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2016
UBC STUDENTS IN HEALTH:
ANNUAL RESEARCH CONFERENCE



FACULTY OF MEDICINE



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SHARC 2016

BASIC SCIENCES ABSTRACTS



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FACULTY OF MEDICINE



Abstract 1

Distant Tumor Inhibition by Stereotactic Body Radiotherapy in Mouse Breast Cancer Models

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Keywords: cancer, radiation therapy, nuclear imaging, animal model

ABSTRACT

Introduction:

Stereotactic body radiotherapy (SBRT) is an emerging technique that is thought to cause distinct biological responses in addition to conventional cell kill. One such potential response is the abscopal effect, immune-mediated inhibition of distant tumors upon primary tumor irradiation. In mammary tumor models receiving hypofractionated radiotherapy of up to 30Gy, the abscopal effect was demonstrated in combination with immunotherapy. We hypothesized that the abscopal effect can be observed in immunocompetent mouse breast tumor models, with hypofractionated image-guided radiotherapy (48 Gy) alone using the Small Animal Radiation Research Platform (SARRP).

Materials & Methods:

Female balb/c mice inoculated with 2×10^6 4T1 mammary tumor cells on each shoulder received 4 fractions of 12Gy, 220kVp x-ray irradiation on one of the tumors from day 10 to 14 using the SARRP. Tumor response was assessed with ¹⁸F-fluorodeoxyglucose (FDG) PET/CT scans on days 9 and 21, as well as with periodic tumor size measurements. FDG uptake values were compared using two-tailed t-test and tumor growth curves were compared using 2-way ANOVA.

To estimate the scattered dose to the non-irradiated (contralateral) tumor, the irradiation was also conducted with a solid water phantom. The resulting dose map was computed using the GafChromic EBT3 film.

Results:

2D dosimetric analysis showed less than 0.1% of prescribed dose beyond 1.2cm and 0.0% of prescribed dose beyond the minimum distance of 1.3cm between the bilateral tumors in a mouse.

As expected, the tumor growth curve of the irradiated tumor showed significant growth inhibition compared to the control ($p < 0.0001$). At the same time, the unirradiated tumor on the irradiated mice also showed significant growth inhibition ($p < 0.01$) to a lesser extent.

Between days 9 and 21, the mean and maximum FDG uptake values increased in the irradiated tumor but decreased in the control. The same trend was also observed in the unirradiated tumor on the irradiated mice. The observed differences in FDG uptake were statistically significant ($p < 0.05$) for both tumors on the irradiated mice when compared to the control.

Conclusion:

Hypofractionated irradiation of mammary 4T1 tumor with 48Gy produced significant overall growth inhibition and increased tumor FDG uptake in both the primary and distant tumors.



Abstract 2

Using Eye-tracking to Quantify the Impact of Prostate Cancer Treatments on Male Libido: A Pilot Study

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Keywords: prostate, cancer, sexual, attention, eye-tracking

ABSTRACT

Background:

Eye-tracking research has demonstrated that heterosexual men with normal testosterone levels attend visually to features of women associated with fertility, notably their breast size and waist to hip ratio. As such, eye-tracking data can serve as an implicit measure of a man's libido. Many treatments for prostate cancer (PCa)—in particular androgen deprivation therapy (ADT)—depress sexual interest in men, but there is no objective measure of the intensity of this effect. Here we explore whether eye-tracking can be used to quantify the impact of PCa treatments on men's libido.

Methods: We used an IRB-approved deception protocol to explore the validity of eye-tracking technology for assessing the level of sexual interest of PCa patients and normal controls. Three age-matched groups of heterosexual men aged 50 years and older were recruited. They were: PCa patients using ADT, PCa patients not using ADT, and healthy controls. Unaware that their eye movements were being tracked, all were exposed to photographs of female models, either fully clothed (neutral) or minimally clothed (sexy). Number and duration of eye fixations on target areas of the female models' bodies were recorded.

Results:

Trends observed in our preliminary data suggest that men on ADT exhibit differential patterns of visual attention to sexual stimuli compared to men in the other two groups. Although confirmation with a larger sample size is required, such shifts in attention may provide an objective measure of the influence of cancer treatments on the libido of PCa patients.

Conclusions:

Eye-tracking technology may provide a reliable and objective technique for measuring the libido of cancer patients. Such data could help patients be better informed about psychological side effects when making treatment decisions. They could also lead to ways to both study and reduce the impact of PCa treatments on men's sexual interest.



Abstract 3

The Role of Autophagy Inhibition in the Development of Parkinson's Disease

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Keywords: Parkinson's disease, autophagy inhibition, animal models

ABSTRACT

Background and Hypothesis:

Parkinson's disease (PD) is a neurodegenerative disorder characterized primarily by motor symptoms including tremors, muscle rigidity, and slowed movement. Pathologically, these symptoms have been largely associated with increased neuroinflammation, dopaminergic neuron loss in the substantia nigra, and cellular accumulation of protein aggregates (Lewy bodies). However, the causes of neuron death and degeneration remain largely unknown. We hypothesized that direct inhibition of the autophagy-lysosomal pathway (ALP), one of the cellular mechanisms that remove misfolded proteins and dysfunctional organelles to maintain cellular homeostasis, and the activity of which decreases with aging, would induce dopamine neuron loss as well as increased inflammation and lead to a putative rodent model of PD.

Methods:

The right substantia nigra of rats was directly injected with the non-specific autophagy inhibitor, ammonium chloride. Positron emission tomography scans and behavioural tests were then conducted to determine in vivo whether the rats showed a lesion and unilateral motor symptoms consistent with PD. Animals were subsequently sacrificed and immunohistochemistry techniques were used to stain brain slices for markers of dopaminergic neurons (tyrosine hydroxylase [TH]) and neuroinflammation (CD68 and ionized calcium binding adapter molecule [Iba-1]).

Results:

Our findings showed that injection of ammonium chloride into rat brains induced increased expression of CD68 and Iba-1 around the injection sites. Furthermore, the injected side of each rat's brain generally showed weaker staining for TH compared to the control (non-injected) side, confirming the in vivo imaging findings of decreased striatal dopaminergic neuron terminals.

Conclusions:

Our results indicate that a decrease in the activity of the ALP may play a role in the development of PD. Increased CD68 and Iba-1 expression in response to ammonium chloride treatment suggest significant inflammation while decreased TH staining is indicative of loss of dopamine cell bodies. Therefore, it may be worthwhile to focus on slowing down the loss of ALP function, or attempting to restore ALP activity, as a novel and effective treatment for PD.



Abstract 4

Prenatal Alcohol Exposure and Early Life Stress on Cytokine Expression Patterns and the Immune Response to Challenge

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Keywords: immunity, alcohol, development, cytokines

ABSTRACT

Prenatal alcohol exposure affects the development and function of many physiological systems resulting in a range of deficits, collectively known as Fetal Alcohol Spectrum Disorder. These deficits include changes in immune function and regulation, leading to increased incidence of infections and predisposition to autoimmune diseases. To investigate possible mechanisms underlying altered immunity, pregnant rats were assigned to a liquid ethanol diet, a pair-fed diet (to control for reduced food intake in ethanol consumers) or a control diet. At puberty, to model stressful adolescence, a subset of offspring was exposed to a series of stressors. In adulthood, animals received an immune challenge with Complete Freund's Adjuvant, which modelled human rheumatoid arthritis. Levels of 10 cytokines (KC/GRO, IFN γ , IL-1 β , IL-2, IL-4, IL-5, IL-6, IL-10, IL-13, TNF- α) in the hind paw, plasma and hypothalamus were analyzed at the peak of inflammation (day 16 post-injection) and following recovery from inflammation. Our data show clear evidence for inflammation in the hind paw at the peak of inflammation, as levels of all cytokines (except IL-2 and IL-5) were elevated in animals with arthritis. Following recovery, several cytokines remained high - particularly IL-6 and TNF- α in alcohol-exposed animals, which is suggestive of sustained low-grade inflammation or impaired resolution. Comparatively, circulating (plasma) cytokine levels were low, exhibiting decreased IL-2 and elevated TNF- α and KC/GRO in arthritic animals, while remaining cytokines were undetectable. Finally, in the hypothalamus, most cytokines were also undetectable, except IL-1 β and IL-2, which showed heightened levels in pair-fed animals only, suggesting a unique pair-feeding effect. The continued expression of pro-inflammatory cytokines in the hind paw of alcohol-exposed animals is suggestive of immune system dysregulation and although yet to be determined, suggests that humans with Fetal Alcohol Spectrum Disorder might have alterations in the pathophysiology of rheumatoid arthritis, as well as other autoimmune disorders.



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CLINICAL RESEARCH (I) ABSTRACTS



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Abstract 5

Thalamic Deep Brain Stimulation Improves Vocal Dysfunction in an Essential Tremor and Coincident Spasmodic Dysphonia Patient: A Prospective, Randomized, Double-Blinded Collaborative Assessment with Otolaryngology

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Keywords: neurosurgery, deep brain stimulation, spasmodic dysphonia

ABSTRACT

Introduction

Spasmodic dysphonia (SD) is a focal dystonia where involuntary contractions of the laryngeal muscles compromise a patient's ability to speak. Since the 1980s, SD has been treated with botox (BTX) but this therapy has many limitations well-known to the Functional Neurosurgery community. In a patient with essential tremor (ET) and coincident SD, we set out to quantify the effects of thalamic Deep Brain Stimulation (DBS) on voice while interrogating the underlying motor thalamic circuitry.

Methods

A 79-year old female with ET and coincident adductor SD was referred to our neurosurgical team. While primarily treating her limb tremor, we studied the effects of bilateral thalamic Vim DBS on voice using the Unified Spasmodic Dysphonia Rating Scale (USDRS) and Voice-Related Quality of Life (Vr-QoL). Since dystonia is increasingly being considered a multi-nodal network disorder, an anterior trajectory into the thalamus was deliberately chosen such that the proximal contacts of the electrode were in the Voa (pallidal outflow) and the distal contacts were in the Vim (cerebellar outflow). In addition to assessing ON/OFF bilateral thalamic Vim stimulation on voice, we experimentally assessed low voltage unilateral Vim, Voa, or multi-target stimulation in a prospective, randomized, doubled-blinded manner. A Wilcoxon Signed-Rank test was used to study the pre- and post- treatment effect of DBS on voice.

Results

Using the USDRS and Vr-QoL, bilateral thalamic Vim stimulation significantly improved vocal dysfunction and QoL compared to no stimulation ($p < 0.05$). Most interestingly, in our experimental interrogation, both low voltage Vim and multi-target (Vim+ Voa) was significantly superior from only low voltage Voa stimulation ($p < 0.05$).

