocardiogram (ECG) remains the focal point in the diagnostic evaluation of Long QT Syndrome (LQTS). The largest contributor to its diagnosis remains the measurement of the corrected QT (QTc) interval. Many physicians are unable to accurately calculate the QTc interval; variabilities in its measurement may result in dire consequences for this inherited arrhythmia, especially if patients are not diagnosed due to underestimation of the QTc interval. There is limited evidence regarding the accuracy and variability in the measurement of the QTc for adult patients with LQTS.

Objectives: To analyze both the intra-observer as well as the inter-observer variability in QTc interval calculations among clinicians assessing adult LQTS patients in the Inherited Arrhythmia Clinic (IAC) (St. Boniface Hospital, Winnipeg, Manitoba).

Methods: This is a retrospective case control study involving approximately 60 adult patients (≥ 18 years of age) presenting to the IAC for evaluation of LQTS (since 2015). Data will be obtained from the IAC online secure database at St. Boniface Hospital. Inclusion criteria are individuals 18 years or older with LQTS and available stress test results. Exclusion criteria include any individual under 18 years of age, pre-existing ventricular paced rhythm, arrhythmia (atrial fibrillation, premature atrial, junctional, or ventricular complexes), conduction disorder (complete left or right bundle branch block, interventricular conduction delay (IVCD), or atrioventricular block), or documented structural heart disease. The control group will include individuals 18 years or older who have not been diagnosed with LQTS through the IAC and who do not meet exclusion criteria. Study arms include five patients each. Baseline patient demographics and medication history will be obtained from the database. All patient data will be anonymized. Investigators will include: two IAC Cardiac Electrophysiologists, two non-IAC Cardiologists, two trainees who will be taught to measure QTc intervals, and two trainees who will not be taught. A standardized protocol for QTc calculation will be utilized.

Results: Data acquisition is ongoing. There are no finalized results to date.

Conclusions: Pending.
URBANICITY AND INFLUENZA VACCINATION RATES AND PERCEPTIONS AMONG INDIVIDUALS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE
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Introduction: Uptake of influenza vaccines among Canadians with chronic obstructive pulmonary disease (COPD) remains low, despite their increased vulnerability. Urbanicity acts as an important social determinant of health. However, most studies define urbanicity as a binary variable (urban/rural) when each region may exhibit unique socioeconomic effects and differs in the availability of health services. Using expanded definitions of urbanicity may offer further insights in health service utilization.

Objectives: [1] estimate the influenza vaccination rate among individuals with COPD by urbanicity, [2] test the association between influenza vaccination and urbanicity, and [3] describe self-reported reasons why individuals with COPD had not received their seasonal influenza vaccine.

Methods: We utilized the nationally representative 2019 Canadian Community Health Survey (CCHS). We included Canadians aged ≥35 years with self-reported COPD, without asthma, and known influenza vaccination status. Urbanicity was defined as: urban, peri-urban, or rural based on the Canadian census. Weighted frequencies were used to estimate proportions. To evaluate factors associated with influenza vaccination status, adjusted odds ratios (aOR) with 95% confidence intervals (95%CI) were estimated using multivariable logistic regression with bootstrapped standard errors.

Results: There were 2,071 CCHS survey participants aged ≥35 years who had COPD, but no asthma, with known influenza vaccination status, representing 495,906 Canadians. We estimated 58.3% (95%CI: 51.6, 64.7) of urban, 45.9% (95%CI: 36.2, 55.9) of peri-urban, and 52.6% (95%CI: 45.8, 59.2) of rural residents with COPD received their influenza vaccine in 2019. Unadjusted comparisons found that peri-urban residents had lower odds of receiving their influenza vaccine (OR for peri-urban vs. urban = 0.61, 95%CI: 0.37-0.99), but not rural residents (OR for rural vs. urban = 0.79, 95%CI: 0.54-1.17). When adjusted for confounders, there were no significant differences in vaccination status between peri-urban vs. urban residents (aOR = 0.66, 95%CI: 0.40-1.09). Having a regular healthcare provider was positively associated with vaccination status (aOR = 2.68, 95%CI: 1.47-4.89). Among unvaccinated Canadians with COPD, many viewed the influenza vaccine as unnecessary for their health: urban (40%), peri-urban (32%), and rural (49%). Not believing or being unsure of the benefits of vaccination was more commonly reported by peri-urban (40%) than urban (13%) or rural (13%) non-vaccinated Canadians with COPD. Lack of time was reported highest among urban residents (16%) than rural (8%) or peri-urban (3%) residents.

Conclusion: Only half of Canadians with COPD received their influenza vaccine. Having a regular healthcare provider was positively associated with influenza vaccination. Urbanicity was not significantly associated with overall influenza vaccination uptake. However, multiple reasons for not receiving the influenza vaccine differed by urbanicity.
THE IMPACT OF PATIENT-PROVIDER LANGUAGE DISCORDANCE IN PRIMARY CARE: A RETROSPECTIVE COHORT STUDY OF HOME CARE RECIPIENTS IN ONTARIO, CANADA
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Introduction: A growing number of Canadians are living in a minority language situation, which is said to occur when an individual’s mother tongue is not spoken by the majority of the population and is not recognized as an official language. In Canada, this generally refers to Anglophones living in Quebec, Francophones living outside of Quebec, as well as all other Canadians who speak a language other than English or French (i.e., Allophones). Patients who live in minority language situations face barriers to accessing care and generally receive healthcare services of lower quality and safety. However, it is not known whether such disparities are due to language barriers and, if so, whether outcomes can be improved by providing patients with care in their mother tongue.

Objectives: 1) Calculate rates of ED visits, hospitalizations, and 1-year mortality for home care recipients in Ontario, Canada. 2) Determine whether these outcomes are modified by patient language and/or the language in which patients receive primary care.

Methods: We conducted a population-based retrospective cohort study using administrative databases held at ICES. We included residents receiving long-term publicly funded home care services from April 1, 2010 to March 31, 2018. Patient language was obtained during home care assessments, where interviewers record each home care recipients’ mother tongue using a standardized tool. Physician language was obtained from the College of Physicians and Surgeons of Ontario (CPSO), which collects demographic information on all physicians in Ontario. We then linked patients to family physicians through the Client Agency Program Enrolment, a database that identifies all Ontario residents with family physicians. We defined primary care as language-concordant when patients and physicians shared a mutually intelligible language, and we defined all other primary care as language-discordant. We followed all patients for 1 year and identified ED visits, hospitalizations, and mortality through record linkage to administrative databases.

