1 ICHAMS

International Conference for Healthcare and Medical Students

Innovation. Collaboration. Reflection.

ICHAMS 10 Year Anniversary

ICHAMS 2021 would like to take a moment to recognize the frontline and essential workers and volunteers who have worked tirelessly for the past year against COVID-19. We will forever be grateful for your service.

We'd also like to extend deepest and heartfelt condolences to those who have lost loved ones to COVID-19.

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ICHAMS 2021 Mission Statement

The International Conference for Healthcare and Medical Students (ICHAMS) is Ireland's first student led conference, founded at the Royal College of Surgeons in Ireland (RCSI) in 2010. This annual international conference is organized by a group of full-time students studying in the healthcare field at RCSI.

ICHAMS is a conference where both undergraduate and graduate healthcare and medical students can come together to present their research to experts and peers in the field. They also attend inspiring keynote lectures, engaging workshops, and network with like-minded students and faculty from around the world.

Our first edition of ICHAMS in 2010 welcomed just 100 students to Dublin - recent conferences have had over 150 presenting students and over 350 total delegates. Conference participants have the opportunity to publish their abstracts in an online supplement with BioMed Central Proceedings, one of the highest impact conference abstract publications!

Our Mission:

1. To provide undergraduate and graduate healthcare students the opportunity to present their research findings in an international setting with structured feedback;
2. To provide a platform for career development and to help develop clinical scientists of the future;
3. To promote interactions among healthcare students from different countries and exchange research knowledge and experiences;
4. To promote and encourage innovative thinking by exposing students to current cutting edge research topics;
5. To educate healthcare students on the importance of research in the broader medical fields and expose students to future research opportunities.

We are thrilled to welcome you to ICHAMS 2021 *online*!

Enjoy the conference!

Foreword from ICHAMS 2021 Co-Chairs

Dear ICHAMS 2021 delegates,

We are delighted and honoured to welcome you to the 10th annual International Conference for Healthcare and Medical Students (ICHAMS). This has been an unprecedented year in which we have had to adapt to the new world during the COVID-19 pandemic. We feel blessed to be able to continue this conference, though online, and welcome both undergraduate and post-graduate students studying in any healthcare field to present their research, network with like-minded peers and learn from world leaders.

We have an inspiring line-up of keynote speakers, innovative workshops and an exciting social program for you all. We are proud to welcome two keynote lectures to ICHAMS 2021 who are experts on this year's conference theme: healthcare inequity. Our opening speaker, Dr. Malika Fair, is the Senior Director for Health Equity Partnerships and Programs at the Association of American Medical Colleges (AAMC), and will discuss race and minority inequity in healthcare. Our closing speaker, Dr. Fiona O'Reilly, is the CEO of Safetynet, and will speak to their involvement in healthcare inequity for the homeless.

At ICHAMS, we aim to provide our delegates with a diverse range of innovative and interactive workshops. This year we are offering workshops that include an introduction to guide dogs, the role of nature in health, ECG interpretations, patient partnerships, understanding chest x-rays, constructing effective CVs, forensic medicine, skin tones in dermatology, and a trivia competition.

We are incredibly grateful for the support we have received from Royal College of Surgeons. This conference would not be possible without the generosity of Dean Hannah McGee, Professor Arnold Hill, and our faculty advisor Dr Brona Murphy. We are also deeply appreciative and gratefully acknowledge the contribution of our 2021 organizing committee, who have worked diligently over the year to ensure the success of this conference, especially in this new and unfamiliar format.

We hope you all enjoy the 10th annual ICHAMS conference and we hope to be able to invite you back to Dublin next year!

Yours sincerely,

Naeha Lakshmanan and Kassandra Gressmann
ICHAMS 2021 Co-Chairs

Foreword from Dean Professor Hannah McGee

Dear Students,

I am delighted to provide the foreword for the RCSI, University of Medicine & Health Sciences, International Conference for Healthcare and Medical Students (ICHAMS) 2021 abstract book.

ICHAMS is an undergraduate scientific student-led conference, now in its 10th year. The conference provides an opportunity for students to be inspired by science, present their research in an international setting and to develop new friendships with peers from all over the world. The success of conferences such as ICHAMS is dependent on the dedication and commitment of students carrying out research, together with their academic supervisors who have supported and encouraged student research projects.

As with all conferences, the success of ICHAMS is highly reliant on the hard-working and enthusiastic team of organisers. This year due to the COVID-19 pandemic, the organising team had the added challenge of organising and planning the first ICHAMS virtual conference. My thanks to Dr. Brona Murphy, Faculty Advisor and Academic Lead for ICHAMS and to the student organising team comprising: Co-Chairs (Naeha Lakshmanan and Kassandra Gressman), Special Tasks Officers (Harsimran Kaur and Jessica Lloyd), Scientific Officers (Lisle Blackbourn, Erin Walton-Ball, Conor Sheahan, Kate Haley and Elisa Yoo), Education & Workshop Officers (Christine O'Keefe, Brian Li, Therese Lynn, Adam Jordan and Matt Laird), Sponsorship Officers (Joshua Parris, Tiffany Yeretsian and Tim Vaughan-Ogunlusi), Events & Accommodation Officers (Maria Casalino, Nicole Melchior and Mari Nerdrum), IT Officers (Razi Alalqam, Shareef Akbari, Nidhi Deshpande and Kameron Chatoor), Marketing & PR Officers (Nikhail Mainra and Nadiha Noor Chelsea); Media Officers (Ishan Antony and Simran Bains); Design Officers (Anna Neder and Candice Parmar); Advisors (Clare Lambert and Bianca DeBenedictis).

Welcome to RCSI, University of Medicine & Health Sciences for the 10th ICHAMS conference. I hope you all enjoy this virtual event and we look forward to hosting this event in person next year.

Best wishes,

Professor Hannah McGee
Dean, Faculty of Medicine and Health Sciences

Foreword from our Head of School of Medicine

Dear Students,

I am delighted and privileged to provide the foreword for the International Conference for Healthcare and Medical Students (ICHAMS) 2021 abstract book. ICHAMS is a widely recognised and highly regarded undergraduate scientific student-led conference. Now in its tenth consecutive year it provides a fantastic opportunity for students to share their experiences with other students in an international setting and to foster early career innovations and leadership skills.

The success of this conference is dependent on the dedication and commitment of the students carrying out the research and the academic supervisors who continue to support and encourage same. As with all conferences, the success is very much dependent on a dedicated, focused and determined enthusiastic team of organisers. Huge thanks must go to Dr Brona Murphy, Faculty Advisor and Academic Lead for ICHAMS and to the student organising team;

      Co-Chairs: Naeha Lakshmanan, Kassandra Gressmann
      Special Tasks Officers: Harsimran Kaur, Jessica Lloyd
      Scientific Officers: Lisle Blackbourn, Erin Walton-Ball, Conor Sheahan, Kate Haley, Elisa Yoo
      Education & Workshop Officers: Christine O'Keefe, Brian Li, Therese Lynn, Matt Laird, Adam Jordan
      Sponsorship Officers: Joshua Parris, Tiffany Yeretsian, Tim Vaughan-Ogunlusi
      Events & Accommodation Officers: Maria Casalino, Nicole Melchior, Mari Nerdrum
      IT Officers: Razi Alalqam, Shareef Akbari, Nidhi Deshpande, Kameron Chatoor
      Marketing & PR Officers: Nikhail Mainra, Nadiha Noor Chelsea
      Media Officers: Ishan Antony, Simrin Bains
      Design Officers: Anna Neder, Candice Parmar
      Advisors: Clare Lambert, Bianca DeBenedictis,

without whom these events could not happen. On behalf of all those attending I would like to sincerely thank all of the above for all their hard work in ensuring this conference continues to flourish and I would like to wish them all the very best for the coming year.