Conclusion

For the first time, the effects of DBS on SD have been quantified. While only a single case, scattered reports exist on the positive effects of thalamic DBS on dysphonia. A Phase 1 pilot trial is underway at our centre to evaluate the safety and preliminary efficacy of DBS in SD.



Abstract 6

Stribild and Darunavir Evaluation (STRIDE): A New Standard In HIV Salvage Therapy

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Keywords: HIV, infectious diseases, Stribild, vulnerable populations, salvage therapy

ABSTRACT

Background:

Historically, patients who have received multiple antiretroviral regimens (because of virologic failure or toxicity) have been placed on more complex regimens termed “salvage therapy.” These regimens are often multi-class, multi-tablet regimens with issues of drug interactions, side effects, and reduced adherence. The availability of potent single tablet formulations may provide us with the opportunity to simplify such salvage regimens, while maintaining long-term efficacy.

Methods:

We have evaluated 31 HIV-positive patients with complex prior treatment histories in whom we have simplified therapy to Stribild with or without Darunavir. These patients had received 2 or more prior regimens and did not demonstrate resistance to any prescribed agents (archived resistance to lamivudine and emtricitabine were allowed). Patients were followed quarterly by regular blood work, HIV Viral Load (VL), and CD4 cell counts.

Results:

Patients switched to Stribild had a mean of 7.4 prior regimens, with 4 (12.9%) switched due to virologic failure, 10 (32.2%) requesting simplification, 4 (12.9%) with medication-associated toxicity, and 13 (41.9%) for other reasons. Within this cohort, 19 (61.3%) were started on Stribild, while 12 (38.7%) received Stribild/Darunavir. The mean follow-up period was 413 (range 157-804) days. Of 31 evaluable patients, 28 (90.3%) were male. After the switch, all 31 (100%) had suppressed VL below 400 copies/mL (range <40-154) and 26 (83.9%) had VL <40 copies/mL with a median absolute CD4 count of 550 (range 40-1368) cells/ μ L. There was a mean CD4 count increase of 63 cells/ μ L. During treatment, 13 (41.9%) were actively using illicit drugs, all of whom had virologic suppression and 9/13 (69.2%) consistently below 40 copies/mL. Of 14 patients with archived mutations conferring resistance to lamivudine/emtricitabine, all had maximal virologic suppression.

Conclusion:

The STRIDE approach should be considered in all patients on complex salvage regimens as a tool for simplification and enhanced maintenance of long-term efficacy. A clinical trial to formally evaluate this approach is planned.



Abstract 7

A Single-centre Evaluation of the Effectiveness of Nebulized Aztreonam (Cayston) on Pulmonary Exacerbation Rates and Healthcare Utilization in Adults with Cystic fibrosis

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Keywords: cystic fibrosis, respiratory medicine, inhaled antibiotics, exacerbations

ABSTRACT

Background:

In cystic fibrosis (CF), pulmonary exacerbations are events characterized by an acute worsening of respiratory symptoms, often necessitating hospitalization. While these exacerbations can be treated with oral or intravenous antibiotics, they often lead to a reduced quality of life and permanent loss in lung function. This provides the rationale for the use of chronic suppressive therapies, such as inhaled antibiotics, which aim to prevent exacerbations and preserve lung function. In 2012 and 2013, there was an unprecedented decrease in the number of hospitalizations for pulmonary exacerbations in BC, corresponding temporally to pharmacare coverage of aztreonam (Cayston), a new nebulized antibiotic. The aim of this study was to evaluate the real-world effectiveness of Cayston by comparing individual exacerbation rates before and after initiation of treatment in patients with CF.

Hypothesis:

Individual pulmonary exacerbation rates in patients with cystic fibrosis decreased following the initiation of nebulized aztreonam treatment, resulting in reduced health care utilization.

Methods:

The sample population (n=40) was obtained by performing a retrospective chart review of all patients (≥ 18 yrs) followed at St. Paul's Hospital CF clinic between January 2012 and May 2015, and selecting those who had been prescribed Cayston in the year 2012 or later, and who had received treatment for a minimum of 10 months. Data relating to lung function and the number of exacerbation events requiring oral or IV antibiotics before and after initiating Cayston were collected for each patient.

Results:

Data analysis revealed a significant (35%, $p=0.003$) decrease in the mean annual pulmonary exacerbation rates requiring IV antibiotics associated with the initiation of Cayston. In addition, a trend towards a slower rate of decline in lung function (FEV1) post-treatment was observed, improving from an average loss of approximately 1.2% /year to 0.7% /year ($p=0.610$). Based on the predicted decrease in exacerbation rates, a crude budget impact analysis predicted mean annual savings in hospital admissions per patient to be approximately \$19,000, counteracting a significant proportion of the estimated annual cost of Cayston (\$23,000).

Conclusions:

Cayston reduces the frequency of exacerbations requiring IV antibiotics and there was a trend toward slower rate of lung function decline.



Abstract 8

Cardiovascular Recovery and Oncologic Outcomes Associated with Continuous and Interrupted Adjuvant Trastuzumab in the Setting of Mild Left Ventricular Dysfunction

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Keywords: Trastuzumab, breast cancer, heart failure, adjuvant therapy

ABSTRACT

Background:

Trastuzumab is a monoclonal antibody that antagonizes the HER2 receptor, a protein overexpressed in 15-20% of breast cancers. While efficacious in treating tumors with HER2 overexpression, trastuzumab has been associated with a clinically significant drop in left ventricular (LV) function in a subset of patients. When severe left ventricular dysfunction (LVD) occurs, trastuzumab is typically held with the intention of restoring cardiac function. However, it is less clear how to optimize both cancer treatment and cardiovascular management when mild drops in LV function are observed. The intention of this study was to assess how trastuzumab was managed in a non-trial setting in patients with mild LVD and evaluate these outcomes.

Methods:

Patients receiving adjuvant trastuzumab therapy in British Columbia for breast cancer between September 2005 and September 2010 who subsequently developed a drop in LV function to 40-50% were identified. The charts of patients who met the inclusion criteria were then reviewed for demographic information, comorbidities, trastuzumab dosing regime, and subsequent cardiac and breast cancer outcomes.

Results:

A total of 151 patients were included in this study. Within this group, 37 (24.5%) patients proceeded with uninterrupted trastuzumab therapy while the remaining 114 (75.5%) had at least one cycle of trastuzumab held with the intention of restoring left ventricle function. The number of patients who experienced a cancer relapse event in the therapy continuation and interruption groups were 3 (8.1%) and 19 (16.7%), respectively ($P = 0.29$). Mean follow-up times for the therapy continuation and interruption groups were 6.0 and 5.6 years, respectively. Six patients (16.2%) who proceeded with an uninterrupted adjuvant regime had a final LV function measurement that had fallen more than 5% below their baseline measurement, while 50 (43.9%) patients who had an interrupted course of trastuzumab therapy experienced this level of cardiac function decline.

Conclusions:

Continuing trastuzumab in the setting of mild LV dysfunction was not associated with an increased incidence of cardiac events. However, an uninterrupted course of trastuzumab appeared to be associated with a lower risk of cancer relapse when compared to an interrupted course, although this did not reach statistical significance.



Abstract 9

Valve Failure in Hydrocephalus Patients Treated with Ventricular Shunts at BCCH 2005-2015

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Keywords: hydrocephalus, valve failure, shunt, pediatric neurosurgery, retrospective chart review

ABSTRACT

Object:

Hydrocephalus is a rare medical condition characterized by the abnormal accumulation of cerebrospinal fluid resulting in increased intracranial pressure. The treatment of this condition is the surgical implantation of a cerebral shunt to drain the excess cerebrospinal fluid from the ventricles to another body cavity where it can be resorbed. Revision procedures for previously implanted shunts are commonly required due to a high shunt failure rate of up to 40%. This retrospective study looks specifically at shunt revision as the result of valve failures, a relatively uncommon cause of valve failure in patients treated with a ventriculoperitoneal shunts. We investigated the reasons for requiring valve replacement and compared different valve longevities. The authors present a single institution's experience with valve failure in patients treated between 2005 and 2015.

Methods:

A retrospective chart review was performed on all pediatric patients who underwent valve replacements at BC Children's Hospital at the time of ventricular shunt revision between 2005-2015. Shunt revisions were reviewed for patient characteristics, the reason for valve revision, valve type and valve lifespan.

Results:

Eighty-five shunt revisions were reviewed. The valve failures studied involved Medtronic CSF flow control differential pressure (51.8%), Orbis Sigma (41.2%) and Codman valves (7.1%). The most common reason for valve revision was valve blockage or malfunction (70.6%), followed by insufficient drainage (18.8%) and valve breakage (10.6%). The pattern of valve failure differed between the various types, as did the valve lifespan with Medtronic valves having a significantly longer lifespan than both the Orbis Sigma ($p=0.003$) and the Codman valves ($p=0.042$).

Conclusion:

This retrospective analysis revealed that there were correlations between the type of valve failure as well as valve lifespan and valve manufacturer. Patients with Medtronic valves in our study population experienced a significantly longer revision-free period compared to patients with Orbis Sigma and Codman Hakim valves.



Abstract 10

Medieval Tools in Modern Times: Dynamic vs. Static Traction in AIS Correction Surgery

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Keywords: scoliosis, surgery, orthopaedics, paediatrics, traction

ABSTRACT

Introduction:

Existing studies highlight the utility of IOSFT in AIS correction, suggesting it to be an effective, safe, and well-tolerated adjunctive technique of improving outcomes and reducing healthcare resources in curves > 80°. No published reports delineate between different traction methods, although increasingly it is being popularized for smaller curves. In this study, our aim was to compare the intra- and post-operative neurologic safety and clinical efficacy of two common traction modalities; dynamic IOSFT, which entails hanging weight from bilateral femora, and static IOSFT, which places a fixed traction force.

Design:

Retrospective comparative case series

Hypothesis:

Static and dynamic IOSFT are equally safe and efficacious in AIS correction.

Methods:

96 consecutive surgical patients treated by two surgeons at a tertiary care facility with mean 1.6-year follow-up between 2011 and 2014 were identified. 63 patients received static and 33 patients received dynamic IOSFT. Each surgeon employed only one mode of traction. Primary outcome included neuromonitoring (NM) changes, estimated blood loss (EBL), OR time, length of stay (LOS), percent curve correction and complications. Descriptive statistics, t-tests and Fisher's exact test for significance ($\alpha=0.05$) were calculated for analysis.

Results:

Demographic variables and curve characteristics were similar between static and dynamic groups. Levels fused (12.3 static vs. 12.1 dynamic), EBL (601mL static vs. 508mL dynamic), OR time (365 min static vs. 376 min dynamic), LOS (6 days static vs. 5.8 days dynamic), and curve correction (71.5% static vs. 69.5% dynamic) were not significantly different. 17.5% of static patients and 12.1% of dynamic patients had NM changes, while 8% of static patients and 3% of dynamic patients experienced complications. Mean number of osteotomies was significantly higher in the static group ($p<0.001$).