Results: Our cohort consisted of 194,553 patients (163,708 Anglophones, 5,136 Francophones, and 25,709 Allophones). Allophones who received language-discordant primary care had higher rates of ED visits (58.3% vs. 54.2%; p<0.01) and hospitalizations (38.4% vs. 35.7%; p<0.01) when compared to Allophones who received language-concordant primary care. Furthermore, Allophones who received language-discordant primary care had a higher risk of 1-year mortality (16.9% vs. 14.6%; p<0.01). The results were similar for Francophones, whose rates of ED visits (65.3% vs. 62.5%; p=0.04) and hospitalizations (42.6% vs. 41.5%; p=0.04) were higher in the setting of language-discordant primary care. The risk of 1-year mortality for Francophones was not affected by the language(s) spoken by their family physician.

Conclusions: Ontarians who received care from family physicians who spoke their mother tongue had fewer ED visits and hospitalizations. The effect was most striking for Allophones (i.e., patients who speak a language other than English or French), whose 1-year survival was also impacted by the language in which they received primary care. The results of our study suggest that we can improve both healthcare utilization and patient outcomes by optimizing the delivery of language-concordant care to all Ontarians.
PRESCRIPTION PATTERNS OF SODIUM AND CALCIUM POLYSTYRENE SULFONATE IN PATIENTS WITH HYPERKALEMIA AND CHRONIC KIDNEY DISEASE

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Introduction: Sodium and calcium polystyrene sulfonate (SPS/CPS) cation-exchange resins have had long-standing clinical use for hyperkalemia in patients with chronic kidney disease (CKD). However, uncertainty exists regarding the real-world usage of SPS/CPS for acute and chronic management of hyperkalemia.

Objectives: We evaluated the prescription patterns of SPS/CPS and their impact on renin angiotensin aldosterone system inhibitor (RAASi) treatment in patients with CKD Stages G3-G5 after an episode of de novo hyperkalemia.

Methods: We conducted a retrospective cohort study using population-level administrative databases in Manitoba, Canada, which included adults with CKD and a RAASi prescription who had an episode of de novo hyperkalemia (≥5.5 mmol/L) between January 2007 and December 2017.

Results: A total of 10,009 individuals were included in our study cohort. Among the study population, 4% received an SPS/CPS prescription within 30 days of their hyperkalemia episode. Of those, 22% received a 1-day supply of SPS/CPS and 7% received a prescription for more than 30 days. There were 8,145 patients using RAASi at baseline who survived 90 days after their first hyperkalemia episode. Of those, 1,447 (18%) discontinued their RAAS inhibitor and 339 (5%) received a prescription of SPS/CPS.

Conclusions: In patients with CKD receiving RAASi therapy, there is a low frequency of SPS/CPS prescription after an episode of hyperkalemia. RAASi discontinuation or down-titration is the most used pharmacologic approach for the management of hyperkalemia, a strategy which deprives patients of the cardiac and renal protective benefits of RAASI. New options for management of hyperkalemia in this population are needed.
Introduction: Rheumatoid arthritis (RA) is a prevalent condition with an annual incidence of 40 per 100000 people per year in the United States. With regards to Canadian data, approximately 1.2% of Canadians live with diagnosed RA, and 23000 patients were diagnosed with RA in 2016-2017. RA has a significant impact on health-related quality of life (HRQOL), including chronic pain, fatigue, and increased incidence of mental health conditions. With regards to the etiology of RA, the heritability is 40% to 65% for seropositive RA and 20% for seronegative RA. Moreover, RA is more common in females. However, there are several known modifiable risk factors associated with RA as well, including cigarette smoking, and obesity. Moreover, as seen in previous studies, certain biomarkers and symptoms are often present prior to RA disease onset, which may help identify individuals at risk of developing RA. Due to the large negative impact of RA on HRQOL, as well as the possibility of identifying individuals at risk for developing disease, it is crucial to explore possible preventative interventions. Furthermore, by understanding factors that will alter rheumatologists’ decisions to provide preventative interventions, we will be able to better understand which patients may benefit from these interventions and at what point prior to disease onset to intervene.

Objectives: (1) To understand Canadian rheumatologists’ willingness and thresholds to initiate preventative care in patients at risk for developing RA. (2) To assess if willingness to initiate preventative care varies by practice location/type. (3) To understand what characteristics would allow rheumatologists to feel more comfortable initiating preventative therapies for RA.

Methods: This project is based on a similar study conducted in the Netherlands by Boheemen et al (2020). We have created a survey with questions similar to those used by Boheemen et al. Survey questions are related to interventions related to pharmacotherapy and lifestyle modifications. Additional questions were added with regards to baseline characteristics of participants’ age, years in practice, percentage of RA patients in their practice, and type of practice. We will disseminate the survey to local rheumatologists in Winnipeg, Manitoba. We will also be sending the survey to rheumatologists across Canada. Participant responses will be compared, and we will assess which factors, if any, influence rheumatologists’ willingness to provide preventative interventions for RA.

Results: Pending completion of data collection.

Conclusions: Pending completion of data collection.
OUTCOME OF COVID-19 VACCINATION FOLLOWING ALLERGY CONSULTATION RECOMMENDING VACCINATION AT A WINNIPEG COMMUNITY SITE.
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Introduction: Due to concerns around allergic reactions to the COVID-19 vaccinations, the Allergy Clinic at HSC has been designated by the COVID-19 Vaccine Task Force as the referral centre for individuals who are concerned about potentially reacting to the first dose of the COVID-19 vaccine (based on history of allergy and specifically allergy to vaccine components) as well as those who have had potentially allergic reactions to a dose of the COVID-19 vaccine. These consults are triaged as highest priority, booked urgently for phone consultation, and following consultation, a weekly virtual meeting is held by the 4 allergists at HSC to determine which patients need to be seen and given the vaccination in a supervised setting versus those who could go to a community site to receive their vaccine. This is decided through a joint meeting with the four allergists and a group consensus is determined based upon clinical judgment. Based on the need for further in clinic appointments, the Allergy Clinic at HSC can keep track of those who were suggested to have a supervised vaccination at the Allergy clinic, however, unknown how many patients ended up proceeding to receive a vaccination in the community and if this intervention was adequate in regard to vaccine uptake.