During this conference I would like to extend the warmest welcome from RCSI to you all. I know you will enjoy the 10th ICHAMS conference and will leave enriched by the experience that the RCSI Organising Committee have arranged for you. May I also take this opportunity to wish ICHAMS all the best for the future in continuing to promote and encourage innovative thinking by exposing students to current cutting edge research topics and for promoting interactions among healthcare students from different countries and exchanging research knowledge and experiences.

With kind regards,

Prof Arnold Hill MCh, FRCSI.
Head of School of Medicine
Professor of Surgery

Foreword from Dr. Brona Murphy, ICHAMS Faculty Advisor

Dear students,

I am delighted and honoured to provide this foreword. It is my great pleasure to extend a warm welcome to the 10th ICHAMS conference and our first virtual meeting. Céad Míle Fáilte. This year's on-line format is undoubtly different from previous years and one I am very excited to share with you all. I anticipate it will encourage innovative thinking as you learn about each other's research knowledge and experiences. I sincerely hope ICHAMS will inspire you to continue in your chosen fields of biomedical research so that you can cultivate tomorrow's healthcare.

The busy and stimulating schedule would not have been possible without the huge efforts of our organising committee, ably led by Naeha and Kassandra. I commend you on an exceptional team effort, especially in the ever-changing circumstances of a global pandemic!

The organising committee and I would like to sincerely thank our keynote speakers as well as our sponsors. We are very grateful to all of our chairs, reviewers and judges for their willingness to share their knowledge, time and effort for ICHAMS.

Finally, we are indebted to our Dean, Prof Hannah McGee and to our Head of School of Medicine, Prof Arnold Hill for their continuing support of our Conference. A very special thanks to Margaret McCarthy in the Dean's Office, Barry McGowen and Sarah Miller in Finance and Gordon Jamieson in the Alumni Office.

We hope you enjoy the conference.

Best wishes,

Brona Murphy

Brona Murphy

ICHAMS
Organizing Committee

Naeha Lakshmanan
Co-Chair

Kassandra Gressmann
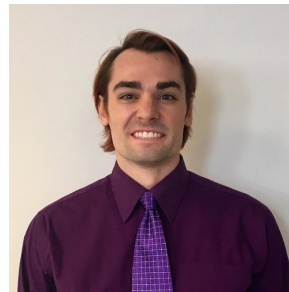Co-Chair

Bianca DeBenedictis
Student Advisor

Clare Lambert
Student Advisor

Harsimran Kaur
Special Tasks Officer

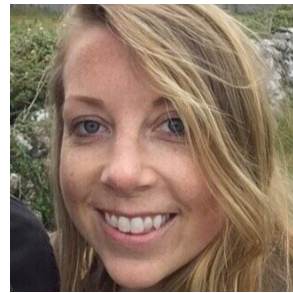
Jessica Lloyd
Special Tasks Officer

Lisle Blackbourn
Head Scientific Officer

Erin Walton-Ball
Scientific Officer

Conor Sheahan
Scientific Officer

Kate Haley
Scientific Officer

Elisa Yoo
Scientific Officer

Christine O'Keefe
Head Education Officer

Brian Li
Education Officer

Thérèse Lynn
Education Officer

Matt Laird
Education Officer
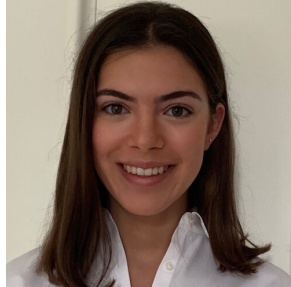

Adam Jordan
Education Officer

ICHAMS Organizing Committee

Maria Casalino
Head Events Officer

Nicole Melchior
Events Officer

Mari Nerdrum
Events Officer

Joshua Parris
Head Sponsorship
Officer

Tiffany Yeretsian
Sponsorship Officer

Tim Vaughan-Ogunlusi
Sponsorship Officer
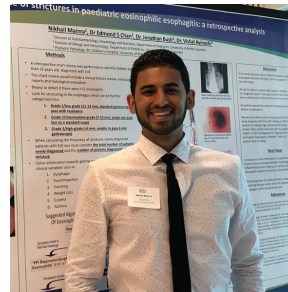
Nikhail Mainra
International Marketing &
Public Relations Officer

Nadiha Noor Chelsea
National Marketing &
Public Relations Officer

Razi Ali Alalqam
Head IT Officer

Shareef Akbari
IT Officer

Nidhi Deshpande
IT Officer

Kameron Chatoor
IT Officer

Ishan Antony
Head Social Media
Officer

Simrin Bains
Social Media Officer

Candice Parmar
Design Officer

Anna Neder
Design Officer

Innovation. Collaboration. Reflection.
ICHAMS 10 Year Anniversary

ICHAMS Ambassadors

Amy Pawson
Royal College of Surgeons
Ireland

Rajkiran K. Deshpande MBBS, DNB
Manipal Hospitals,
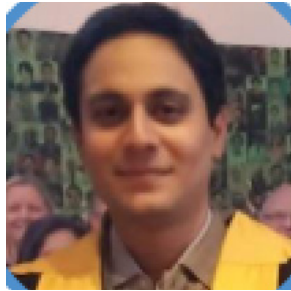Bangalore

Faizan Akram
The Islamia University of
Bahawalpur

Fatemah Hazrati
Mashhad University of
Medical Sciences

Githmi Palahepitiya Gamage
Royal College of Surgeons
Ireland

Leah Sarah Peer
Saint James School of
Medicine

Mashkur Abdulhamid Isa
University of Sheffield

Mitalee Garg
Kasturba Medical College,
Mangalore, MAHE

Olgav Sushych
Ukrainian Medical
Stomatological Academy

Omer Abubakr Algali
University of Khartoum

Vrinda Munjal
Royal College of Surgeons
Ireland

Sherry Seah
National University of
Singapore

Radhe Shah
Smt. N.H.L. Municipal Medical
College

The ICHAMS Ambassador Program is a platform to expand ICHAMS' mission to provide valuable research and presentation experience to healthcare students at an early point in their career. An ICHAMS Ambassador has the important role to serve as an information source for prospective delegates of the conference. This includes sharing ICHAMS experiences and encouraging other students to attend and/or present research at the conference. This special program fosters an even greater collaboration and collegiality between healthcare students from different nations and health systems around the world.