Conclusion:

IOSFT in AIS correction is a safe and effective adjunctive technique in curves <80°, with no neurologic complications in this cohort and similar rates of NM changes regardless of static or dynamic application. Perioperative clinical outcomes and postoperative radiographic outcomes were comparable between dynamic and static IOSFT. Further research is required to quantify safe amounts of IOSFT.



Abstract 12

Negotiating Power on the Healthcare Team: Perspectives from COPD Patients

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Keywords: healthcare, team, COPD, interview, qualitative

ABSTRACT

Background:

It is recognized within chronic care that patients' perception of control and ownership over their own healthcare is critical in improving prognosis, while decreasing healthcare costs. However, patients' active role participating in their own care is hindered by the power dynamics of patient care negotiations characterizing many healthcare team interactions. This pilot study generated preliminary insights into the phenomena of healthcare team power negotiations around patient-centered care from the perspective of Chronic Obstructive Pulmonary Disease (COPD) patients.

Research Questions:

(1) What are the experiences of COPD patients in leading their own care within the context of a healthcare team coordinating their care?, and (2) What mechanisms do COPD patients draw upon to assert themselves in the decision making process around their care with team members?

Methods:

Six participants over the age of 65 living in Vancouver with a diagnosis of COPD were recruited for this study. Semi-structured interviews were conducted to explore the research questions.

Results:

Preliminary observations from the interviews suggest various themes: (1) Perceptions of COPD healthcare teams and their coordination vary widely among patients, (2) Economic status may influence the perception of coordinated care, (3) Caregiver spousal support may help in the provision of coordinated care, and (4) Power is perceived as being absent when teams are uncoordinated.

Conclusion:

The results from this pilot study help to deepen the theoretical exploration of team based care and patients' sense of empowerment, thus influencing/enriching this program of research in important ways. This research, in its preliminary stages, has broad implications for health services delivery, chronic disease models of care, patient-centred care, health professional education, and multidisciplinary care.



Abstract 13

Accuracy and Reliability of Internet-Based Resources on Preoperative Fasting

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Keywords: preoperative, fasting, internet, anesthesia

ABSTRACT

Background:

Patients commonly use the Internet to obtain health-related information, yet website recommendations may be inaccurate. Our objectives were to 1) describe the characteristics and recommendations of Internet resources on pre-operative fasting and 2) assess the readability and quality of Internet-based pre-operative fasting guidelines.

Methods:

We used Google® search engine to search common preoperative fasting terms and included the first thirty websites from each search. After excluding duplicate and inappropriate websites, websites were categorized as: 1) Anesthesia society; 2) Government-sponsored; 3) Healthcare institution; 4) Scientific article; 5) Commercial or news/media report; and 6) Forum or personal website. We documented country of origin, date of last update, and recommendations intervals for preoperative fasting of liquids, solids, formula and breast milk. We assessed readability using the Flesch Reading Ease score and Flesch-Kincaid Grade level. Website quality was assessed using Health on the Net Foundation certification and two validated tools (JAMA Benchmark Criteria and DISCERN score).

Results:

We identified and analyzed 87 unique websites. Website fasting recommendations were variable, with 54% recommending clear fluid intake up to 2 hours prior to surgery. Anesthesia society websites were more likely to recommend hydration than health care institution websites (62 vs 13%, $p < 0.0001$). Overall readability was poor with a mean Flesch Reading Ease of 49 (standard deviation [SD] 15) and Flesch-Kincaid Grade level of 10.6 (SD 2.7). Scientific articles and anesthesia society websites had the lowest readability ($p < 0.001$ across categories). Overall quality was poor with a median JAMA Benchmark score of 1 out of 5 (IQR 0-3) and mean total DISCERN score of 39.8 out of 80 (SD 12.5). The website category and country of origin predicted the mean total DISCERN score ($p = 0.04$, $p < 0.0001$, respectively) with anesthesia society and scientific article websites scoring higher and health care institution websites scoring lower.

Conclusions:

Fasting recommendations provided on the Internet are variable and frequently inconsistent with current guidelines, and websites that provide fasting recommendations have poor quality scores and readability. The Internet resources available on preoperative fasting may be confusing and provide inaccurate information to patients.



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Abstract 14

Systematic Review of the Impact of Acute Care Surgery Service Delivery Models – Processes of Health Care Delivery, Education, and Provider Satisfaction

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Keywords: acute care surgery, emergency general surgery, health economics, education, delivery systems, operations

ABSTRACT

Background:

In recent years, significant workload, high acuity and complexity of emergency general surgery conditions have led hospitals to replace the traditional on-call model with dedicated acute care surgery (ACS) service models. The purpose of this systematic review is to assess the impact of ACS service implementation on health care delivery processes and costs, resident education, and provider satisfaction.

Methods:

A systematic, English-language search of Ovid, EMBASE and MEDLINE was conducted for papers examining the impact of ACS services on health care delivery and cost, education, and provider satisfaction. From 1,827 papers, two independent reviewers identified 22 studies that met inclusion criteria. The evidence-based practice for improving quality (EPIQ) method and Newcastle-Ottawa Scale were used to score quality and level of evidence.

Results:

These results fall under 3 themes – systems, education and job satisfaction. Most studies found increased daytime and decreased after-hours operating, improved patient transit from ED to OR to home, and decreased length of stay. The overall trend was higher case volumes with a good variety of cases, which improved resident education and case logging. Residents at a centre with an ACS service maintained their subspecialty rotations and no longer covered ACS call, therefore having more time to devote to clinics and academic half days. Finally, in several papers, surgeons were surveyed after the implementation of an ACS service and overall felt it improved job satisfaction, productivity and billing.

Conclusions:

The ACS model has been implemented widely around the world, and has demonstrated an improvement in timeliness of care, diversified case mix, decreased administrative costs, and improved trainee learning. Models should be created and re-assessed to meet the patient quality standards, financial and educational goals.



Abstract 15

Medical Student Attitudes Towards Geriatrics

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Keywords: geriatrics, attitudes, medical students

ABSTRACT

The global aging population is increasing annually. However, the interest in a career involving geriatrics care is not keeping up with the increase in population. The lack of geriatrics interest leads to a decrease in willingness and quality of care for the elderly. Geriatrics knowledge, geriatrics experience, and personal demographics have been found to be associated with geriatrics attitudes in health care professionals. In Canada, personal demographics is an important factor because 20% of Canadian Medical student identify as Chinese or South Asian. The purpose of the study is to analyze medical student attitudes and compare the factors that affect these attitudes. In our study, we compared the attitudes of medical students at University of British Columbia in Canada and National Taiwan University in Taiwan. The similarity between these two countries in its elderly population and health care system provides them as two countries for comparison. We utilized a 5-10 minutes online questionnaire to obtain data on pre-medical factors (demographics and experiences), career choice factors, current geriatrics attitudes, and geriatrics knowledge. The study results will be presented comparing positive attitude scores between UBC students of Taiwanese and non-Taiwanese descent vs. Taiwanese students. Statistical differences in attitudes will be presented from analyzing geriatrics experiences and geriatrics knowledge. Western individualist values lower chances for intergenerational interaction whereas Eastern collectivist culture promotes duty of caring for older family members. Asians have a more negative geriatrics attitude whereas those more assimilated into Canadian culture will exhibit a more positive attitude towards geriatrics. By understanding the attitudes that UBC medical students have throughout the four years of medical school and comparing this with medical students in Taiwan, we can better dissociate the influences pre-medical and medical experiences have on attitudes.



Abstract 16

A transgender health care education seminar can be effective and should be incorporated into the British Columbian medical undergraduate curriculum

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Keywords: transgender health, education

Background:

In British Columbia, there is a need for more education on transgender health topics. Last year, University of British Columbia (UBC) medical students performed a nation-wide survey of peers and identified a gap in their understanding of transgender medicine and health care. This year, we organized a weekend seminar with talks by medical faculty, medical students, community experts, and a professional educator, to address the identified gap.

Methods:

The seminar was a self-directed project for the Doctor, Patient, & Society 420 course. It was advertised to UBC medical students and residents from the Family Medicine Program. Participants were given pre- and post-surveys to determine if/how attendance changed views. Approval was granted by the UBC Behavioural Research Ethics Board, and the Faculty of Medicine Research Access Committee.

Topics were presented through lectures, a panel discussion, and a question-and-answer period, and included: i) The gender spectrum, ii) Inclusive practices and language; iii) Medical/surgical aspects of transitioning; iv) Experiences from transgender individuals; and v) Increasing access, safety, & support for transgender individuals.

Results:

Attendees identified the use of inclusive language, the personal stories from our panel, the concept of 'intersectionality' in transgender health, and the importance of parents' acceptance on individuals' welfare, as the most valuable themes. Further strengths noted by attendees were the short lengths of the presentations, and that they were given mostly by transgender individuals. Suggestions for improvement included: adding more visual examples of transgender health delivery, identifying ideas that make a difference, and recommendations for how to incorporate the family into the care of the individual.

One limitation was the small audience. Thus, a suggestion for future seminars is to extend the invitation to a larger audience, or change logistics to improve turnout, so that more students would benefit.

Conclusions:

Incorporating transgender health education into the medical curriculum is timely and necessary. Attendees reported the same gaps as were reported at UBC last year and as have been reported elsewhere. Delivery of content via a student-led seminar (including speakers who identify as transgender) was effective. However, because the seminar was elective, attendance was modest, compromising the potential impact. An elective seminar for busy medical students is insufficient and the curricular content should be integrated into the formal curriculum.



Abstract 17

Integrating Clinical Medicine with the Basic Sciences: Musculoskeletal System Cadaver-Based Learning Module for Medical Students

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Keywords: musculoskeletal anatomy, clinical skills, web module, medical education

ABSTRACT

In undergraduate medical education, there has traditionally been a focus on the basic sciences, cornerstones of which include anatomy and clinical skills. However, there is concern among some practicing clinicians that the preclinical knowledge of medical students in anatomy and clinical skills could be improved to allow for safer and more effective medical practice. A mutual area of concern among students and clinicians is the disconnect between their education in anatomy and clinical skills. While students may become proficient in the execution of certain clinical examinations through systematic repetition, their interpretations of examination findings may be limited by their inadequate understanding of the underlying anatomy. Clinical skills education often draws on the anatomy that students learn in the anatomy lab, and both topics are often studied in parallel. However, the anatomy curriculum seldom underscores the relevance of anatomical features and their direct correlations with clinical skills and examination techniques. As such, we hypothesize that by developing an online module which employs cadaver-based teaching of anatomy with enhanced context provided by clinical skills cases and examinations, students will achieve a better appreciation and understanding of the underlying anatomical pathology that is often manifested clinically, and that this will facilitate their overall learning of anatomy. Accordingly, an online module was developed for 2nd year UBC medical students which focused on the lower limb musculoskeletal anatomy, as well as the pertinent pathology and clinical tests. Completion of the module was encouraged in preparation for exams, but was ultimately voluntary. Overall, 101 students provided feedback and 95% expressed that the module had successfully enabled them to better consider the correlation between anatomy and clinical skills. Furthermore, the number of students who reported that they had a very solid understanding of musculoskeletal anatomy after completing the module increased by greater than 3.6-fold. We conclude that cadaver-based modules are effective for reviewing the anatomy content and the integration of clinical relevance further facilitates this process, while also bridging the gap between these two domains.