Objectives: 1) To determine the percentage of patients who received the COVID-19 vaccine in the community after being advised, following consultation, that it was safe to do so; 2) To determine if there are differences in regards to health region of residence, age, gender, dose number of vaccine to be received, as well as certain clinical variables, between those who received and did not receive the vaccine in the community, following consultation.

Methods: According to ACCURO Medicine EMR, ~200 patients received a COVID-19 Vaccine Clinic virtual/phone consultation before their first dose or subsequent dose. The ACCURO charts of these patients will be reviewed to identify those who were advised that it was safe to receive the vaccination in the community. From there, we will receive access to their vaccine status via the Manitoba Centre for Health Policy for PHIMS. From the ACCURO chart, each patient will have their health region of residence, gender and age recorded along with underlying medical conditions, previous vaccine reaction, history of any allergy and pending vaccine dose. The Chi-square test of association will be used to examine differences in categorical variables between those who received the vaccine post-consult vs. those who did not. Logistic regression model will be used to assess how various demographic and clinical variables were associated with the outcome (receiving COVID-19 vaccine post-consult in the community setting), the odds ratio (OR) and the 95% confidence interval (CI) will be reported.

Results: Results will be collected using the above methods and analyzed as aforementioned.

Conclusions: Our results will be interpreted to see whether, following a reassuring virtual/phone consultation, patients proceeded with receiving their pending COVID vaccine dose in the community. In addition, it will be determined whether there is any statistically significant difference between the various variables outlined above in those who followed through with vaccination in the community vs those who did not. This may provide guidance if a similar approach is used in future vaccination campaigns.
MANITOBA’S HIV SYNDICEM: IDENTIFYING THE INTERSECTION OF SUBSTANCE USE DISORDER, HOUSELESSNESS, AND OTHER COMORBIDITIES IN PEOPLE LIVING WITH HIV


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Introduction: A syndemic is the clustering of social and health problems at a population level. A syndemic model aims to incorporate social and economic factors, as well as the overlap of other diseases, in understanding and describing a specific disease. HIV research has used a syndemic model for decades, first describing the overlap of substance use, violence, and AIDS, known as the SAVA syndemic, in the 1990’s. Although Canada is meeting the 90-90-90 HIV targets, Manitoba is reporting increasing HIV cases, suggesting Manitoba’s HIV population is distinct. A syndemic model approach is needed to better understand people living with HIV (PLHIV) in Manitoba.

Objective: To describe the Manitoba HIV syndemic with a focus on substance use, houselessness, and previously diagnosed comorbidities in PLHIV in Manitoba.

Methods: A retrospective cohort study was completed. Clinical charts of all people newly diagnosed with HIV in Manitoba, Canada between January 1, 2018 and December 31, 2021 were reviewed. Basic sociodemographic data, substance use history, STBBI and other comorbidities were collected. Further information on linkage to the Manitoba HIV program, and adherence to anti-retrovirals (ARVs) during follow up was collected.

Results: The following results are preliminary, and the full results will be presented during Research Day. The median age was 35 – 39 years (depending on the year). Among all PLHIV that entered the Manitoba HIV Program, 80% were new HIV diagnosis, 15.9% were transferred while on treatment, 2.3% were transferred off treatment. The main self-reported modes of transmission were heterosexual and injection drug/needle sharing. 42.4% were female sex (38.9% to 46.6%). Gender: 41.5% were women, 1.3% transgender man to women, 0.4% transgender women to men, and 0.7% self-identified as non-binary person. Sexual orientation: 75.6% heterosexual, 18.8% gay, 5.1% bisexual, 0.5% lesbian. Experiencing houselessness: 31%. 74% live in urban area, 26% in rural area. 72% reported drug use, with injected drug use the most common method. 81.7% reported pre-existing medical conditions, with mental health (depression and anxiety) and sexually transmitted infections the most common. 89.8% had follow-up visits, 83.4% return to clinic, and 75.1% missed at least one scheduled visit. 50% were diagnosed with other disease or hospitalized during follow-up after the HIV diagnosis.

Conclusions: Manitoba’s HIV population is distinct. Heterosexual sex and injection drug use are the most prevalent modes of transmission in Manitoba. A significant majority report injection drug use. Nearly half of new HIV cases are female, which is unprecedented. Houselessness and mental health comorbidities are overrepresented in the new PLHIV population as well. The data demonstrates an overlap of injection drug use, houselessness, and mental health comorbidities in new HIV cases in Manitoba. This is Manitoba’s syndemic. A multipronged approach addressing substance use disorder, housing and mental health supports is needed to help Manitoba’s growing, unique HIV population.
PROTON-PUMP INHIBITOR USE BEFORE AND AFTER A DIAGNOSIS OF INFLAMMATORY BOWEL DISEASE
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Introduction: Proton-pump inhibitors (PPI) have an impact on gut microbiome. Based on US data from 2011-2012, approximately 8% of adults had a prescription to a PPI within the past 30-days (Allin & Moayyedi, 2021), raising the possibility that the advent of PPI use may be associated with the worldwide rise in inflammatory bowel disease (IBD).

Objectives: We investigated whether increased use of PPI was associated with a diagnosis of IBD.

Methods: The University of Manitoba IBD Epidemiology Database includes all Manitobans diagnosed with IBD between 1984 to 2018 with age, sex and geography-matched controls and comprehensive prescription drug data from April 1995. Subjects were considered to be users if they received 2 prescriptions of PPI. We assessed PPI prescriptions pre-diagnosis and for 3-years post-diagnosis of IBD. The absolute and relative rates were calculated and compared for PPI use pre- and post-IBD diagnosis.

Results: A retrospective analysis was completed by analyzing 5920 subjects that were diagnosed with IBD after April 1996. Rates of PPI use in controls increased gradually from 1.5 to 6.5% over 15-years. Persons with IBD have a higher rate of PPI use peaking up to 17% within 1-year of IBD diagnosis with a rate ratio (RR) of 3.1 [95% CI 2.9 – 3.3]. Furthermore, persons with Crohn’s disease (CD) [RR= 4.2; 95% CI 3.7 – 4.6] were more likely to have been PPI users pre-diagnosis than persons with ulcerative colitis [RR= 2.4; 95% CI 2.2 – 2.7]. Important predictors of increased PPI use were older age, year of data collection and CD diagnosis.