Day 1:
Friday
February 12th

12:00pm	**Opening Ceremony** Welcome to ICHAMS 2021!	CrowdComms
12:30pm	**Poster Session A** Abstracts can be found on pages 23-41	Zoom
1:30pm	**Oral Session 1** Abstracts can be found on pages 19 & 20	CrowdComms
2:30pm	**Afternoon Event** Beginner Flow Yoga led by Nicole Melichor	CrowdComms
3:00pm	**Afternoon Break**	
3:30pm	**Workshop A** Workshop information on page 15	Zoom
5:00pm	**Keynote:** *Racism in Medicine:* *The Role of Health Professions Students* Dr. Malika Fair MD, MPH	CrowdComms
6:00pm	**Evening Event** Virtual Escape Room led by Nicole Melichor	Zoom

Day 2:
Saturday
February 13th

9:00am	**Bonus Workshop** Learning about Chest X-Rays Hosted by Radiopaedia	CrowdComms
11:00am	**Day 2 Opening** Welcome to the second day of ICHAMS 2021!	CrowdComms
11:30am	**Poster Session B** Abstracts can be found on pages 42-69	Zoom
12:30pm	**Oral Session 2** Abstracts can be found on pages 21 & 22	CrowdComms
1:30pm	**Afternoon Event** Beginners Dance Class	CrowdComms
2:00pm	**Afternoon Break**	
2:30pm	**Plenary Session** Abstracts can be found on pages 17 & 18	CrowdComms
3:30pm	**Workshop B** Workshop information can be found on page 16	Zoom
5:00pm	**Keynote:** *Safetynet Primary Care: Challenging Healthcare Inequity* Dr. Fiona O'Reilly, PhD	CrowdComms
6:00pm	**Evening Event** Cocktail Class & Irish Trivia led by Mari Nerdrum	Zoom
7:00pm	**Closing Ceremony** *Thank you for coming to ICHAMS 2021!*	CrowdComms

Using CrowdComms

Hello Attendees,

To access the CrowdComms platform, use the following link:
https://crowdcomms.com/ichams21/login

Login using the email that you should have received with an invitation link.
Check your spam folder if you have not seen it in your inbox.

If for some reason the email is not allowing you to long in, try changing the
email from **.com** to any alternative that may be used for it. For instance, instead
of **example@rcsi.com**, you might try **example@rcsi.ie**

Once you log in, the live stream and agenda can be accessed through the
various tabs.

If you have any further questions or problems with accessing or using the
platform, please contact tech support at **+353 (0) 65 6828919** or email us at
ichamsit@rcsi.ie

*If you are based in Ireland, we do request that you use the number first as
that will connect you directly to CrowdComms Tech Support. Email may take
longer to respond to, but we will try helping you ASAP.*

Welcome to ICHAMS 2021!
We hope you have a great conference!

Keynote Speakers

Dr. Malika Fair

Malika Fair, MD, MPH is the Senior Director for Health Equity Partnerships and Programs at the Association of American Medical Colleges (AAMC). In this role, Dr. Fair develops programs and initiatives to enhance institutional, faculty, and student learning in diversity & inclusion, equity, and population health. Dr. Fair serves as the Principal Investigator for the Centers for Disease Control and Prevention (CDC) Cooperative Agreement with the AAMC which seeks to strengthen collaboration between the disciplines of academic medicine and public health.

Dr. Fair oversees the Office of Community Engagement that seeks to develop strategic partnerships with community agencies to improve the health of local residents as well as to assist medical schools and teaching hospitals with their community engagement efforts. Dr. Fair is an Associate Clinical Professor and practicing physician in the Department of Emergency Medicine of The George Washington University. Prior to her current position, Dr. Fair served as the Clerkship Director of Emergency Medicine and the Co-Director of the Health Policy Track for The George Washington University School of Medicine and Health Sciences. She also served as the Co-Principal Investigator of the Beyond Flexner Study and an investigator for the Medical Education Partnership Initiative (MEPI) in The George Washington University Milken Institute School of Public Health.

Dr. Fair serves as Vice Chair of the Board of Directors for the Not-For-Profit Hospital Corporation (United Medical Center) and on the Advisory Board of the Griffith Leadership Center within the University of Michigan School of Public Health and Department of Health Management and Policy In 2019, Dr. Fair was selected to serve on the Mayor's Commission on Healthcare Systems Transformation for the District of Columbia and to be included in the 40 Under 40 Leaders in Minority Health by the National Minority Quality Forum.

Dr. Fair completed her residency training and chief residency at Carolinas Medical Center in Charlotte, NC. She received her medical and Master of Public Health degrees from the University of Michigan and Bachelor of Science from Stanford University.

Dr. Fiona O'Reilly

Dr. Fiona O'Reilly, PhD, CEO Safetynet Primary Care has devoted her career over the past 3 decades working in the health care area, both nationally and internationally – with a focus on and passion for achieving health equity for all and bringing humanitarianism home. As CEO of the Medical Charity Safetynet Primary Care she has led the organisation to adapt and change in response to the Covid-19 crisis to protect the health of marginalised groups, particularly those living in congregated settings. Safetynet has established a Covid Helpline for triage and testing, a community assessment hub for assessment of Covid positives and presumed positives, and a cluster response unit to respond to outbreaks in settings such as Direct Provision Centres, homeless hostels and Traveller halting sites.

Fiona trained as a Registered General Nurse and Registered Sick Children's Nurse and has a Master of Science from Trinity College Dublin in Community Health. Her PhD thesis "Reality or Rhetoric, Community Involvement in Primary Care in North Inner-City Dublin" allowed her to critically review primary care in the context of urban deprivation. Fiona's Post-doctoral research at the Department of Anthropology at the National University of Ireland Maynooth allowed her to gain an understanding of the culture and nature of addiction in deprived communities. She worked as a Senior Research Fellow in Social Inclusion, at the Partnership for Health Equity – leading the research study for the 'Homelessness: An Unhealthy State' report. In Fiona's earlier career she established and managed programmes in war torn countries (e.g. Sudan, Somalia, and Ethiopia) andconducted evaluations in Afghanistan, Zambia and Kenya.

Fiona is also a founding director of the Emergency Nutrition Network. She previously worked as director for the Agency for Personnel Services Overseas (APSO) Humanitarian Assistance Training Programme and has taught on a number of MSc training programmes (TCD, UCD, RCSI). Currently, Fiona is the Assistant Programme Director (Part Time) on the North Dublin City GP Training Programme, based at University College Dublin's Catherine McAuley Centre in Dublin.

Social Events

Friday February 12th, 2021:

Beginners Yoga Flow Class - 2:30pm-3:00pm
Led by: Nicole Melchior
Host: CrowdComms
Let's get up and get moving with a 30 minute active yoga break led by our very own Events Coordinator Nicole. All you need is a yoga mat, water bottle, and towel.

Virtual Escape Room - 6:00pm-7:00pm
Led by: Nicole Melchior
Host: Zoom
Challenge and build your teamwork, communication, and logical and creative thinking skills over our first ever Virtual Escape Room event hosted on Zoom! Spots will be limited to 60 people and sign up is required ahead of time on Ex-Ordo. Required materials include your A-game and some paper and pens to write down any relevant clues.