Abstract 18

Peer Facilitated Case Based Learning: Reproduction Block as the Learning Ground for Novel Medical Education Methods

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Keywords: CBL, education, peer-based

ABSTRACT

Background:

Peer Facilitation is a well-studied approach to education that has been piloted for the last five years in the University of British Columbia Faculty of Medicine during Reproduction Block in the second semester of second year. Undergraduate medical students volunteered to participate in small group Case Based Learning (CBL) tutorials without a tutor. Instead, they rotated through the role of Peer Facilitator with each session allowing a different student to take on the role.

Methods:

Following every session the students provided feedback in the form of a four to five question "Flash Feedback" form, they also provided end of the block qualitative feedback, and anonymously evaluated three peers. We analyzed the data from the 2015 pilot, compared it to the 2014 student feedback, and then related it to a summary of existing research in this area.

Results:

The results of these pilots are congruent with existing research and clearly demonstrate a benefit to students in several ways: improved learning environment, skill development, peer feedback, and a positive experience.

Conclusions:

The data collection from 2014 and 2015 of the pilot peer facilitation groups demonstrate a highly positive student experience. Feedback from students highlighted not only new skill development but also an improvement in motivation and information retention. It has been well-documented in the literature that peer facilitation is beneficial to both students and facilitators, providing valuable opportunities for learning.



Abstract 19

Development of Mandarin Language Workshops for Medical Students

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Keywords: Mandarin, language barrier, language, immigrant, patient-centered care

ABSTRACT

Language barriers represent a major challenge to providing healthcare to immigrants. We surveyed medical students at the University of British Columbia to determine the need for tools to bridge the language gap, developed and delivered Mandarin-language workshops and medical Mandarin phrasebooks for medical students, and ran a Mandarin-language blood pressure clinic to give students a chance to practice interacting with community members in Mandarin. We also conducted surveys with these community members about how important they felt it was to have a Mandarin-speaking health care provider. In a survey about the language abilities of medical students and their perceived need for language workshops, 84% of the 58 medical students who responded reported having past clinical encounters in which they felt that use of a language other than English would have improved communication with patients, 43% reported having used a language other than English to communicate with patients, and 76% expressed an interest in receiving resources or attending workshops about medical terminology in languages other than English. The most commonly spoken language other than English among respondents was French (57% of respondents spoke any level of French), followed by Mandarin (19% of respondents) and Spanish (17% of respondents, but none beyond a basic level). Responses to the medical Mandarin workshop were positive; of 28 participants completing a survey after the workshop, 93% said that the workshop had added to their ability to speak Mandarin and 82% said that it had added to their confidence in communicating with patients using Mandarin. Of 32 community members who filled out a survey at the Mandarin blood pressure clinic, 75% understood Mandarin better than English, and 59% expressed that they would be more comfortable seeing a healthcare provider who had learned basic Mandarin than a seeing a healthcare provider who only spoke English. We additionally received very important feedback from many participants, and gained insight into how to improve the workshops and associated resources. This work provides some insight into a framework with which to develop further language training initiatives for healthcare providers.



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Abstract 21

Longterm outcomes of adults with arthrogryposis

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Keywords: arthrogryposis multiplex congenita

ABSTRACT

Arthrogryposis Multiplex Congenita (AMC) is a rare, non-progressive birth defect that affects two or more joints including the limbs, spine, and jaw. The purpose of our study is to provide data on long-term outcomes of adults with Arthrogryposis based on standardized measures as this type of data is non-existent. Adults with AMC provided information on demographics, surgery, living situation, mobility and two standard measures on quality of life (SF-36) and physical activity (Physical Activities Score for Individuals with Physical Disabilities -PASIPD) using an online questionnaire. The data was analysed descriptively. This is the largest international study of adults with Arthrogryposis with 177 participants from over 15 countries. The study consisted of 72% of females and 28% males with an average age of 39 and age range of 19-84. The majority (75%) were living independently of family members either on their own or with a partner. They were highly educated and were three times more likely to have a graduate degree than the general US population. Over 90% of the participants had upper and lower limb involvement, a third had scoliosis or lordosis while 16% had jaw problems. They had on average 9 (0-70) surgeries so far. People with AMC reported lower physical function scores than non-disabled individual (U.S.); however, they reported similar or higher for the other quality of life measures on the SF 36. They were considerably less physically active than able bodied individuals. Half experienced chronic back pain and 60% complained of joint pain. Almost half took took regular pain medications. Individuals with AMC are highly driven and maintain their independence despite experiencing significant levels of chronic pain. They have significant hip and knee involvement and require several surgeries for improved mobility. However, they are quite creative in finding ways to adapt to their disability.



Abstract 22

The Association of Femoroacetabular Impingement and Delayed Gadolinium Enhanced MRI of Cartilage (dGEMRIC): A Population-based Study

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Keywords: femoroacetabular impingement, osteoarthritis, DGEMRIC, MRI

Background: Femoral acetabular impingement (FAI) is a degenerative hip condition in which there is abnormal contact between the acetabulum and the femoral head-neck junction. The association between FAI and hip osteoarthritis (OA) is well known. Early detection of cartilage degeneration in FAI may be important in preventing progression to symptomatic hip OA. **Purpose:** 1) To assess the association of FAI and dGEMRIC T1 relaxation value (RV) scores. 2) To evaluate whether subtypes of FAI (cam, pincer, mixed) are associated with region-specific dGEMRIC T1 RV scores.

Methods: Caucasian subjects with and without hip pain, age 20-49, were recruited from a population-based cohort and underwent dGEMRIC scans on a 3T scanner (Intera, Philips). Total hip and regional T1 RV scores were determined by a trained reader (intra-rater reliability = 0.99). On plain radiographs, cam impingement was defined by an alpha angle of $>55^\circ$, while pincer impingement was defined by a lateral center edge (LCE angle) $>40^\circ$ or a positive cross-over sign. Mixed impingement was defined by the presence of both cam and pincer impingement. T1 RV scores of all FAI types and controls were compared in the anterior-superior, central-superior, and posterior-inferior regions of the femoral head using linear regression analysis, adjusted for age, sex, and BMI. All results were weighted for the greater Vancouver total population according to age, gender, and hip pain.

Results: Subjects (n=128) had mean (SE) age of 38.0(1.4), 51.4% were female, 28.0% had hip pain. FAI was present in 47.7% (7.8% mixed type, 15.6% cam type, 24.2% pincer type). Mean T1 RV score for the whole joint was 823.1 ms in the FAI group, and 814.6 ms in the non-FAI group (p=0.63). Mixed FAI had a significantly reduced T1 RV score in the anterior-superior region compared to cam (p<0.0001), pincer (p=0.02), and no FAI (p=0.0004). T1 RV scores were not significantly different in the cam (p=0.069) and pincer groups (p=0.541) compared to the no FAI group. Similar results were found in the central-superior region. There was no association of pincer FAI with posterior-inferior T1 RV score (p=0.26).

Conclusion: Significant associations of regional cartilage degeneration were found in subjects with mixed type FAI compared to those with non-FAI hips, and those with pure cam and pincer FAI. This suggests that progression to mixed type FAI leads to a synergistic decrease in cartilage glycosaminoglycan content compared to either cam or pincer FAI alone. No substantial cartilage degeneration was found in hips with pure cam or pincer FAI compared to non-FAI hips. This suggests that if isolated pincer or cam deformities do ultimately lead to cartilage denegation, it is not evident in participant under 50 years. This study provided further insight into the pathophysiology of FAI in a young population-based cohort.



Abstract 23

Post-operative Delirium in Orthopaedic Surgery: Incidence, Risk Factors, and Mitigation

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Keywords: delirium, incidence, orthopaedic surgery, mitigation

ABSTRACT

Context:

Delirium is a common acute brain dysfunction that is seen in about 50% of hospitalized older adult patients. In frail, older postoperative orthopedic patients with co-morbidities, the prevalence of delirium is higher, estimated to be approximately 60%.

Problem/Issue:

Delirium leads to increased mortality and morbidity and longer hospital stays. In addition, many patients with delirium will not return to their pre-hospitalized functional status and will require long-term care. The high cost of delirium to patients, care providers and the healthcare system means it is very important to address mitigatable risk factors and use validated delirium assessment tools to confirm the diagnosis.

Intervention:

A small National Surgical Quality Improvement Program (NSQIP) action team used the internationally validated Confusion Assessment Method (CAM) for assessing delirium in 60 in-patients in Surrey Memorial Hospital's Orthopedic Surgery unit. Only 12 percent of those assessed met the criteria for delirium and these patients had multiple risk factors.

Measurement:

A second year Medical Student and a Quality Improvement Consultant interviewed orthopedic patients using CAM and reviewed their charts to identify risk factors. Culprit drugs – potentially harmful drugs in the elderly as identified by BEERS Criteria - and pain management practices were key preventable factors contributing to delirium.

Challenges & Lessons learned:

Risk factors contributing to delirium, such as inappropriate drugs and pain management, can be addressed to prevent or mitigate delirium development and its sequela. A validated assessment tool such as the CAM is essential for providing an accurate diagnosis.

Relevance:

The intervention suggests that the prevalence of delirium in orthopedic patients was lower than cited in the literature. However, for those who developed delirium a change in medication as well as better pain management practices would enhance their care. These changes will improve patient outcomes and decrease healthcare costs.