Conclusions: This retrospective analysis showed an increase in PPI use over the past 20-years among all Manitobans. Persons with IBD have higher PPI use preceding their diagnosis. Possibly, the use of a PPI alters the gut microbiome increasing the risk for IBD diagnosis, or that persons with IBD have increased rates of dyspepsia warranting a PPI or that some IBD symptoms are treated with PPI whether warranted or not. Future studies are needed to delineate whether the indication for ongoing PPI use is appropriate.
CONCURRENT SEXUALLY TRANSMITTED AND BLOOD BOURNE INFECTIONS (STBBIs) AMONG PEOPLE LIVING WITH HIV IN MANITOBA, 2018-2022

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Introduction: While the number of people newly diagnosed with HIV in Canada is decreasing, in Manitoba the number of people diagnosed with HIV yearly has been rising. The relationship between intravenous opioid use and HIV, hepatitis C and B has previously been described. It has been shown that people living with HIV (PLHIV) who also are diagnosed with HCV are more likely to require acute care hospital admissions. A concurrent syphilis infection can increase the likelihood of sexual transmission of HIV. PLHIV are routinely screened for hepatitis B and C, syphilis, Chlamydia and Gonorrhea, but not for other sexually transmitted and blood-borne infections (STBBI). It is unknown the frequency and the drivers of concurrent STBBI among PLHIV.

Objectives: To describe the frequency of STBBI before HIV diagnosis, at entry into HIV care, and during follow-up, disaggregated by sex at birth, gender, drug use, and unstable housing.

Methods: A retrospective cohort study was completed. Clinical charts of all people newly diagnosed with HIV in Manitoba, Canada between January 1st, 2018 and December 31st, 2021 were reviewed. We collected sociodemographic data such as sex at birth, gender, and age, as well as information regarding housing status, prior or current drug use, including use of injection drugs, past and current STBBIs.

Results: Heterosexual sex and injection drug use are the most prevalent modes of HIV transmission in Manitoba. Methamphetamine use is higher amongst females newly diagnosed with HIV with 78.8% of females diagnosed in 2021 using methamphetamines, compared to 59.7% of males. 75% of females and 55% of males were noted to have a prior diagnosis of an STBBI. At the time of diagnosis 40-60% of females (dependent on year) were also living with an additional STBBI co-infection. The proportion of PLHIV who use methamphetamines rose in 2021 compared to prior years. PLHIV who use methamphetamines and who were experiencing unstable housing had a greater number of STBBIs. This abstract contains preliminary results, full results will be presented at resident research day.

Conclusions: The significant burden of additional STBBIs prior to HIV diagnosis and during HIV follow up support the need for comprehensive STBBI testing, point-of-care testing and treatment and greater resources to prevent transmission of these infections, particularly among at-risk groups. Additionally, the results indicate a need for addressing the structural and social determinants of the syndemic by supporting harm reduction programs and safe injection sites, mental health supports and funding safe and affordable housing.
THE EFFECT OF SORAFENIB AND OTHER SYSTEMIC TREATMENTS ON SURVIVAL IN PATIENTS WITH HEPATOCYLLULAR CARCINOMA (HCC).

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Introduction: Hepatocellular cancer (HCC) is the most prevalent subtype of liver cancer, comprising approximately 90% of total cases. Liver cancer as a whole, is the sixth leading cause of malignancy across the globe, with more than 800,000 cases in 2018. Possible therapeutic options include resection of mass, liver transplant, ablation, chemoembolization or systemic therapies. Systemic therapies are generally recommended for advanced HCC cases, with sorafenib as first line therapy. Sorafenib is a multikinase inhibitor that obstructs specific kinases that are implicated in tumor proliferation and angiogenesis. Two phase III trials had investigated the role of sorafenib and both had shown an overall statistically significant improved overall survival in advanced HCC patients treated with sorafenib in comparison to placebo. The use of sorafenib is not without toxicities however, with gastrointestinal and dermatological adverse effects experienced by patients.

Objectives: The overall goal of this study is to gather a cohort of patients with HCC treated with a minimum one-time dose of sorafenib and assess outcomes including overall and progression free survival with attention paid to specific toxicities experienced by patients. Our goal is also to gather data on patients treated with other systemic options to be able to compare these treatments to HCC patients treated with sorafenib. Furthermore, we also plan to assess risk factors and underlying disease etiology effect on overall survival when treated with sorafenib or other systemic therapies.

Methods: A retrospective cohort study is planned to examine patients with HCC in a cross-provincial study across Canada at ten cancer agencies including CancerCare Manitoba. We plan to assess patients with HCC treated with at a minimum of one dose of sorafenib from January 1, 2008 to June 30, 2020. Data is planned to be initially extracted through the Manitoba Cancer Registry including patient’s date of birth, gender, date and method of diagnosis, histology and date of death if deceased. Further chart review is required to obtain the remaining data variables, including ethnicity if available, ECOG status, underlying disease etiology, previous treatments, information regarding their first line systemic therapy including toxicities, as well as data points regarding any further systemic therapy pursued. Toxicities will be graded through the use of the Common Terminology Criteria for Adverse Events (CTCAE). Progression free survival will also be assessed via onset of systemic therapy until signs of progression on radiologic imaging. Furthermore, observed survival within HCC patients will be compared to several prognostic scoring systems to assess accuracy (Okuda Staging system, CLIP score). Lastly, multivariable survival analyses are planned to be assessed using Cox proportional hazards regression models to evaluate whether the etiology of the underlying liver disease has an effect on the overall survival.

Results: Currently, the results of the data collection and analysis are ongoing with a total of 130 charts being reviewed.