Saturday February 13th, 2021:

Beginners Dance Class - 1:30pm-2:00pm
Led by: Tim Vaughan
Host: CrowdComms
Who doesn't love a throwback! Experienced dancer Tim Vaughan will be leading a quickfire dance class suitable for all levels, set to Get Right by the one and only J.Lo. Get moving and learn some new moves to break out on the dancefloor once they open again! All you need is yourself!

Cocktail Class & Irish Trivia - 6:00pm-7:00pm
Led by: Mari Nerdrum
Host: Zoom
Although our conference will be hosted virtually this year, we hope to bring you an Irish experience through our Irish Mule cocktail class. There are both alcoholic and non-alcoholic options. After this, come put your knowledge to the test with Irish Trivia hosted on Kahoot, so brush up on your Irish knowledge beforehand to win some prizes!

Ingredients you will need:
- 2 shots (60ml/2 fl oz) of whisky - bonus if it's Irish whisky!
- Substitute for club soda or sparkling water for non-alcoholic
- 175 ml (¾ cup) non-alcoholic ginger beer
- ½ lime - juiced
- 10 mint leaves, muddled/smashed
- Plenty of ice

Safetynet Initiative

This year, for ICHAM's tenth anniversary, we decided to focus on the theme of healthcare inequity for our first ever virtual conference. Our organizing committee has selected Safetynet Primary Care as our official charity for the 2021 conference.

Safetynet's mission is to deliver high-quality healthcare services to the marginalized members of society who would normally not have access to adequate healthcare, in addition to advocating for greater inclusivity in the healthcare system. Safetynet offers many exceptional community health inreach and outreach services, both in Dublin and nationwide. In 2018, they won the HSE Health Service Excellence Award for supporting a healthy community.

Over the course of the conference, we will be accepting donations through GoFundMe, where 100% of our proceeds raised will be donated to Safetynet. The donation link can be found by clicking here.

We thank you ahead of time for your support.

Workshops

Choose 1 workshop on Friday February 12th, 2021 at 3:30pm:

Workshop A.1: An Introduction to The Irish Guide Dogs
Host: Jennifer Nora Hurley,
The Irish Guide Dogs for the Blind

Iriish Guide Dogs is Ireland's national charity dedicated to helping people who are vision impaired and families of children with autism to achieve improved mobility and independence. They are an accredited member of The International Guide Dog Federation and Assistance Dogs International. Based out of their headquarters in Cork, the Irish Guide Dogs help to change the lives of many Irish people and their families, by matching them with a fully trained dog who becomes a companion, guide and support for many years.

Join this very special workshop with Ms Jennifer Nora Hurley a Regional Development Officer from the Irish Guide Dogs alongside a current guide dog owner to hear about the training programme for the dogs and the incredible impact of the work they do.

Workshop A.2: The Role of Nature in Improving Health
Host: Sarah Hourigan, Nature Therapy Ireland

There is a growing body of evidence proving the beneficial effects that exposure to the natural world has on the health of a population, such as reducing stress and promoting healing. Policymakers and health systems across the globe are increasingly considering the human need for nature in how they plan and operate for patients and healthcare staff alike. This workshop will provide a broad and inclusive picture of the complexity of this human interaction with nature, discussing the many interconnected and fundamental focus points necessary to reach a full understanding of its role in improving health and wellbeing.

Join this interactive session to delve into the history behind and research supporting nature-based therapies and interventions. There will also be space to pause and explore your own connection to nature, learning simple techniques you can incorporate into your own life through a series of guided invitations and group discussions.

Please bring along: pen, paper, nature object (e.g. leaf, twig, feather, shell etc.)

Workshop A.3: Introduction to Interpreting ECGs
Host: Dr. Michael John Daly

The ECG is the most important test for diagnosis of the cardiac rhythm, conduction system abnormalities, and detection of myocardial ischemia. Despite this clinical significance, confident interpretation of ECGs is quickly becoming a dying art.

Join Dr. Michael John Daly as he shows us how ECGs can not only be easy to read, but enjoyable as well! The fun is in solving the puzzle. Over the course of this workshop, Dr. Daly will highlight key features of common ECGs and also assist you in placing ECG leads on a surface model.

Workshop A.4: Partnering With Patients: From Clinical Care to Health System Transformation
Host: Dr. Antoine Boivin and Mathieu Jackson

Patients are engaged at many levels of health systems internationally. Yet, establishing productive partnerships with patients often remains a challenge in clinical care. The goal of this workshop is to familiarize future doctors with foundational principles of patient partnerships and its application to clinical care and health system transformation. Using real-world scenarios, an expert dyad of patient and physician will illustrate practical applications of partnership in care. The workshop will conclude with the relevance of exploring the relationships between patient engagement in care and health system transformation.

Antoine Boivin, MD PhD is a practicing physician and holds the Canada Research Chair in Patient and Public Partnership (Université de Montréal, Canada). He led the first randomized trial of patient engagement in priority setting. In his clinical practice, Dr Boivin cares with patient and community members integrated as full members of the primary care team. Dr Boivin received the Canadian Donald I. Rice Award for vision and leadership in family medicine, and is a member of the British Medical Journal International Advisory Committee.

Mathieu Jackson is patient coordinator and pedagogical counselor at the Centre for excellence in partnerships with patients and the public (CEPPP), where he co-directs the Partnership school. Mathieu has Hemophilia B moderate. He completed a Bachelor's degree in French literature and is completing his master's thesis in Comparative education. Mathieu is on the boards of directors of the Canadian Hemophilia Society and is a fellow of the 2017-2018 International AFFIRM Program.

Workshops

Choose 1 workshop on Saturday February 13th, 2021 at 3:30pm:

Workshop B.1: Trivia Competition
Host: Brian Li

Eager to put your knowledge to the test? Take part in our 50-question trivia competition on Saturday Feb 13th for a chance to win! We've got some great prizes for 1st, 2nd, and 3rd place! All participants will enter their answers on Mentimeter, entrance codes to be announced on the day of the competition. Faster answers get you more points! Our questions will cover topics ranging from medicine, clinical knowledge, public health, science & technology, and general knowledge. Good luck!

Workshop B2: Tips for Constructing Effective CV's & Cover Letters that Integrates Research Experience
Host: Dr. Ebun Joseph and Niamh Mullen

This session aims to equip students with the key skills required to construct a professional and targeted CV and cover letter. It will outline how to present research experience, publications, and conference presentations on student's resumes. It will also highlight how to present your skills, knowledge and experience to best effect and avoid common pitfalls and mistakes in applications. The formal application process, typical information and formats will also be discussed. Students will learn how to make a positive impact by tailoring their CV to the specific role and presenting their skills in the best possible light.

Workshop B.3: Skin Tones in Dermatology
Host: Prof Nicola Ralph

Professor Nicola Ralph is a Consultant Dermatologist on the Specialist Register for Dermatology in Ireland. She is an honours graduate of the Royal College of Surgeons, completing her training in Dermatology in the Mater Misericordiae University Hospital where she developed a special interest in photodermatology. This workshop will provide an overview of conditions in the context of different skin types. Conditions to be discussed will include skin cancer and inflammatory conditions such as acne, psoriasis, eczema, lupus, and blistering disease.