Abstract 25

The Outlook of Seniors Regarding Online Health Services in a Primary Health Care Setting

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Keywords: senior, online health services, primary care, internet, survey

ABSTRACT

In the 21st century, the Internet and smart phone have transformed the way in which we get information and communicate with each other. Specifically, in regards to health care, patients are increasingly using the Internet to look for and to obtain health information. Current Internet services are limited to laboratory investigations and additional information about common diseases, but in future years, such Internet services may expand. The senior population constitutes an important growing part of our society and providing appropriate health services to this demographic is emerging as one of the major challenges of the future. Studies have examined how the senior population uses the Internet, but very few have delved into examining what services they would find helpful. The Internet could play an important role in improving the healthcare that the senior population could receive by addressing patient's interests and tailoring in online services more to their needs. It is for this reason we sought to determine the interests and needs of computer-using senior population patients in a family practice setting. We distributed anonymous surveys to a convenience sample of patients from two family medicine clinics, which assessed primarily patient's interest in Internet services. The Internet services we surveyed included: Receiving email reminders about appointments, receiving updates about advances in treatments through online means, booking appointments online with e-mail confirmation, obtaining prescription refills, messaging your doctor via online secure in events of emergency, searching your past medical records securely online and sending health/condition updates to your doctor via a secure online service. Preferences of Internet services were assessed using a Likert scale, and subjected to statistical analysis. Our findings showed that senior population patients across a wide diversity of genders, ethnicities, and education levels, considered Internet service modalities useful and desirable for their health care. Overall, it suggests that resource allocation to increasing health care services delivered online will be beneficial to tackling the progressively complex challenge of caring for senior population patients.



Abstract 26

Senior Empowerment and Quality of Life in Residential Care Facilities

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* Oral presentation: Ding; Poster presentation: Cheung, Kong, Lee, Yao

Keywords: geriatric, senior, quality of life, qualitative, residential care facility

ABSTRACT

Background:

The social isolation that often accompanies a senior's transition to a residential care facility can result in powerlessness, and a lack of motivation for self-care resulting in poor health outcomes. Thus, empowerment is a common focus for public health promotion programs. However, there is little data on practical ways to empower seniors living in residential care facilities.

Hypothesis:

We hypothesize that the Grandpal Penpals program that connects seniors with elementary students through letter-writing and visits will result in less social isolation, greater feelings of empowerment and improved quality of life.

Materials and Methods:

We conducted pre-program interviews (n=9) regarding five quality of life domains most pertinent to the study: (i) motivation, (ii) meaningful activities, (iii) meaningful relationships, (iv) functional competence, and (v) empowerment. Post-program interviews will be conducted in one month to determine any changes in these domains.

Results:

Most of the seniors had various motivations to get through the day, including maintaining their appearance, pursuing hobbies and relationships, and a general passion for life. They enjoyed a variety of social and solitary activities, and they valued relationships with family and friends above those with fellow residents and staff. Interestingly, we identified multiple barriers that prevent senior empowerment. First, the seniors felt that the facility regulations were out of proportion to their physical and cognitive impairments. This, in addition to other factors, discouraged seniors from pursuing the activities and relationships most meaningful to them. Finally, some seniors expressed hesitation to joining the Grandpal Penpals Program.

Conclusions:

The present data suggests that the seniors experience considerable social isolation, although it does not correlate to a lack of motivation to take care of their health. However, their isolation does lead to powerlessness in other areas; more research is needed to determine what changes will be most effective. The post-program interviews for the Grandpal Penpals program will provide useful data on whether such practical and easy to implement programs help enhance empowerment for seniors living in residential facilities.



Abstract 27

Beyond the Numbers: Benefits of Qualitative Research in Community-Centred Care

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* Oral presentation: Hwang; Poster presentation: Wang

Keywords: qualitative research, senior health, loneliness, social isolation

ABSTRACT

Background/Rationale:

Qualitative research is used by a variety of healthcare disciplines to better understand the context and meaning of data obtained in studies. It allows researchers to uncover the full experience of study participants that would otherwise have been overlooked in quantitative studies. Walk N' Talk For Your Life (WTL) program in Okanagan, B.C, was initiated to reduce loneliness and social isolation in the Canadian senior population. This program consists of walking, functional fitness exercise, and health presentations. The quantitative data obtained from questionnaires assessing the participants' change in the UCLA loneliness scale, Lubben Social Network Scale and deJong and Giervald Loneliness scale after the WTL program showed only slight reductions in loneliness and social isolation. A supplementary qualitative research was therefore adopted to investigate in depth the context surrounding the benefits obtained by individual participants.

Methods:

Nineteen one-on-one interviews were performed, transcribed, and analyzed separately by 2 researchers using content theme analysis (CTA) under the guidance of the Consolidated Criteria for Reporting Qualitative Research (COREQ) criteria, a 32-item checklist used for reporting qualitative data. The 2 researchers proposed possible themes from each transcript and compared amongst themselves for any discrepancies. Through discussion, the two researchers finalized the common themes and categorized the themes into clusters.

Results:

Eleven themes in five clusters titled 'reasons for loneliness', 'perception of loneliness', 'benefits of WTL program', 'interest in continuation of a WTL-like program' and 'strengths of WTL' were determined from the transcripts. The quotes obtained illustrated common causes of loneliness and isolation, and also revealed that WTL can help seniors connect with new people, and improve physical health, motivation, and personal development.

Conclusion:

This project has exemplified the methods necessary for in-depth qualitative analysis and contextualizing existing data. By providing new perspectives, qualitative research allows us to supplement quantitative research and improve our understanding of senior health.



Abstract 28

Assessment and Comparison of Vaccination Status in Pediatric Cochlear Implant Patients: A 10-Year Retrospective Review

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Keywords: cochlear implant, vaccination, public health

ABSTRACT

Introduction:

A previous review of vaccination rates in pediatric cochlear implant (CI) patients at BC Children's hospital implanted between 2002-2007 revealed that 67% of patients were up-to-date at the time of their surgery, putting them at serious health risks. In 2008, an Infectious Disease Specialist began working with the Cochlear Implant Team in order to address this significant concern. The objectives of this study were to review the vaccination status of CI patients implanted since 2008 (2010 - 2014), compare these to the aforementioned rates and investigate whether barriers to child vaccination compliance post-surgery continue to exist.

Methods:

This study consisted of a retrospective chart review and a telephone survey. Demographics, focused clinical history, surgery details and vaccination status from records of 116 patients implanted between 2010 and 2014 were reviewed. 23 patients required additional vaccines after their CI and a telephone survey was conducted to obtain the current vaccination status of these patients and, if applicable, reasons for non-compliance.

Results:

Between 2010-2014, 98% of patients were up-to-date at the time of surgery, compared to 67% of patients were up-to-date at the time of surgery between 2002-2007 (31% absolute increase, relative odds 28.5). Telephone survey was conducted on 17 patients and 47% of them did not receive the necessary vaccinations post-surgery. Pneumovax-23, a vaccine specifically for high-risk patients was the only vaccine missed in all cases. The main reason for non-compliance was because parents were unaware that their children were at high risk and required the vaccine.

Conclusion:

Pre-operative vaccinations improved after administrative changes were made in 2008, however, a large proportion of patients requiring vaccinations after surgery did not receive them. CI patients are missing vaccines critical to their health due to the communication gap that continues to exist between the CI team, patient's parents and public health. Possible solutions to bridge this gap include providing families with updated high-risk vaccination schedules post-surgery, sending reminder notifications to family members, and notifying public health of the patient's high-risk status.



Abstract 29

5-Year Incidence of Amyotrophic Lateral Sclerosis in British Columbia (2010-2015)

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Keywords: ALS, epidemiology, incidence

ABSTRACT

Background:

Amyotrophic Lateral Sclerosis (ALS) is a fatal degenerative neurological disease with significant effects on quality of life. International studies continue to provide consistent incidence values, though complete case ascertainment remains a challenge. The Canadian population has been understudied and there are currently no quantitative data on the incidence of ALS in British Columbia (BC).

Objectives:

The objectives of this study were to determine the five-year incidence rates of ALS in BC and to characterize the demographic patterns of the disease.

Methods:

The capture-recapture method was used to estimate ALS incidence over a five-year period (2010-2015). This method uses documented cases of ALS shared between incomplete sources to estimate complete case totals. Two sources were used to identify ALS cases: one database from an ALS Medical centre and another from a non-profit ALS organization.

Results:

During this time period, there were 690 incident cases within the two sources. The capture-recapture method estimated 57 unobserved cases, corresponding to a crude 5-year incidence rate of 3.29 cases / 100,000 (CI 3.05-3.53). The mean age of diagnosis was 64.6 (CI 59.7 – 69.4), with 63.5 (CI 56.9 – 70.1) for men and 65.7 (CI 58.6 – 72.7) for women. There was a slight male predominance in incidence with a 1.05:1 ratio to females. Peak numbers in incidence occurred between the ages of 70-79.

Conclusions:

The incidence of ALS in BC found to be consistent with international findings though nominally higher than in all other Canadian provinces to date. This represents an important benchmark study because it can be used to compare against future tallies of disease incidence, enabling researchers to recognize previously unseen trends in disease burden. Findings in BC may represent truly greater incidence from unascertained risk factors in our geography and population; however, this data is the most recent from any province and may simply represent a window in time with diffusely elevated ALS case numbers. Too many populations in Canada remain unstudied to definitively conclude on patterns, but encouragingly a national registry is being formed to dynamically characterize ALS in Canada.



Abstract 30

WH"Y" Long-Acting Reversible Contraceptives: Identifying and Addressing Millennial Misconceptions

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* **Poster presentation only**

Keywords: long acting reversible contraception

ABSTRACT

Objectives:

While contraceptive uptake rates in developed countries are as high as 74% in developed nations unintended pregnancy rates continue to be upwards of 65%. (1) Although, long-acting reversible contraceptive devices (LARCs) have been shown to be highly effective (1,2,3) in Canada only 2.3% of women use them. (1)

In this study, we identified misperceptions of LARC use that may deter use among young women, with the goal of development of a patient counselling and educational resource.

Methods:

In order to identify determinants of IUCD use, a content-based analysis was conducted on relevant literature. A literature search was performed on PubMed to include qualitative and quantitative studies of any design published in English between 2008-2015 whose subjects included women aged 16-35. Content-analysis was conducted on the abstracts of any relevant studies to distil major themes of misperceptions or barriers to women's use of long-acting reversible contraceptives. "Misperceptions" were identified as such when primary literature or guidelines refuted the claim or when evidence was inconsistent. These findings resulted in the basis of a e-resource for patient education.

Results:

Our results identify the specific themes regarding perceptions and barriers to use of Long-Acting Reversible Contraception (LARCs) in youth populations. These included themes such as 1) reversibility of the contraceptive method 2) suitability for use in nulliparous women, 3) discomfort with LARC placement and removal 4) concerns over menstrual changes, and 5) infection risk. We have created a short presentation to address identified misconceptions.

Conclusion:

LARC uptake in Canada may be impeded by a number of misconceptions and barriers specific to young women. By developing a digital patient education tool, we hope to improve uptake of LARCs in this population. An educational tool created in response to our findings can be found at: www.talkwithyourdoc.ca.