Conclusion: With the data collection underway, the conclusion is also pending at this time point.
STREAMLINING PRE-PROCEDURAL WORKUP FOR FISTULOGRAMS AND TUNNELLED LINES IN MANITOBA, A QUALITY IMPROVEMENT INITIATIVE

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Introduction: Standardized pre-procedural work up for fistulograms and tunnelled lines lacks supporting evidence and is a source of unnecessary resource use without adding patient value or minimizing adverse events from occurring. Currently in Manitoba it is required that patients obtain a preprocedural chest-x-ray (CXR) and electrocardiogram (ECG) within 6 months prior to a fistulogram or tunnelled line procedure, along with specific bloodwork 6 weeks prior. An extensive literature search did not yield any results for a standard preprocedural checklist in this setting. Canadian Cardiovascular Society (CCS) guidelines suggest that patients undergoing non-cardiac elective surgeries do not require a preoperative ECG or CXR. Choosing Wisely Canada (CWC) Anesthesia guidelines also do not recommend ordering a baseline ECG for asymptomatic patients undergoing low-risk non-cardiac surgery such as fistulograms, or CXR for routine pre-anesthetic assessment.

Objectives: To determine if eliminating CXRs and ECGs from preprocedural workup for fistulograms and tunnelled lines will (1) have adverse effects, (2) improve workplace efficiency, and (3) yield cost-savings.

Methods: We identified that CXRs and ECGs as preprocedural workup for fistulograms/tunnelled lines are an unnecessary standard protocol at the Health Sciences Centre (HSC) in Winnipeg. During 2019 - 2021, 1032 fistulograms/tunnelled lines were performed. Preprocedural ECG and CXR costs during this time totalled $52,506.86. We created a process map to understand the complexity of each step required for a patient undergoing these procedures. We listed all possible stakeholders and created a power interest map to recognize the most influential stakeholders in our planned intervention. With input from all stakeholders, a value stream map was created removing any non-value-added steps, including CXRs and ECGs. Our first PDSA cycle started on April 19/2022 by eliminating CXRs and ECGs from the preprocedural process for all 441 patients enrolled in the central dialysis unit at HSC. After three months with no adverse events, the second PDSA cycle started on July 4/22 by expanding our intervention to outpatient clinics, home hemodialysis, and all local centre dialysis units adding an additional 1507 patients.

Results: Our preliminary results from the first PDSA cycle show that a total of 99 fistulograms/tunnelled lines were performed with cost-savings of $4559.94. No common adverse events of line insertions were reported such as bleeding, arterial puncture, arrhythmia, air embolism, catheter malposition, pneumothorax/hemothorax, or hospitalization post procedure. Elimination of CXRs and ECGs has been met with great satisfaction by stakeholders as evidenced by a survey. After three months of no adverse outcomes, the second PDSA cycle started on July 4/22 by expanding our intervention to outpatient clinics, home hemodialysis, and all local centre dialysis units. So far, no adverse events have been reported to us.

Conclusion: Fistulograms and tunnelled lines are considered lower-risk procedures and we observed that it is safe to eliminate pre-procedural workup of CXR and ECGs at our local level. Elimination of these tests also reduced staff workload and has led to cost savings across our inpatient dialysis program.
COSTS ASSOCIATED WITH TREATMENT OF METASTATIC NON-SMALL CELL LUNG CANCER IN MANITOBA
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Introduction: Novel therapies and advancing diagnostic modalities have substantially impacted the treatment of metastatic non-small cell lung cancer (NSCLC) over the last 10 years. Analysis of NSCLC related costs in the context of rapidly changing treatment patterns is important for informing health policy in a resource constrained environment.

Objectives: The objective of this study is to assess the costs associated with treatment of metastatic NSCLC in Manitoba from 2005 – 2015.

Methods: Patients diagnosed with stage IV NSCLC from 2005 – 2015 were identified from the Manitoba Cancer Registry. These cases were linked to population-based administrative and clinical databases. Costs of services associated with treatment of NSCLC included systemic therapy, physician services, radiation therapy, surgery and day procedures, and hospitalizations. Costs were stratified by phase of patient care. All cost estimates were represented in 2018 Canadian dollars (CAD).

Results: There were 2,138 patients diagnosed with metastatic NSCLC in Manitoba who met study inclusion criteria. The mean monthly cost per patient was $11,337 in 2005 and increased to $14,027 by 2015. Approximately 80% of total costs were attributable to hospitalizations and day procedures, with the majority of costs incurred during the terminal phase of patient illness.

Conclusion: Treatment of NSCLC is associated with significant financial costs, with hospitalization during the terminal phase of illness driving the majority of these costs. These results suggest that cost savings may be obtained by implementing interventions that reduce hospitalizations.
Introduction: Lupus nephritis (LN), a complication of systemic lupus erythematosus (SLE), is known to be more frequent and have worse outcomes in vulnerable populations, including ethnic minorities, low socioeconomic status, and those living remote from care. We have previously shown similar results in our own cohort. There are few studies exploring differences in renal biopsy (Bx) patterns, Bx results, or impact of patterns of care on adverse renal outcomes and mortality in these vulnerable populations.

Objectives: The overall objectives are to: (1) Determine the (updated) frequency of LN, development of ESRD and mortality in HSC Rheumatology Clinic (HSCR) SLE patients; (2) Determine the ISN/RSP renal Bx class, activity, and chronicity index; (3) Determine the interaction between vulnerable population factors, renal Bx findings and care patterns on progression to ESRD and mortality. In this preliminary analysis, we examined whether there were differences in patients undergoing renal Bx, or in ISN/RSP renal Bx class.

Methods: SLE patients seen at the HSC were included in this retrospective cohort study. Renal Bx data was acquired from medical records and the Shared Health Renal Biopsy Registry Database, which includes all local renal Bx since 2002. Thus, patients seen at the HSCR prior to 2002 were excluded. Demographic data and clinical variables were extracted from the medical record and an SLE research database. Ethnicity was by self-report. Chi square, t-tests, and one-way ANOVA were used for univariate comparisons.

Results: 1312 unique patients were identified: 568 patients had SLE onset prior to 2002, 5 did not have SLE, 196 had missing data. 543 patients were included in this analysis: 87 were female, 48% White, 31% Indigenous, 18% Asian, and 4% Other. Mean age at diagnosis was 37 years (±16). 42% (n = 229) of patients had renal involvement (meeting 1997 revised ACR criteria). Renal involvement was more common in all ethnic groups compared to white patients: White 26%; Asian 64%; Indigenous 55%, Other 45%; p <0.001. Among all patients, Asian, Indigenous, and Other patients had a younger age at SLE compared to White patients, and LN patients were younger at disease onset compared to those without (LN=32±15 years; noLN=41±16 years; p=0.001), with a similar pattern between ethnic groups: White=39±14; Asian=29±14; Indigenous=29±13; Other=36±21; p=0.001. Of 229 pts with renal involvement, 126 had a renal Bx; those undergoing Bx were younger at SLE onset compared to those who did undergo Bx; noBx=35yrs±14; p=0.001. There were no differences in LN class on Bx between ethnic groups: White 73% class IV/V (N=24), Asian 80% IV/V(N=31), Indigenous 72% IV/V(N=36), Other 100% IV/V(N=4); p= 0.9.