Workshop B.4: Forensic Science
Host: Prof Niamh Nic Daeid

DNA analysis. Reading fingerprints. Assisting in justice. Forensic science intersects both science and the law and is a powerful tool in conducting criminal investigations. Join Professor Niamh Nic Daeid, the director of the award winning Leverhulme Research Centre for Forensic Science (LRCFS) for an exploration of this fascinating and innovative field.

BONUS WORKSHOP on Saturday February 13th, 2021 at 9:00am:

Learning about Chest X-Rays Hosted by Radiopaedia
Host: Dr. Andrew Dixon, Radiopaedia

Join Dr Andrew Dixon, a Consultant Radiologist and Co-Director of Radiology Training at the Alfred Hospital in Melbourne, Australia for this 1 hour workshop on chest X-ray. Dr Dixon is the Academic Director of the brilliant Radiopaedia - the online open-edit radiology resource. He has primary subspecialty expertise in neuroradiology, with secondary interests in musculoskeletal imaging and trauma radiology.

As one of the most frequently performed radiological investigations across the globe, honing your skills in the interpretation of chest X-rays is time well spent. Join us for this one hour workshop where Dr Dixon will share helpful tips and tricks with the audience based on clinical cases. The session will be interactive and engaging, and will help take you one step closer to becoming an expert in the chest X-ray.

Durability of CNS disease control in EGFR/ALK wild-type NSCLC patients with brain metastases treated with immune checkpoint inhibitors (ICI)

Sally Lau[1], Christopher Poletes[2], Lisa Le[3], Kate Mackay[1], Aline Fares[1], Penelope Bradbury[1], Frances Shepherd[1], Ming-Sound Tsao[4], Natasha Leighl[1], Geoffrey Liu[1], David Shultz[2], Adrian Sacher[1]

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Introduction: Immune checkpoint inhibitors (ICIs) have excellent systemic activity and is the standard first line treatment in *EGFR/ALK* wild type metastatic non-small cell lung cancer (NSCLC). But their role against brain metastases, which affects over 20% of patients and cause significant morbidity, is less clear. We sought to investigate the intracranial activity of ICIs. **Methods:** We reviewed of all patients with *EGFR/ALK* wild type mNSCLC who had baseline CNS metastases. Serial MRIs were reviewed to determine the time to intracranial progression (iPFS). Survival analyses were performed using the Kaplan-Meier method and compared using the log rank test. Multivariate regression was performed to adjust for the disease-specific graded prognostic score (ds-GPA). **Results:** We analyzed 36 ICI and 33 chemotherapy-treated patients who had serial MRIs available. The modality of radiotherapy used was different between the two groups. iPFS was superior in the ICI treated group (13.5 vs 8.4 months) and remained significant even after adjusting for the ds-GPA scores (adjusted HR 1.9; 95%CI 1.1-3.4). The 1-year cumulative incidence rate of CNS progression was lower in the ICI- (19% for PD-L1≥50%, 43% for PD-L1 1-49%, 57% for PD-L1<1%) compared to chemotherapy-treated patients (58%); p=0.03. Remarkable durability was seen among ICI-treated patients who with PD-L1 ≥50% and a systemic partial response (n=10) where none had an intracranial event despite systemic progression in 5 patients.
Conclusions: Durable CNS disease control can be achieved with ICIs in patients with PD-L1 ≥50%. De-escalation of brain radiotherapy should be further investigated in this subgroup of patients.

Evaluating the appropriateness of antibiotic treatment of tonsillitis during COVID-19 in the primary care setting - A Preliminary Report

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Background: Acute tonsillitis is a cause of sore throat frequently seen in primary care. Either the CENTOR or FeverPain scoring criteria can be used to guide antibiotic prescribing. During the COVID-19 pandemic, GPs largely moved from face-to-face (F2F) to remote consultations, potentially making it challenging to use scoring systems. This study aims to evaluate the appropriateness of antibiotic treatment of tonsillitis during the COVID-19 pandemic in primary care. **Methods:** A multicentre observational study was performed in five GP surgeries in North Wales. Data of patients with a confirmed diagnosis of acute tonsillitis were retrospectively reviewed from March 2020 until present. A questionnaire was produced to standardise data collection across sites. Scores were retrospectively calculated from the documented parameters to assess its appropriateness. Univariate analysis was performed to compare differences between remote and F2F consultations. **Results:** 170 patients were enrolled in total. This preliminary report analysed the data of 65 patients (F2F:remote, 21.6%:78.4%). 83.1% of all patients were prescribed antibiotics. 13.8% of consultations used a scoring system to guide prescription. 66.2% of consultations had sufficient parameters recorded. Of those, 44.6% supported antibiotic prescription. There was no significant difference between rates of antibiotic prescription (87.5%,83.3%), or scoring system usage (0%,17.4%) between F2F and remote consultation. F2F had significantly (p=0.0081) higher rates of sufficiently recorded parameters (93.8%) than remote group. Amongst patients scored, there was no significant difference in appropriateness of antibiotic prescription between both groups. **Discussion**: Our preliminary report has demonstrated that antibiotic prescription did not differ significantly between remote and F2F consultations. This encouragingly suggests similar effectiveness of antibiotic prescription in tonsillitis in both groups. Interestingly, we noted more missing parameters in remote consultations, possibly attributed to the difficulty of performing clinical assessments remotely.

Scientific Analysis of MicroRNA Regulation of Risk Genes in Multiple Sclerosis (MS)

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Introduction: Multiple Sclerosis (MS) is a chronic inflammatory disease characterised by the demyelination of the central nervous system in young adults. Although the cause for MS is unknown, genome-wide association studies have identified 233 genetic loci that are associated with MS susceptibility. The aim is to investigate whether these risk genes are predicted to be regulated by microRNAs (miRNAs) which are small non-coding RNAs involved in post-transcriptional regulation of gene expression. **Methods:** 200 non-MHC (Major Histocompatibility Complex) loci and 33 MHC-associated loci were interrogated to make a list of MS-risk genes. We utilised three microRNA target prediction algorithms, TargetScan, DIANA-microT-CDS and MiRDB, to find miRNAs that are most commonly regulated in that gene. Due to the limitation of the bioinformatic tool, we divided the MS risk genes into 7 distinctive categories based on their functions in molecular pathways and DNA regulation. Finally, a list of overrepresented microRNAs was compiled by intersecting the common miRNAs in each category and subsequently between those 7 categories. **Results:** 90 MS risk genes were selected from the 200 non-MHC loci and 11 genes from the 33 MHC-associated loci. We found that miR-27 and miR-4775 have intersections between 5 different categories, whereas miR-590, miR-548, miR-19, miR-3148, miR-340, and miR-153 were commonest in 4 different groups. A table compilation of all targeted MS risk genes with their most promising miRNAs and a Venn diagram representing these relationships were successfully generated.
Discussion/Conclusion: We were successful in the prediction search where miR-27 is commonly targeted in multiple pathways. Mir-27 is known to be potentially linked to immune regulation and this warrants an investigation on how altered miR-27 expression may regulate MS pathology. In conclusion, we have shown that microRNAs are predicted to target multiple MS-risk genes and that microRNA regulation may play a significant role in MS susceptibility.