Abstract 31

Contraception Access Research Team: The Canadian Sexual Health Survey

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Keywords: sexual health, contraception, women's health, survey, economic model

ABSTRACT

By the age of 45, 31% of women in Canada have had an abortion. Unlike several other Western countries, Canada does not provide subsidy to efficacious contraceptive methods. In BC, it is estimated that 15,000 abortions are performed annually. The BC Provincial Health Officer has highlighted the need to improve access to contraception as a key health priority. In order to advocate and support the development of health policies, such as universal subsidy for contraception, high quality data need to be collected on currently unknown determinants of Canadian sexual and reproductive health, while considering cultural and socioeconomic context. We developed the Canadian Sexual Health Survey (CSHS) to assess and measure these parameters and apply them to model cost-effective policy options.

The survey contains validated questions from seven international sexual health surveys and was pilot tested during 2014. This survey employs multi-stage cluster sampling and stratifies households in BC by Provincial Health Authorities and income. Women under 30 years of age or in low socioeconomic regions are overrepresented. The survey is conducted as a door-to-door, computer-assisted, personal interview with a confidential-audio self-entry portion in English and Mandarin Chinese. Key themes cover history of contraceptive use, including adherence and prevalence, pregnancy outcomes and intentions, and social determinants of health.

We collected at least 75 surveys in each of 21 local health areas, for a final sample of 1677 females aged 14-49. Preliminary analysis is underway suggesting an estimated response rate over 80% among eligible women, with clear indications of a high unmet need for contraception, high rates of unintended pregnancy resulting in unintended births and repeat abortions. Evidence based on this data will help to construct Canada's first Contraception Economic Model, which will enable trials of alternative policies for contraception subsidy.

Through data collected from a representative sample of BC females, our survey will gather information on unknown determinants of sexual and reproductive health. It will allow the modeling of alternative policies to enhance services, knowledge and affordability of contraceptive methods for Canadians. The CSHS may have value as a surveillance tool for ongoing monitoring and research purposes.



Abstract 32

Preventing Opioid Overdoses: Tracking Urine Fentanyl Concentrations Among Illicit Drug Users Across British Columbia

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Keywords: people who use drugs, Fentanyl, harm reduction

ABSTRACT

Rationale:

Fentanyl is a dangerous opioid that is 100 times more potent than morphine. There has been a recent rise in the mixing of fentanyl into other illicit drugs in British Columbia (BC); however, illicit drug users are not informed of the fentanyl content of these drugs. The powerful nature of the drug combined with the lack of knowledge about fentanyl among illicit drug users has resulted in a 5x increase in fentanyl-related opioid overdoses across BC from 2012 to 2014.

Objectives:

This study attempts to track the geographical distribution of fentanyl-contaminated illicit drugs in BC, including which drugs are being mixed with fentanyl, where these drugs are being sold, and where these drugs are being consumed.

Methods:

Recruitment posters were placed across 20 harm reduction clinics throughout BC in order to recruit 400 visitors of harm reduction clinics as our study participants. Participants were asked to complete a brief anonymous questionnaire outlining their demographic characteristics and indicating which illicit drugs they had taken over the past 3 days. Participants then provided a urine sample which was tested for the presence of fentanyl using a rapid fentanyl test strip by the individual harm reduction sites. Questionnaires and urine test results were returned to the BC Centre for Disease Control for analysis. Study participants were provided with \$5 cash or a \$5 food voucher upon completion of the study.

Results:

The results of the study will be compiled in order to determine the geographical distribution of fentanyl and to elucidate which drugs are being mixed with fentanyl.

Conclusions:

Once data analysis is complete, appropriate public health measures will be taken to circulate harm reduction messages regarding the mixing of fentanyl into illicit drugs. The goal of the public health response is to curb the incidence of unnecessary opioid overdose-related deaths.



Abstract 33

Comparing Socratic and Didactic Teaching Methods on Health Topics in a Provisionally Accommodated Homeless Population in Kelowna, British Columbia

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* **Oral presentation: Maccan; Poster presentation: Miller**

Keywords: health education, community-based, homeless, Socratic teaching, didactic teaching

ABSTRACT

Background

In the medical profession, it is widely accepted that a biopsychosocial approach should be considered when addressing the needs of patients. Within this model, social risk factors play a large role in predicting health outcomes. Social factors such as homelessness, drug abuse, mental illness and incarceration are significant in creating health disparities. Education is one approach that has been taken to mitigate some of these disparities. There is limited data on the preferred method of delivering health promotional material to populations at risk of experiencing health care disparities due to social risk factors.

Objectives:

Our study aims to serve a population with significant social risk factors by providing them with health education sessions while simultaneously assessing the preference and effectiveness of Socratic versus didactic teaching styles in this population.

Hypothesis:

The Socratic method of teaching about issues pertaining to common health problems will be preferred over a traditional didactic format of teaching in the study population.

Methods:

This study is being implemented at the John Howard Society of Central and South Okanagan (JHSCSO) in Kelowna, BC. The JHSCSO provides transitional housing to individuals that have experienced a wide range of hardships including homelessness, drug and alcohol addiction, mental illness and former incarceration. Six health education sessions are each being presented at two transitional housing locations. Each session consists of a Socratic and didactic approach to education delivery. After each session, study participants are surveyed about their preference between the two styles of teaching, as well as the effectiveness of the sessions in making future healthcare decisions and increasing comfort levels with healthcare professionals.

Results and Conclusions:

Data collection is ongoing and hence conclusions cannot yet be drawn. From this study, future health awareness interventions may be better equipped to effectively communicate medically relevant topics to people with a large number of social risk factors. It is anticipated that more effective communication with this population will lead to an improved relationship with healthcare professionals. It is our hope that this project will spark an interest in developing better health awareness programs for similar populations in the future.



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Abstract 34

The Five-Year Cumulative Incidence of Burns in Uganda: Early Outcomes of a Cross-Sectional Household Survey

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Keywords: global health, burn incidence, cross-sectional survey, Uganda

ABSTRACT

Background:

With new proposed burn treatments for low- and middle-income countries being developed, studies need to be done to determine current burn incidence in these countries so that interventional efficacy can be evaluated. Uganda is one country in which this has not been adequately assessed.

Objectives:

The purpose of this study was to determine the five-year cumulative incidence of burns in Uganda. The secondary objective was to examine risk factors for burns in Uganda.

Methods:

This study used a cross-sectional household survey with multistage probabilistic sampling to select households in Uganda's Eastern Region. All interviews were conducted in-person by Canadian medical students with local interpreters. The survey collected demographic information about the household as well as specific contextual data for those household members who had sustained a burn injury between 2010-2015.

Results:

Early results include 246 households surveyed in Eastern Uganda. The mean age of the head of household (HoH) was 46.9 years (sd=15.0), with 80% male. Over 80% of the HoH's were farmers. The median number of residents per household was 8 (range = 1 to 50). 79% of households had only thatched roofs; 21% had at least one tin roof.

Of the 2,149 individuals represented, the five-year cumulative incidence of burns was 7 per 1000 (95% CI = 5-8). Of the 75 burns that occurred in the sample, 44% were in children age four and under (59% of burns under age 4 were males). 56% of burns occurred during hot/dry season. Contact burns were the most common type (40%), followed by scalds (35%) and flame burns (25%). The majority of burns occurred in the kitchen at home (65%), and primarily affected the limbs of the patients (45% upper limbs and 39% lower limbs). 69% of burns were first treated at home, and 95% of burns discussed in this study resulted in full recovery.

Conclusions:

The five-year cumulative incidence of burns in this sample was 0.7% between 2010 and 2015. This rate is significantly lower than other studies conducted in neighboring countries.



Abstract 35

Evaluation of a Community-Based Health Education Intervention in Rural Kisumu

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Keywords: nutrition, knowledge, practices, rural, Kenya

ABSTRACT

Purpose of Study:

A 2013 evaluation of childhood nutrition in the Kisumu region of Kenya found that 14% of children were underweight and 24% were stunted, suggesting a deficit in nutritional education and food security. A nutrition project was implemented to address knowledge gaps in 3 rural communities in the Kisumu region by delivering maternal and infant nutrition workshops to community health workers (CHWs) servicing this population in 2014. The aim of this study was to evaluate whether the train-the-trainer (ToT) method improved nutrition knowledge and practices within the community.

Methods Used:

To assess the effectiveness of information delivery to the community following CHW training sessions, 15 household surveys were conducted with mothers, with 5 in each community. The questionnaires were translated and focused on basic food group knowledge as well as childbirth, breastfeeding and complementary feeding practices. Additional focus groups were held with CHWs (n=36) in the 3 communities to assess information retention on these topics.

Summary of Results:

The results suggest that workshops provided to CHWs in 2014 yielded successful nutritional knowledge dissemination and retention among community mothers. 60% of women were able to identify all food groups and 100% knew to introduce complementary feeding at 6 months and continue breastfeeding for up to 2 years. Despite knowledge of these guidelines, many women were unable to apply them due to socioeconomic barriers. In fact, 100% of women documented finances as a barrier to obtaining adequate food. Additionally, the results suggest that both CHWs and mothers were confused regarding breastfeeding guidelines for HIV+ mothers.

Conclusions:

Overall, the ToT teaching format was an effective model for information delivery, as much of the nutrition knowledge was relayed from CHWs to community mothers. Despite this success, additional efforts to address barriers to food access are necessary. Moving forward, increasing the percentage of women able to identify foods from each food group will improve their ability to provide a balanced diet for themselves and their families. Finally, since Kisumu has an HIV prevalence of approximately 18.4%, it is imperative that CHWs familiarize themselves with current guidelines for breastfeeding among HIV+ mothers.



Abstract 36

The most powerful tool can be the simplest technology: ten years later, utilizing the physical exam in the Indian Himalayan Mountains

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Keywords: global health, medicine, physical exam

ABSTRACT

Background/Objectives:

Located in the rural, high-altitude mountains of northern India, Spiti Valley is medically underserved and inaccessible for approximately seven months of the year. In 2006, the project commenced through a partnership with Munsel-ling Boarding School, with one goal: to improve the health status of the student population.

Methods:

Requiring only reference materials and an otoscope, medical students conducted annual physical exams and created permanent health records for each student. The exams aided in: identifying important health concerns, planning interventions, and assessing the success of those interventions. High prevalence of infectious diseases prompted projects directed towards improving access to clean water and sanitation. High prevalence of malnutrition, anemia and growth stunting resulted in several nutritional interventions. A sustained prevalence of disease despite improved infrastructure highlighted the need for behavioural interventions and a health curriculum.