Conclusions: A greater proportion of Indigenous and Asian SLE patients had LN compared to white patients. Patients with LN were overall younger than those without LN. Most patients undergoing renal Bx had LN class IV or V, and the most common reason for not having a renal biopsy was clinically mild LN. In this preliminary analysis, we did not see differences in the proportion of SLE patients with renal involvement undergoing a renal Bx, or in Bx results (LN class). In the future, we plan to look at overall patterns of care and treatment, care gaps including adherence and loss to follow-up, and exploring the impact of socioeconomic factors and distance from care on LN outcomes.
ACQUIRED HEMOPHILIA A: A 15-YEAR POPULATION-BASED REVIEW OF INCIDENCE RATE, PATIENT DEMOGRAPHICS, AND TREATMENT OUTCOMES
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Introduction: Acquired haemophilia (AHA) is characterized by the development of autoantibodies against coagulation factor VIII (FVIII), resulting in bleeding, which can be life threatening. While presumed to be quite rare, the population-based incidence is unknown. Comprehensive data describing the epidemiology, natural history, and response to treatment of AHA is lacking. The province of Manitoba, Canada has a single laboratory that measures FVIII levels and titres. The laboratory records thus represent a complete and unbiased population-based sample of patients with AHA.

Objectives: (1) evaluate the population-based incidence of AHA in Manitoba, Canada; (2) describe the clinical presentation, treatment, and outcomes of patients diagnosed with AHA.

Methods: We conducted a retrospective, population-based cohort study of all patients with AHA diagnosed and treated in Manitoba, Canada over a 15-year period. From April 2006 to February 2021, using records from the sole provincial reference laboratory (Health Sciences Centre, Winnipeg, Canada), we identified a complete-case census of patients with a FVIII inhibitor. Patients with congenital haemophilia were excluded. Using a piloted case report form, patient demographics, presenting symptoms, pertinent lab results, treatment and outcomes, were ascertained from hospital and outpatient bleeding disorder clinic records. Cases were followed up until January 2022. Statistical analysis was performed using GraphPad Prism.

Results: From 2006 to 2021, we identified 34 patients with AHA. This corresponds to a population-based incidence of 1.78 cases per million per year. Median age at presentation was 76 years. Females represented 58% of cases. 68% (23/34) of cases were considered idiopathic, 26% (9/34) had an underlying autoimmune disorder, and 6% (2/34) had active malignancy at time of diagnosis. 97% (33/34) had bleeding at time of diagnosis. 65% (22/34) of patients received hemostatic treatment for a median duration of 7 days. Recombinant FVIIa was the most common first line agent used (77%, 17/22). No arterial or venous thrombosis complications were observed during the hemostatic treatment period. Immunosuppressive treatment (IST) was used in 88% (30/34) of patients. Prednisone and cyclophosphamide was the most common first line regimen, used in 82% (28/34) patients. 39% (11/28) of patients received additional therapies such as rituximab, azathioprine, and vincristine. Cytopenia(s) were the most common adverse effect, seen in 16 patients. 79% (27/34) of patients achieved remission. Median time to remission was 2.1 months. Of those that achieved remission, median time from diagnosis to death was 7.2 years. 21% (7/34) of patients died without achieving remission. Their median time from diagnosis to death was 2.6 months.

Conclusions: The population-based incidence of AHA in Manitoba is 1.78 cases per million per year. The majority of patients present with bleeding, which can be life-threatening. Hemostatic agents are effective in controlling bleeding, though thrombotic risk should be considered. Combination cyclophosphamide and prednisone produces high rates of remission. Cytopenias should be monitored closely. Outcomes are good if patients are able to complete IST, which is largely dictated by their comorbid conditions.
MANAGEMENT OF STAPHYLOCOCCUS AUREUS BACTEREMIA IN AN ACUTE CARE HOSPITAL – A QUALITY IMPROVEMENT PROJECT

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Introduction: Staphylococcus aureus is one of the leading causes of gram-positive bloodstream infection (BSI) and is the most important cause of BSI-associated death. Predictors of, or risk factors for mortality in Staphylococcus aureus bacteremia (SAB) relate strongly to host factors as well as factors relating to the management of the disease. Inpatient Infectious Diseases consultation has been associated with decreased in-hospital mortality. The Infectious Disease Society of America (IDSA) has put forward recommendations for SAB. However, there are still significant variations in practice and adherence to guidelines which represent a threat to patient safety. There have been two previous papers describing implementation of a quality improvement initiative for S. aureus bacteremia in the Netherlands and in Dallas, Texas. They both included a hospital-wide protocol and educational events which led to an increase in compliance to the guidelines, decreased relapse rate and identification of complications.

Objectives: The aim of this study is to determine if it is possible to improve quality of care, as measured by adherence to guideline recommendations for management of SAB, through implementation of a hospital-wide order set with educational initiatives at St. Boniface General Hospital in Winnipeg, Manitoba. The data presented here represents the pre-intervention phase showing descriptive data of SAB management and compliance with IDSA guidelines.

Methods: All adult inpatient at St. Boniface General Hospital in adults who are diagnosed with SAB defined as at least one blood culture being positive with either MSSA or MRSA between July 1, 2019 and December 31, 2020 were identified. Exclusion criteria include death within 48 hours of the positive blood culture or presentation, previous SAB within the study period. The primary outcome of interest is adherence to recommended management in terms of obtaining follow-up blood cultures, echocardiogram (ECHO) and Infectious Diseases consultation. Secondary outcomes will include in-hospital or 90-day mortality (if still in hospital) and recurrence. Basic descriptive statistics were done on Prism 9.

Results: A total of 165 patients were identified in this study period, 64 were excluded. 43 were female and 58 were male, the mean age was 60.2, 73.3% were admitted to the Internal Medicine service, 9.9% to Family Medicine, 8.9% to Surgical services and 7.9% to other services. 69.3% and 30.7% of SAB BSI are from MSSA and MRSA respectively. 8.9% did not have an ECHO done and 8.9% did not have repeat blood cultures drawn. Only 70.3% of patients had an ID consult. 31.7% of patients died in 90 days while 5% of all patients had a recurrence.