The Role of microRNA-122 in Pathogenesis of Congenital Heart Defects during Pregestational Diabetes

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Pregestational maternal diabetes increases the risk for congenital heart defects (CHDs) in infants by four times. Diabetes may alter maternal/fetal microRNAs (miRNA) leading to the pathogenesis of CHDs. An elevation of miR-122 has recently been reported in patients with impaired glucose tolerance, insulin resistance and obesity. miR-122 is highly abundant in the liver and acts as tumor suppressor. The aim of this study was to determine if miR-122 is elevated in embryonic hearts from diabetic mice, and to examine effects of antimiR-122 on pathogenesis of CHDs during pregestational diabetes. Diabetes was induced by streptozotocin (50 mg/kg, IP x5) to adult female C57BL/6 mice. Diabetic females were treated with a locked nucleic acid (LNA) antimiR-122 or scramble LNA control (10 mg/kg, SC x2), and their offspring's hearts were examined at E18.5 for morphology and function. RT-qPCR analysis showed that miR-122 was upregulated in E12.5 hearts of offspring from diabetic dams. In cultured E12.5 hearts, treatment with miR-122 or high glucose inhibited proliferation and epicardial EMT, and increased apoptosis. These effects were abrogated by antimiR-122 transfection. Downregulation of genes critical to cell cycle progression, angiogenesis, and heart development, such as Cyclin D1, Snail1, Gata4 and Hand2 under high glucose conditions, was prevented by anitmiR-122 transfection. *In vivo* antimiR-122 treatment to diabetic dams decreased incidence of CHDs and improved cardiac function compared to scramble LNA controls. The current study reveals for the first time a critical role of miR-122 in CHD pathogenesis, and may have therapeutic implications in preventing CHDs during pregestational diabetes.

A brain network involved in auditory attention for response is hyperactive in hallucinations in schizophrenia

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Introduction: The Auditory Attention for Response (AAR) functional brain network has been detected in several task-based fMRI studies. AAR involves the bilateral temporal pole, superior temporal gyrus, supplementary motor area, and dorsal anterior cingulate cortex. This study aims to elucidate how the task demands, conditions, and hallucinations alter the level of activity of the network, as measured by the estimated hemodynamic responses (HDRs). **Methods:** Functional brain networks already computed on data collected in the Cognitive Neuroscience of Schizophrenia Laboratory in Vancouver, Canada, were re-classified into 11 templates of task-based brain network prototypes. All manifestations of the AAR network were identified, and the hemodynamic-response (HDR) shapes interpreted to determine the cognitive function associated with the AAR network, and whether or not it is associated with hallucinations in schizophrenia. The estimated HDRs were analysed with repeated measures ANOVAs for effects and interactions of participant groups and task conditions. **Results:** The identified AAR networks showed activation when participants monitored two tones, indicated when they heard an oddball tone, and listened to sound clips play. It was deactivated during visuo-spatial working-memory, processing of incongruent Stroop stimuli, probabilistic reasoning about visual proportions, the Raven's Progressive Matrices task, and while visually processing social situations. Moreover, schizophrenia patients with auditory-hallucinations demonstrated hyperactivity in AAR when listening to speech, but not when monitoring sounds. **Conclusion:** The AAR network demonstrates activity when subjects attend to auditory stimuli that may later require responses, but is suppressed when intensive visual processing is required. This links AAR to social attention, whereby during visual-attention, the AAR is suppressed, but when they have to listen for cues that may require responses, the AAR is activated. Patients with auditory hallucinations demonstrate hyperactivity when listening to speech, suggesting that hallucinations may be caused by overactivity in this network, providing a target for neurostimulation treatment of hallucinations.

Medication, Nocturnal Dipping Profile and Hypertensive Emergency

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Introduction: The aim of this study was to analyze the medication used by the patients with hypertensive crisis (blood pressure above 180/120mmHg) and its impact on the main risk factors for hypertensive emergency development. **Methods:** A total of 233 patients (108 male, 125 female), 184 had hypertensive urgency/ 53 emergency (54.44% /50.95% in women) at the Emergency department during 11 months. Patients were divided in five age groups as decades starting from the age of 40 (mean 65.85 years) and a total ten groups depending on which type of hypertensive medication they were using (ACEi, ARB, BB, CCB, diuretics, moxonidine, and their combinations). **Results:** By using antihypertensive monotherapy percentage of hypertensive emergencies were 100.00%, 50.00%, 41.66%, 33.33%, 21.05%. Using ACEi + CCB + diuretic significantly decreased the number of emergencies to 0%, 18.47%, 21.05%, 25.00%, 33.33%; but adding beta blocker additionally diminished the risk. Overall 53 patients had no medication (22.75%) and 68 of 233 patients were smokers (29.18%, 63.23% male) of which 36 patients had hypertensive emergency (52.94% of smokers). The biggest number of non-dippers was found in patients who took ARBs, diuretics and/or CCB but the smallest number was shown in patients who took ACEi in combination with moxonidine (-20.07%). 22.02% of smokers were non-dippers (-54.67% non-smokers). Odds ratio for getting hypertensive emergency in case patient had a non-dipper profile was 4.18 (Confidence Interval 1.02 – 18.89, $p < 0.05$). Patients taking different medication (or none) did not have an increased chance for hypertensive emergency development (Odds Ratio 1.21, $p =$ Not Significant). We didn't find any differences in the non-dipping profile incidence between genders (72.12% males, 72.83% females). **Conclusion:** Combinations of all antihypertensive medication showed benefit over monotherapy. Higher 24-hour and nighttime blood pressure (non-dipping profile) was significantly associated with greater change for developing hypertensive emergency.

YouTube videos on hands-only (compression-only) cardiopulmonary resuscitation: a content analysis

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Introduction: YouTube videos are an important platform for sharing relevant healthcare information due to their wide accessibility, but the risk of disseminating misleading information should not be ignored. The purpose of the study was to evaluate the content accuracy of hands-only cardiopulmonary resuscitation (CPR) videos on YouTube according to the 2015 American Heart Association's guidelines (AHA). **Methods:** The YouTube was searched for videos in English using eight search terms related to hands-only CPR. First 60 videos of each search term were included in this study. Source of videos, total views, number of days since upload, likes, dislikes were noted. All the videos meeting the inclusion criteria were viewed and scored. Each step of hands-only CPR was given score as 0 (nonexistent or incorrect information) or 1 (sufficient information), and total score between 0 and 6 was assigned for each video. **Result:** Out of 480 videos, 440 were excluded for variety of reasons and 40 videos were selected for study. Out of these 25 videos were uploaded by health organizations, health care institutes and hospitals, while 15 videos were uploaded by other sources. Mean content score of all videos assessed was 3.35. The mean content score was 3.40 for videos uploaded by health organizations, health care institutes and hospitals, while that for other sources it was 3.27. There was no statistically significant difference in views per day, likes, dislikes and content score among videos based on source. **Discussion:** The results presented here showed that majority of hands-only CPR videos in English on YouTube on the study day were not compliance with the AHA guidelines in terms of providing basic information. Creation of high quality educational videos to be broadcasted is necessary, in order to adequately spread accurate and updated knowledge of hands-only CPR to the lay population.