Results:

Between 2007-2015, the prevalence of **malnutrition** and **growth stunting** declined (**height:** 30.9% <3rd percentile to 17.0% ≤ 5th percentile, **weight:** 10.3% <3rd percentile to 7.6% ≤ 5th percentile). Similarly, **scabies** dropped from 35.2% to 7.2%. The prevalence of **intestinal helminths** slightly increased to 7.2% from 6.6%. In 2015, 59/517 students required further treatment and were referred to local physicians in a nearby village, sustainably engaging the population with the medical system.

Conclusion:

Amid advancements in medical technology, the power of the physical exam can easily be overlooked. The exams not only inspired and evaluated interventions in a cost and resource sustainable manner, but also fostered a warm and trusting relationship with the students and the community, fundamental to the success of any global health project.



Abstract 37

A Method for Multistage Sampling in the Randomization of Household Surveys in developing Countries

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Keywords: household survey, multistage sampling, computer-based, epidemiology

ABSTRACT

Background:

Household surveys are useful for gathering cross-sectional data in a population of interest and are often used to inform or monitor developmental policies. Obtaining a properly randomized sample is crucial to the generalizability of a survey's findings, but can be difficult to accomplish in developing countries where maps, home phones/ computers, addresses, and street names are either not available or insufficient. The purpose of this study is to describe a specific protocol that uses computer technology to facilitate randomization of a sample, provide a means of in-field navigation and allow for mechanisms of quality control.

Methods:

Twenty Parishes in Uganda were selected from the Land Conflict Mapping Tool using a random number generator. A web interface was then constructed to digitize the coordinates of individual houses and roads in these Parishes using satellite imagery. A random subset of houses to be surveyed were generated using ArcGIS software and converted into GeoPDF maps. These maps were then exported onto mobile devices using Avenza so that real-time, wireless GPS navigation between selected houses in the field was possible. Mobile devices were also used to collect survey data using Quicktap software.

Results:

The methods described in this paper were used to estimate the five-year incidence of burns in the Northern and Eastern regions of Uganda. The process may require some technical expertise to set-up, but once up-and-running can be easily used by the average person. Clicking putative houses on the satellite imagery and manually laying down roads was time-consuming, but can be worked on remotely by multiple individuals at the same time through a shared, password-protected, online link. Collection of survey data using mobile devices was easy to accomplish, convenient and had the added benefit of automatically incorporating the GPS coordinates of each survey.

Conclusion:

This paper describes a standardizable technique for producing a randomized sample when conducting a household survey and provides researchers with the tools to make their own customized maps from satellite data with wireless GPS navigation capabilities. Equipment costs are minimal and data can be backed-up on an external, encrypted hard drive to ensure security. Carrying out this process in the field is user-friendly and can be easily accomplished by novices or volunteers. Some setbacks of this technique in its current form include the moderate degree of tech support necessary for start-up and the tedious work required in creating maps.



Abstract 38

A Qualitative Focus-Group Based Assessment of Perceptions, Approach to Management and Knowledge of Local Resources for Mental Illness in Rural Kenya

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Keywords: mental health, global health, Kenya

ABSTRACT

Purpose of Study:

As of 2012, mental illness accounted for 13% of the global health burden with approximately 75% of individuals going untreated in developing nations. Appropriate care is particularly problematic in Kenya, with only 23 psychiatrists available to a population of 45 million, highlighting a significant health deficit. This study evaluated beliefs and practices surrounding mental illness in 3 rural communities to inform culturally sensitive training modules for community health workers (CHWs) to address local challenges associated with mental health.

Methods:

Five focus group discussions (FGDs) were held in three rural communities within the Kisumu, Kenya region. Demographic groups surveyed included: women (n=44), men (n=14) and CHWs (n=36). The aim was to survey knowledge and perceptions of mental illness, and generate discussion using case-based vignettes describing presentations of mental illness' as outlined in DSM-5. FGDs were conducted by facilitators and translators. Key informant interviews were held with a local psychologist, faith healer and headmaster to gain expert perspectives on mental health locally.

Summary of Results:

Although mental health interest was evident, FGDs with community members and CHWs indicated education on mental health was limited. Results of case-based vignettes displayed themes of fear and stigma associated with mental illness. Further, medical-based etiologies and treatment were rarely suggested for psychiatric illness intervention. Although CHWs are commonly consulted for health advice, they did not identify themselves as a resource for mental health cases. FGDs revealed numerous psychosocial barriers hindering community members from seeking help relating to psychiatric problems.

Conclusions:

The lack of formal mental health education along with a community belief that psychiatric illness is linked to the supernatural, has propagated stigma surrounding mental illness. Significant barriers to accessing mental health care include financial strain, distance and stigmatization. Moving forward, our goal is to eliminate the fear and stereotypes associated with psychiatric cases by educating CHWs using mental health training modules. The modules will serve to assist CHWs to feel more confident and capable advising on mental health cases, thereby creating a new mental health resource for community members and reducing stigma and associated barriers limiting access to care.



Abstract 39

Sickle Cell Disease in the Indigenous Tharu People of Nepal

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* **Oral presentation: Joy; Poster presentation: Marchand, Bell, Joy**

Keywords: sickle cell disease, Nepal, global health

ABSTRACT

Background:

Sickle Cell Disease (SCD) is a genetic disorder characterized by a mutation in the β -globin gene, resulting in impaired red blood cell function. SCD causes global morbidity and mortality, best identified throughout many regions of Africa and Asia. SCD has recently been identified as a health issue in Nepal, particularly in the indigenous Tharu population, compelling the Nepalese government to provide subsidized treatment for those diagnosed. Due to limited resource availability, the true SCD prevalence is unknown. As a result, community-level management strategies, such as medical treatment, genetic counseling, and local education, have not been effectively implemented. The aims of this study were to perform an initial Sickle Cell Trait (SCT) screen in a resource-poor Tharu community, increase local awareness of the disease, and equip the community with supplies and a local technician to maintain the sustainability of the screening process.

Material and Methods:

A census was conducted to identify all individuals of Tharu ethnicity in a community in Dang, Nepal. Of the 3665 eligible individuals, as determined by age (6 months to 40 years), 2899 enrolled in the study. Informed consent was obtained and 1-5mL of venous blood was sampled from each participant. After inducing hypoxic conditions, sickled red blood cells were identified via light microscopy.

Results:

Of the 2899 participants, 271 tested positive for SCT (9.3%, 95% CI: 0.083, 0.105). No significant differences in SCT prevalence were detected between genders or age groups.

Conclusions:

The prevalence of SCT in the Tharu people of Nepal is comparable to countries with a high disease burden, such as India, Nigeria, Kenya and Uganda. Raising community-level awareness of SCD in Nepal has the potential to improve symptom recognition, access to health services, and subsequent management of the disease. Future directions include screening nearby Tharu populations, differentiating sickle cell trait from disease, as well as connecting those diagnosed with appropriate health care resources.



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CLINICAL RESEARCH (II) ABSTRACTS



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Abstract 40

Use of Spinal Epimorph in Arthroplasty Patients at Kelowna General Hospital

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* Not presented, Poster display only

Keywords: anesthesia, orthopaedics, epimorph, arthroplasty

ABSTRACT

Background:

Previous research has shown the pain-controlling benefits of using morphine in spinal anesthetics during arthroplasty procedures. However, the use of intrathecal morphine is also associated with significant side-effects in a dose-dependent manner. These include increased rates of urinary retention, longer hospital stays, and higher rates of nausea, vomiting and pruritus.

Objectives:

To explore the usage patterns of spinal epimorph in arthroplasty surgeries at Kelowna General Hospital, and to measure the rates of pre-determined and previously studied side-effects of epimorph in the local population.

Methods:

During the period of June 15th – July 3rd, 2015 every patient who received either a knee or hip arthroplasty procedure was given a post-operative survey screening potential side-effects of epimorph including nausea, vomiting, pruritus and the number of days to weight bearing. Additionally, each patient's chart was reviewed to determine the dosage of epimorph, who required catheterization, and time to first supplemental PRN analgesic. Over this period a total of 32 participants were enrolled in the study.

Results:

Nausea RR = 1.75 (0.68-4.5), vomiting RR = 0.97 (0.32-3.0), avg. length of stay = 3.4 days with epimorph and 2.6 days with no epimorph (p=0.01), catheterization RR = 5.4 (0.76 – 39.2), pruritus RR = 2.3 (0.55 – 0.99), time to first supplemental analgesic = 5.3 hrs epimorph, 1.6 hrs no epimorph (p<0.01), supplemental O2 required RR = 1.25 (0.52-3.0)

Conclusions:

Two measures reached statistical significance: the average length of stay and time to supplemental analgesic usage. These showed an increased length of stay for those who received epimorph, but those receiving epimorph also seemed to have a greater initial analgesic benefit. Overall the trends we observed matched those seen in previous studies.



Abstract 41

Review of Electroconvulsive Therapy Service and Treatment Delivery at a Major Academic Hospital in Vancouver

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Keywords: electroconvulsive therapy (ECT), chart reviews, health services, depression, bipolar disorder

ABSTRACT

Objectives:

Electroconvulsive therapy (ECT) is one of the most effective biological treatments for patients with mood disorders. At the University of British Columbia (UBC) Hospital, a policy change on July 12, 2012 aimed to reduce the frequency of ECT treatment from thrice weekly to twice weekly. Since the change, regional health-service delivery patterns for ECT are still unknown. Therefore, we examined the effect of the policy change on ECT utilization, patient clinical outcomes, and on the overall course of hospitalization at the Mood Disorders Unit in a university teaching hospital.

Methods:

We performed a retrospective chart review of 52 patients (mean age: 53.77 vs. 43.67; % male: 41% vs. 23%) for ECT index courses between April 1, 2010 to July 12, 2014 at the Mood Disorders Unit at the UBC Hospital. Data was available for 22 patients before the change and 30 patients after the change. Information on patient demographics, primary diagnoses, indications for ECT, electrode location, frequency and duration of ECT treatment, and interruptions in the ECT course were collected. Outcome measures included Clinical Global Impression (CGI) improvement at discharge and at 1 week post ECT, or at discharge if sooner.

Results:

When comparing patients before and after the policy change, there were no statistically significant changes in mean duration of hospitalization (65.86 vs. 66.00 days, $p=0.989$), days from admission to first ECT (19.41 vs. 15.80 days, $p=0.531$), mean number of days from first ECT to last (38.73 vs. 37.77 days, $p=0.857$), and mean number of total ECT treatments (12.46 vs. 12.07, $p=0.781$). CGI improvement scores at discharge were similar between the two cohorts.

Conclusions:

Our results indicate that the policy change did not have a significant effect on a patient's ECT course and clinical outcomes during hospitalization at the 1East Mood Disorder Unit at UBC Hospital. However, given the limited number of patients, larger studies to capture the full scale of ECT utilization across all the regional health authority hospitals are needed.