Conclusion: There remains a small proportion of patients who are not receiving standard of care with regards of SAB management. And ID consultation was also not universally done. Further education on SAB and the implementation of an electronic order-set will hopefully increase compliance to guideline-based care for SAB. Further statistical analysis will also be done on this data-set.
TICAGRELOR AS COMPARED TO CLOPIDOGREL FOR PREVENTION OF MAJOR ADVERSE CARDIOVASCULAR EVENTS FOLLOWING PERCUTANEOUS CORONARY INTERVENTION FOR ACUTE CORONARY SYNDROME

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Introduction: Dual antiplatelet therapy (DAPT) with ASA and a P2Y12 inhibitor has become a mainstay of therapy in acute coronary syndrome (ACS). Although ticagrelor was demonstrated to be superior to clopidogrel in the PLATO trial, North American patients did not demonstrate mortality benefit. A recent observational study of 13,897 patients from Alberta who had undergone percutaneous coronary intervention (PCI) for ACS revealed that there was no difference in mortality or incidence of major adverse cardiovascular events (MACE) between patients prescribed ticagrelor compared to clopidogrel when adjusted for age and comorbidities, but there was an increase in major bleeding in patients receiving ticagrelor. It is important to evaluate the efficacy of these P2Y12 inhibitors in the real-world setting.

Methods: We conducted a retrospective cohort study of all patients who were diagnosed with ACS and underwent PCI in a single Canadian province from January 1, 2015 to March 31, 2020. Baseline characteristics including comorbidities, medications, and bleeding risk were obtained. Propensity matching was used to compare patients who received ticagrelor as opposed to clopidogrel. The primary outcome was occurrence of MACE at 12 months, defined as death, nonfatal MI, or unplanned revascularization. Secondary outcomes included all-cause mortality, major bleeding, stroke, and any-cause hospitalization.

Results: A total of 6665 patients who underwent PCI for ACS were included. 2108 received clopidogrel and 4214 received ticagrelor. Patients who received clopidogrel were older, more likely to have comorbidities including cardiovascular risk factors, and had higher bleeding risk. In 1925 propensity-score-matched pairs, patients who received ticagrelor were observed to have a significantly lower risk of MACE (HR 0.79; 0.67-0.93, p<0.01) and hospitalization (HR 0.85; 0.77-0.95, p<0.01) compared to those who received clopidogrel. There was no difference observed in risk of major bleeding (HR 1.08; 0.69-1.86, p=0.74). A trend toward reduced risk of all-cause mortality was noted, although this was not statistically significant with propensity matching analysis (HR 0.76; 0.53-1.08, p=0.13).

Conclusion: In a contemporary real-world cohort of ACS patients managed with PCI, ticagrelor use was associated with reduction in MACE and hospitalization compared to clopidogrel. These results are in agreement with the PLATO trial, but contrast with recent observational data. Interestingly, these results differ from the preliminary results of this study presented previously that included a smaller sample size (n=3375, 1129 propensity-matched pairs) and showed a trend toward reduced risk of MACE that was not statistically significant; this study therefore helps demonstrate the importance of sample size in observational research. Analyzing data from a larger ACS patient cohort treated with PCI may help identify patient subgroups that may benefit most from use of ticagrelor as the P2Y12 inhibitor of choice.

Disclosure: First author’s role includes study design, data analysis, and manuscript preparation. Primary supervisor is Dr. Ashish Shah.
THE EFFECT OF COVID-19 ON SEIZURE CHARACTERISTICS IN A CANADIAN TERTIARY CARE EMERGENCY DEPARTMENT

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Introduction: An acute symptomatic seizures (ASyS) is defined as a seizure that occurs in close temporal relationship with an acute central nervous system (CNS) insult, which may be metabolic, toxic, structural, infectious, or due to inflammation. Many do not recur once the precipitating factor or condition has been removed or reversed. As the COVID pandemic has impacted on acute care of seizure patients, it is of interest how seizure patient characteristics may have changed during the pandemic. A study of ASyS patients before and during the peak pandemic period may reveal a shift in the types of seizures as well as issues of seizure care access.

Objective: We study patients with and without ASyS at a tertiary care emergency department (ED) during defined pre versus peak COVID-19 pandemic periods to assess the effects of the pandemic on patient characteristics.

Methods: Retrospective review of adult patients with a spot EEG in the ED for variables of sex, age, motor semiology, EEG requisition indication, EEG result, and ASyS status. We used excel and STATA to perform Chi-squared, Fisher’s exact, and Wilcoxon rank-sum tests.

Results: There were 63 pre-pandemic and 52 peak-pandemic patients. Demographics of patients selected for EEG from the ED did not change between pre-pandemic and peak-pandemic periods. There were 14/27 pre-pandemic and 13/27 peak-pandemic ASyS patients, with diverse etiologies. Our analysis revealed significant global differences in the distribution of EEG results (p<0.0001) between ASyS and non-ASyS patients. More proportions of ASyS than non-ASyS patients had seizures or status epilepticus (SE). ASyS patients during the peak-pandemic period had more ictal EEG findings when EEG were ordered to ‘rule out seizure’ (45.5% vs. 3%, p=0.0036). Yet paradoxically, ASyS patients in the peak-pandemic period had more EEG requisitions to ‘rule out seizure’ (87.5% vs. 33.3%) and fewer to ‘rule out status epilepticus (SE)’ (12.5% vs. 66.7%) compared to the pre-pandemic period (p=0.0281).

Conclusion: During the peak of the COVID-19 pandemic, fewer EEG were ordered to rule out SE in ASyS patients despite consistent local practice patterns, which suggests that sicker patients (ASyS-SE) may have encountered significant barriers to accessing the ED and epilepsy/seizure care. It would be beneficial to conduct further studies to clarify those specific barriers.
A RETROSPECTIVE ANALYSIS OF THE ETIOLOGY AND OUTCOMES OF BACTERIAL SKIN AND SOFT TISSUE INFECTIONS IN HIV-POSITIVE INDIVIDUALS IN MANITOBA

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Introduction: Human Immunodeficiency Virus (HIV) has been a major focus of the public health sphere for years particularly in Manitoba which has the second highest incidence of HIV in Canada. While antiretroviral therapy has reduced morbidity and mortality in this population, individuals with HIV still face numerous infectious and non-infectious complications related to the infection or its treatment. While many of these complications have been explored in the literature, little exploration has been undertaken to uncover the bacterial pathogens leading to skin and soft tissue infections (SSTIs) in this population and whether these differ from HIV-negative individuals. This information may lead to a change in practice, particularly the empiric treatment initiated for HIV-positive individuals presenting with significant SSTIs.