Virtual high-throughput docking study of approved drugs provides multiple, novel treatment options for COVID-19

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Introduction: In November 2019, COVID-19 became a public health emergency of global concern. As the virus continues to spread rapidly, drug repurposing has gained some interest as possible treatment options. However, current drug candidates have been unsuccessful thus far at translating into the clinic, lacking therapeutic efficacy for patients. Aim: We aimed to use computational modelling to identify novel drugs for repurposing in COVID-19 patients. **Methods:** We used virtual high-throughput screening to dock all the drugs that have entered clinical trials into two viral proteins: SARS-Cov2 RNA dependent DNA polymerase and the main protease ($3CL^{pro}$ protease). *In vitro* data was then collected on these drugs for COVID-19 to identify their activity against COVID-19, C_{max} and toxicity. **Results:** 576 clinically tested drugs and drug candidates were predicted to interact with the COVID-19 targets. 97 candidates had reached phase I, 167 had reached phase II and 132 had reached phase III, 180 had reached phase IV. Of the approved drugs of interest, 15% were antivirals, 20% antibiotics, 4% antifungals and 1% antiparasitic drugs, that could be easily repurposed. Other interesting categories include the lung medications (4%), immunomodulating (4%) and antithrombotic/antiplatelet agents (4%) that may have positive effects on disease progression/ presentation. The drugs predicted to have the best docking scores included drugs that have been shown to kill COVID-19 *in vitro* thus validating this modelling study. **Conclusion:** We have utilised virtual high-throughput screening and data mining to identify a number of drug options that can be repurposed quickly and at scale either alone or in combination with other drugs. These drugs have the potential to be effective for use in the current pandemic.

An evaluation of assumptions underlying respondent-driven sampling and the lived experiences of sexual and gender minority youth participating in HIV clinical trials in the United States

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Background: Respondent-driven sampling (RDS) has been used globally to recruit diverse populations for whom sampling frames may not exist, but has recently demonstrated challenges in sampling youth in the U.S. This analysis evaluates a modified RDS approach for sampling Black and Latinx sexual and gender minority youth (BLSGMY) and evaluates how social context of these youth may impact traditional RDS assumptions. **Methods:** RDS was implemented in three cities to engage BLSGMY in HIV prevention or care intervention trials. RDS was modified to include targeted seed recruitment from venues, internet, and health clinics, and provided options for text or paper coupons. Qualitative interviews were conducted among a sub-sample of RDS participants to explore their experiences with RDS. Interviews were coded using RDS assumptions as an analytic framework. **Results:** Between August 2017 and October 2019, 405 participants were enrolled and 1,670 coupons were distributed, with 133 returned, yielding a 0.079 return rate. The maximum recruitment depth was 4 waves among seeds that propagated. Self-reported median network size was 5 (IQR 2-10) and reduced to 3 (IQR 1-5) when asked how many peers were seen in the past 30 days. Qualitative interviews (n=27) revealed that small social networks, peer trust, and targeted referral of peers with certain characteristics challenged network, random recruitment, and reciprocity assumptions of RDS. HIV research hesitancy was a salient barrier to participation and peer referral. **Discussion:** Small social networks and varying relationships with peers among BLSGMY challenge assumptions that underlie traditional RDS. Hybrid RDS approaches may support recruitment of larger samples for community-based research. Relationships with peers through social media present emerging options for RDS but may challenge assumptions of reciprocal relationships. Research hesitancy and situational barriers appear to present challenges that will need to be addressed in RDS study designs.

Evaluation of Microscopy, Adenosine Deaminase and Lactate Dehydrogenase Levels as Diagnostic Methods of Tubercular Pleural Effusion

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Introduction: Pleural effusion has been associated with over 50 aetiologies, amongst which Tuberculous Pleural Effusion(TPE) is one of the most prevalent infection. Pleural biopsy, the currently most accepted diagnostic criteria is invasive, tedious and time-consuming, hence, better methods of diagnosis are required. The aim of the study was to evaluate easily available and cost-effective methods like Adenosine Deaminase(ADA), Lactate Dehydrogenase Levels(LDH), LDH: ADA ratio and microscopy. **Methods**: The research was a hospital-based observational study in Dr.D.Y.Patil Hospital, Pune which analysed 50 undiagnosed cases of pleural effusion. After obtaining informed consent, pleural fluid was collected and ADA and LDH levels were analysed, Ziehl-Neelsen(ZN) staining of PF was performed and pleural biopsy was obtained. Receiver Operating Characteristic(ROC) curves were prepared to find the ideal cut-off point for each diagnostic criterion and sensitivity, specificity for each parameter were analyzed. **Results:** In this study, 76% were males and 24% were females with a mean age of 41 years. Of the 50 cases analysed, 31 cases (62%) were reported with a positive biopsy report for TPE, while 19 cases (38%) were negative. At a cut-off level of 26 IU/L, pleural ADA level reported sensitivity and specificity of 96.77% and 57.89%, while that of LDH was 93.55% and 68.42%, at a cut-off of 326 IU/L. The LDH: ADA ratio was found to be most significant at 6.64 with a sensitivity of 93.55% and a specificity of 36.84%. The demonstration of AFB in ZN staining reported 100% specificity but mere 9.68% sensitivity. **Discussion:** According to this study, ADA had maximum sensitivity and thus, is the most suitable screening criterion in high burden settings, followed by LDH and LDH:ADA ratio, while ZN staining has maximum specificity. Comparing and contrasting these criteria will help determine a composite index with a balance between cost-effectivity and diagnostic accuracy of TPE.

Investigating Macrophage Activation in Response to Damage-Associated Molecular Patterns in Multiple Sclerosis

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Although the cause of Multiple Sclerosis (MS) is unknown, we understand that active macrophages release inflammatory mediators causing symptomatic damage. However, the trigger for macrophage activation is unclear. We investigated if the Damage Associated Molecular Pattern, High-mobility-group-box 1 (HMGB1), can trigger macrophage activation. HMGB1 is a ubiquitous nuclear architectural protein and was found to be upregulated in CSF samples and active plaques of MS patients. We measured the hallmarks of macrophage activation; NO (Greiss assay), IL-6, TNFa and IL-1b (ELISA), NFkB p65 phosphorylation (Western blotting), and miR-155 (RT-PCR). Raw 264.7 and bone marrow-derived macrophages were stimulated in a dose and time-dependent manner with HMGB1 and Toll-like receptor agonist, LPS, as a positive control. All experiments were performed in triplicate, 4 independent times. At 6, 24 and 48 hrs, LPS (1 mg/ml) induced activation markers (NO, IL-6, TNFa and IL-1b) in a time-dependent manner in both cell lines as expected. This was greatest with LPS at 48 hrs. HMGB1 alone (5, 10 and 50 ng/ml) did not have any impact on any of the activation parameters. However, when stimulated with both LPS and HMGB1, for 48 hrs, a statistically significant synergistic effect in NO, IL-6, TNFa and IL-1b production by Raw264.7 was seen. Our investigations imply that HMGB1 can synergistically enhance an inflammatory response in LPS stimulated macrophages. The impact of HMGB1 at later time points suggests it may worsen chronic inflammation, which may be relevant in MS patients who have increased HMGB1 and suffer chronic inflammation. Further characterisation will explore the different domains of the HMGB1 molecule on macrophage activation, as well as the mechanism of enhanced macrophage activation markers.