Abstract 42

Appropriateness of Red Blood Cell Transfusions in the B.C. Children's Hospital Neonatal Intensive Care Unit

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Keywords: red blood cells, RBC, transfusions, neonatal intensive care unit, NICU, BC Children's Hospital

ABSTRACT

Red blood cell (RBC) transfusions are a mainstay of treatment for individuals who are bleeding and anemic. It is associated with poorer outcomes in some patient populations and is a costly treatment with demands in excess of supply. Though RBC transfusions should be undertaken only when necessary, it is not known what proportion of transfusions are given for appropriate reasons. Therefore, we have undertaken a retrospective study to identify the number of appropriate versus inappropriate RBC transfusions in the Neonatal Intensive Care Unit (NICU) at B.C. Children's Hospital. The eligible study population is any non-surgical recipient of RBCs in the 2014 calendar year, which was a sample size of 182 transfusion events. All clinical information was stored online using REDCap and extracted electronically with Powerchart/Cerner and individually with patient charts. The details of each transfusion event were reviewed by a hematopathologist to determine appropriateness. Of the 182 transfusion events, 68% of transfusions in 2014 was considered to be appropriate with recipients (71% males) born at 27.4 ± 3.6 weeks with a birth weight of 1.0 ± 0.6 kg and pretransfusion hemoglobin of 96.7 ± 17.6 g/L. The most responsible diagnosis was prematurity (82%) along with confounding factors, such as anemia of prematurity (81%), intra-uterine growth restriction (25%), and respiratory disease (96%). These results help to establish a baseline appropriate RBC transfusion rate in the NICU population of B.C. and identify suboptimal practices, which can be targeted with education to improve patient safety.



Abstract 43

Low Risk Chest Pain in the Emergency Department: Does Coronary Computed Tomography Angiography Lead to Fewer Investigations?

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Keywords: chest pain, acute coronary syndrome, exercise stress test, computed tomography, emergency department

ABSTRACT

Objective:

Coronary Computed Tomography Angiography (CCTA) is a non-invasive imaging method that can be used to evaluate chest pain in the Emergency Department (ED). For patients presenting to the ED with low risk chest pain, CCTA appears comparable to standard care, which includes exercise stress testing (EST). Advantages of CCTA include reduced length of stay in the ED and fewer hospital admissions. However, studies have reported that patients who undergo CCTA may be subject to more downstream testing than patients managed with standard care. To address this concern, our study examined the rates of follow-up investigations within 30 days of CCTA or EST for: 1) invasive angiography; and 2) all combined cardiac testing.

Methods:

This retrospective cohort study was performed at two Canadian urban Emergency Departments. Patients aged 18 to 65 who presented with low risk chest pain (chest pain without objective findings of acute coronary syndrome) were eligible. Patients were evaluated with CCTA or EST at the physician's discretion. We determined the number of follow-up investigations ordered for these patients, including rates of invasive angiography.

Results:

From July 1, 2012 to June 30, 2014, we analyzed data for 1700 patients. There were 521 patients in the CCTA group and 1179 in the EST group. Demographics and risk factors were similar in both cohorts. In the following 30 days, 30 CCTA patient (5.8%) and 297 EST (25.2%) had additional cardiac follow up testing (difference 19.4%, 95% CI 16.0 to 22.6). In terms of invasive testing, 12 CCTA (2.3%) and 20 EST patients (1.7%) had angiography within 30 days (difference 0.6, 95% CI -0.8 to 2.6%).

Conclusion:

Patients who presented to the ED with low risk chest pain had similar rates of angiography, whether they were managed with CCTA or standard care. However, in contrast to previous studies, CCTA patients had fewer follow up investigations.



Abstract 44

Does Knowledge of the Canadian CT Head Rules Affect the Frequency of Head CT's Done in Minor Head Injury Patients Presenting to the Emergency Department?

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Keywords: CT, concussion, emergency, checklist, adherence

ABSTRACT

Minor Head Injuries (MHI), commonly referred to as concussions, are one of the most common neurological disorders presenting to the Emergency Department (ED). The significant majority of these patients can be successfully discharged after a short period of observation. An increase in public awareness has resulted in an increased number of visits across Canada and number of CT scans ordered. According to the Canadian Institute for Health, between 2003-2012 there has been a 60% increase in the number of CT scanners being used, which is disproportionate to the increase in MHI presentations.

Unnecessary CT application has its consequences, including increased radiation exposure, pressure on limited emergency department resources, negative effects on access and flow, as well as increased health care costs. For these reasons, it is generally not considered acceptable or cost-effective to order a head CT scan to screen for every patient that presents with a Minor Head Injury (MHI).

The Canadian Computed Tomography Head Rules (CCTHR) is a validated and well-known head injury clinical decision rule that allows Emergency Department (ED) physicians to determine which patients are most likely to benefit from a diagnostic CT. However, this clinical decision rule is not uniformly adhered to and a number of preventable CT scans are ordered. A quality review at Kelowna General Hospital revealed that 25% of CT's ordered were not in accordance to the CCTHR. The purpose of this study is to determine why physicians are not uniformly utilizing this tool in the ED and implement an educational intervention to increase adherence.



Abstract 45

The Influence of Exercise Training Intensity on Sedentary Time in Overweight Adults

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Keywords: interval training, sedentary time, accelerometry, structured exercise

ABSTRACT

Background:

Sedentary behaviour is an independent risk factor for cardiometabolic disease yet it is still not well understood how exercise interventions impact sedentary time. This study examined how a supervised exercise intervention and subsequent free-living exercise impacted sedentary behaviour in overweight/obese adults participating in either high intensity interval training (HIIT) or moderate intensity continuous training (MICT).

Methods:

Participants were randomized to complete 10 sessions of either HIIT (n=16) or MICT (n=15) combined with exercise counselling over two weeks. Accelerometers were used to compare sedentary and physical activity behaviour prior to, and during, the intervention. Participants were then instructed to maintain HIIT or MICT on their own and accelerometer data was collected one month post-intervention to examine sedentary time and physical activity between exercise and non-exercise days.

Results:

In both groups, there was a significant reduction in the percentage of time spent in sedentary activities during the supervised exercise intervention when compared to pre-intervention ($p=0.01$), with a significant increase in moderate-to-vigorous physical activity expressed as percentage of wear time and minutes per day (both $p=0.01$). Accelerometer assessment after one month of free-living exercise revealed a significant reduction in the percentage of time spent in sedentary activities on exercise days compared to non-exercise days in both groups ($p=0.03$).

Conclusions:

A supervised intervention and engaging in free-living exercise involving either HIIT or MICT reduced sedentary time in overweight/obese adults. Thus, HIIT or MICT interventions should be promoted to improve cardiometabolic health, with no apparent impact on increasing sedentary time.



Abstract 46

Detection of Abnormally Shaped Ears in Newborns

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Keywords: early detection, inter-rater agreement, ear deformity

ABSTRACT

Introduction:

Many children are born with abnormally shaped ears, including protruding ears or oddly shaped outer ears. While the majority of these abnormalities are benign, they can cause significant issues with self-esteem and bullying. Correction of these abnormalities has been associated with improved psychological and social outcomes for these children with reports of increased happiness, self-confidence, improved social experience, and a reduction of or end to bullying. Molding with soft splints and tape can resolve some of these abnormalities, avoiding the need for future corrective surgery. However, newborns with these abnormalities are rarely identified early, within the first few days of life, when molding is most effective. In this study, we investigate whether a trained non-specialist can correctly identify ear abnormalities in newborns.

Methods:

A non-specialist (medical student) was trained on normal and abnormal ear anatomy using photographs and descriptions. Newborns <72 hours of age were recruited from the maternity wards. Newborns' ears were photographed and photographs were assessed by two specialists and the non-specialist. External ear shape was classified as either normal or abnormal in a double-blinded and non-blinded fashion based on pre-determined criteria.

Results:

A total of 661 ears of 334 newborns were photographed and assessed. Inter-rater agreement between the two specialists was validated in both double-blinded and non-blinded assessments with a kappa statistic of 0.787 (SE 0.092) and 0.957 (SE 0.043), respectively. High inter-rater agreement between the gold-standard specialist and non-specialist was achieved in both double-blinded and non-blinded assessments with a kappa statistic of 0.863 (SE 0.078) and 0.892 (SE 0.044), respectively. The non-specialist detected abnormally shaped ears with a sensitivity and specificity of 90.9% and 91.1% double-blinded, and 96.4% and 98.7% non-blinded, respectively.

Discussion:

Our study illustrates that a trained non-specialist can accurately detect newborn ear abnormalities, providing a cost-effective means of ensuring that these children's health care needs are met in a timely fashion. Specifically, we recommend the integration of ear shape assessment into currently established programs such as the newborn hearing screening program.



Abstract 47

Risk of Intraocular Hemorrhage With New Oral Anticoagulants

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* **Not presented, Poster display only**

Keywords: anticoagulants, hemorrhage, ophthalmology

ABSTRACT

Purpose:

To quantify the risk of intraocular hemorrhage with warfarin and new oral anticoagulants (NOACs)

Methods:

We ascertained all reported cases of intraocular hemorrhage (vitreous, choroidal, or retinal) with warfarin and NOACs (including dabigatran, rivaroxaban and apixaban) from the World Health Organizations's Vigibase database from 1968-2015. We used a disproportionality analysis to compute reported odds ratios (RORs) and corresponding 95% confidence by comparing the number of events with the study outcomes and study drugs compared to all other drugs reported to Vigibase. A harmful signal was deemed for a lower limit of the 95% confidence interval above 1.

Results:

We identified 100 cases of intraocular hemorrhage (vitreous, choroidal, or retinal) with warfarin in the World Health Organizations's Vigibase database from 1968-2015. A total of 171 cases of intraocular hemorrhage with NOACs (93 cases with rivaroxaban, 69 with dabigatran, and 9 with apixaban). Warfarin had the highest association with choroidal hemorrhage (ROR= 65.40 [33.86 - 126.30]). Rivaroxaban had the highest association with both retinal and vitreous hemorrhage (ROR= 7.41 [5.73 - 9.59] and ROR= 11.14 [7.37 - 16.86], respectively). Dabigatran was also significantly associated with retinal and vitreous hemorrhage (ROR= 3.78 [2.82-5.08] and ROR= 5.83 [3.66-9.30], respectively). The number of reports of retinal and vitreous hemorrhage were also significantly higher with apixaban, but the number of cases may be too little to make a meaningful evaluation.

Conclusion:

Warfarin, dabigatran, and rivaroxaban showed a significant association with various types of intraocular hemorrhage. Large epidemiologic studies are needed to further confirm these findings.



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