Objectives: (1) To determine the pathogens causing bacterial SSTIs among individuals with HIV receiving care at the Health Sciences Centre (HSC); (2) To explore the various factors (e.g. demographics, medical comorbidities, management of HIV infection, etc.) affecting acquisition of bacterial SSTIs; (3) To determine the clinical outcomes of monomicrobial and polymicrobial infections among individuals with HIV receiving care at the (HSC).

Methods: A retrospective chart review of patients attending the HSC HIV clinic between January 1, 2015 and December 31, 2020 will be undertaken and participants who have had an SSTI will be identified. The following data will be obtained and analyzed: patient demographics, details surrounding HIV treatment and current status, risk factors for HIV infection, risk factors for SSTI acquisition, medical comorbidities, risk factors for antimicrobial resistance, the type of SSTI acquired and specific pathogens (if isolated), treatment of the STTI, and outcomes/complications related to the SSTI. Descriptive analysis will be performed for the number of SSTIs, risk factors, causative microorganisms and resistance patterns, management and outcomes of the infections.

Results: Pending completion of data collection/analysis.

Conclusions: Pending completion of data collection/analysis.
PATIENT CHARACTERISTICS, AND OUTCOMES IN MYOCARDIAL INFARCTION WITH NONOBSTRUCTIVE CORONARY ARTERY DISEASE (MINOCA) IN MANITOBA

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Introduction: Myocardial infarction with nonobstructive coronary artery disease (MINOCA) is a clinical condition in the setting of acute myocardial infarction (MI) with normal or minimally obstructed (≤50% stenosis) coronary arteries. There are several causes of MINOCA, ranging from coronary pathologies such as spontaneous coronary artery dissection (SCAD) to noncoronary abnormalities (Takotsubo cardiomyopathy and myocarditis). MINOCA requires a comprehensive work up to elucidate the underlying mechanism. Currently, MINOCA is often underdiagnosed. While coronary angiography is performed in most patients, additional tests such as intravascular imaging and cardiac magnetic resonance imaging (MRI) are often underutilized. However, an accurate diagnosis is important as the management of this condition is dependent on the underlying cause. In addition, the long-term prognosis of patients with MINOCA is variable and dependent on the etiology.

Objectives: 1) To describe the demographic and clinical features of MINOCA patients in Manitoba. 2) To evaluate the use of common diagnostics to diagnose patients with MINOCA and the management strategies employed in these patients. 3) To assess in-hospital and short-term (1 year) outcomes for patients diagnosed with MINOCA.

Methods: All ACS patients over 18 years old who underwent coronary angiography without stenting at St. Boniface Hospital between October 1, 2020-December 31, 2020 were included in the analysis. The cardiac catheterization laboratory electronic system was used to generate a list of all the patients diagnosed with MINOCA. A chart review was performed to obtain baseline demographics, medical history, clinical presentation, and outcomes. Data was analyzed using Excel. Descriptive statistics for patient demographics and clinical outcomes will be reported in medians (interquartile ranges) and proportions.

Results: The study included 60 MINOCA patients. The median age at presentation was 66 years (56-72), with 62% being female. The most common cardiovascular risk factor was hypertension (38%), followed by dyslipidemia (38%) and current or previous smoking (35%). Chest pain was the leading presenting symptom (75%). Most patients (83%) presented as a non-ST elevation myocardial infarction (NSTEMI). Approximately 38% of electrocardiograms on presentation were normal. Majority of patients had normal coronary arteries (70%). Only 7% of patients had intravascular imaging performed and 18% had cardiac MRI. A third (32%) of MINOCA cases did not have an identifiable etiology. The most common type of MINOCA identified was myopericarditis which was seen in 17% of patients, followed by SCAD and Takotsubo in 15% and 13% of cases, respectively. The one-year mortality rate was 7%, with other short-term complications being rare in MINOCA.

Conclusion: Although MINOCA is an uncommon cause of MI, it is not a benign condition and patients are still at risk of adverse cardiovascular outcomes. A high degree of suspicion is therefore required for appropriate diagnosis of the condition and effective therapeutic management of these patients.
METABOLIC ACIDOSIS IS ASSOCIATED WITH ACUTE KIDNEY INJURY IN PATIENTS WITH CKD
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Introduction: Metabolic acidosis in patients with chronic kidney disease (CKD) results from a loss of kidney function. It has been associated with CKD progression, all-cause mortality, and other adverse outcomes.

Objectives: We aimed to determine whether metabolic acidosis is associated with a higher risk of acute kidney injury (AKI) in patients with CKD.

Methods: This was a retrospective cohort study. Using electronic health records and administrative data, we enrolled 2 North American cohorts of patients with CKD Stages G3–G5 as follows: (i) 136,067 patients in the US electronic medical record (EMR) based cohort; and (ii) 34,957 patients in the Manitoba claims-based cohort. The primary exposure was metabolic acidosis (serum bicarbonate between 12 mEq/L and <22 mEq/L). The primary outcome was the development of AKI (defined using ICD-9 and 10 codes at hospital admission or a laboratory-based definition based on Kidney Disease: Improving Global Outcomes guidelines). We applied Cox proportional hazards regression models adjusting for relevant demographic and clinical characteristics.

Results: In both cohorts, metabolic acidosis was associated with AKI: hazard ratio (HR) 1.57 (95% confidence interval [CI] 1.52–1.61) in the US EMR cohort, and HR 1.65 (95% CI 1.58–1.73) in the Manitoba claims cohort. The association was consistent when serum bicarbonate was treated as a continuous variable, and in multiple subgroups, and sensitivity analyses including those adjusting for albuminuria.

Conclusions: Metabolic acidosis is associated with a higher risk of AKI in patients with CKD. AKI should be considered as an outcome in studies of treatments for patients with metabolic acidosis.