The association between abnormal vaginal microflora and duration of pregnancy as well as selected maternal and neonatal parameters.

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Introduction: Abnormal vaginal flora (AVF) is the result of excessive growth of aerobic bacteria and fungi in relation to the scarce presence of *Lactobacillus spp*. It has been suggested that AVF is responsible for preterm birth and many neonatal conditions including infections or sepsis. The aim of the study was to assess the influence of excessive vaginal colonisation with aerobic bacteria and fungi on the selected postnatal parameters of newborns, duration of pregnancy and length of hospitalisation of neonates. **Methods:** Retrospective data of all 1057 patients who delivered between January and June 2019 in the Department of Perinatology of Medical University of Lodz was analysed. 809 patients were included in this study. The study group consisted of 396 patients with abundant microbial growth, from whom vaginal flora samples were obtained between 26 and 42 weeks of gestation, while 413 patients with physiologic vaginal biocenosis constituted the control group. **Results:** Patients with AVF gave birth prematurely more often than patients with balanced microflora (9.09% vs 5.31%), p=0.038. Newborns of mothers with AVF obtained Apgar score under 4 more frequently (1.21% vs 0%; p=0.024). Eutrophic neonates were born less frequently in the study group (82.08% vs 88.65%; p=0.025). Hospitalisation period was longer for children of mothers with AVF (mean of 6.3 days vs 5.03; p=0.025). Newborns of mothers with AVF developed perinatal infections more often (23.97% vs 15.94%; p=0.004). 4 infants died in the study group (p=0.045). The most prevalent pathogens were: *Streptococcus agalactiae* 57.32%, *Candida spp.* 39.64%, *Klebsiella spp.* 9.85%. Signs of infection were more frequently recorded in newborns of mothers infected with *Klebsiella spp.* (35.90% vs 19.16%; p=0.011). **Discussion:** Abundant growth of aerobic bacteria in the 3rd trimester of gestation contributes to preterm birth, leads to the development of infection signs in newborns, increases mortality rate and prolongs hospitalisation period.

A Cross-National Comparison of the Association between Numerical Minority Status and Cigarette Smoking Prevalence and Lung Cancer Incidence

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Introduction: The objective of this study was to make cross-national comparisons to explain the relationship between numerical minority group status and cigarette smoking prevalence and age-adjusted lung cancer incidence. **Methods**: This study was completed by reviewing and compiling population-level data from all possible countries with existing data that met our inclusion and exclusion criteria. This was done by a systematic approach utilizing national data, Global Adult Tobacco Survey data from the WHO and International Cancer Registry data. Minority groups were defined based on ethnicity, race, religion or language-dependent on country, determined by cross-referencing the Central Intelligence Agency's World Fact Book and the Minority Rights Group International. **Results**: In a significant number of comparisons, numerical minority status was associated with increased cigarette smoking prevalence and age-adjusted lung cancer incidence. The findings suggest that minority status may contribute to tobacco-related health inequalities. Data collection and statistical analysis are currently underway. **Discussion**: Minority status is a marker of higher lung cancer incidence and smoking prevalence – whether described by physical traits including race or ethnicity, or cultural traits including religion and language. Krieger's ecosocial theory describes how racial discrimination exerts effects on health in the United States. This is through biological internalization of social trauma, alienation and other detrimental exposures from society – resulting in increased risk of premature death. Krieger proposes that smoking is an outcome of high psychosocial distress from minority discrimination.

The data collected and analysed thus far in this study supports the hypothesis that minority status is associated with greater smoking prevalence and lung cancer incidence when compared to majority populations. This highlights the vulnerability of minority groups and is reflective of the discrimination minorities face, manifesting in pathological outcomes. It warrants further research on other health risk factors that may be more prevalent in minority groups.

Aggressive growth and invasion of sclerosing basal cell carcinoma of the eyelid: A case report

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Introduction: Basal cell carcinoma (BCC) is, overall, the most common malignancy and the most common malignancy of the eyelid.[1-3] BCC is often slow-growing with low mortality, but certain clinical subtypes are associated with aggressive growth and invasion.[2,4,5] Sclerosing BCC is an aggressive subtype of BCC, with an increased risk of recurrence.[2] **Case Summary:** A 75 year old man presented with sclerosing BCC of the right orbit, with involved intraconal structures, inferior oblique muscles, and the anterior lateral rectus. This invasion was due to its infiltrative growth pattern into fibrous and soft tissues. He also presented with a benign pleomorphic adenoma mass of the right parotid gland. This presentation occurred after two previous surgical excisions. He presented with BCC of the right eyelid in 2013. This was excised and reconstructed with a skin graft. In 2018, the tumour recurred, and he underwent a second surgical excision. This excision was incomplete, as it had positive tumour margins. Treatment upon the third presentation involved complete excision of the BCC with a right orbital exenteration, maxillectomy, and parotidectomy. The right zygoma and orbit were reconstructed with left iliac bone graft. The skin was reconstructed with a radial forearm free flap and thigh split-thickness graft. The patient then received adjuvant radiation therapy to the right orbit. A few months after treatment he began to wear an orbital craniofacial prosthesis. There has been no evidence of BCC recurrence two years post-surgery. **Conclusion:** Certain subtypes of BCC are associated with aggressive growth and increased risk of recurrence.[2,4,5] BCC tumours should be rapidly excised and receive adjuvant radiation to prevent recurrence.[2,4] This is important in sclerosing BCC cases, as they are associated with tissue infiltration and a higher risk of recurrence.[2]

An Exploratory Study on The Relationship Between Self-Perceived Quality of Life and Physical Activity in a Canadian Cohort

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Introduction: Physical activity has been linked to reduced risk of developing cardiovascular disease, stroke, diabetes, cancer, and depression. There is a positive relationship between physical activity and happiness. The aim of this explorative study is to assess the relationship between physical activity levels and self-perceived quality of life and self-satisfaction. **Methods**: The survey was conducted in two medical clinics. It was created using combined, modified versions of the International Physical Activity Questionnaire and World Health Organization Quality of Life Questionnaire. This survey was comprised of two sections, including overall physical activity level and self-reported quality of life. The quality of life section required participants to rate their overall quality of life, health satisfaction, appearance satisfaction, and self satisfaction. Ethical approval was obtained. Valid consent was obtained, participants under the age of 18 were excluded. The data was analysed in STATA 16 using logistic regression, controlled for sex. **Results**: The logistic regression model found a positive relationship between activity level and quality of life (OR: 2.31, p= 0.18), health satisfaction (OR: 2.36, p= 0.08), appearance satisfaction (OR: 1.78, p= 0.24), self-satisfaction (OR: 1.58, p= 0.32). None of these relationships were statistically significant, most likely due to the small sample size. **Discussion:** This research did not find a statistically significant relationship. However, this does not mean that a relationship does not exist. This study had a small sample size, owing to its exploratory nature, meaning that levels of certainty required for statical significance was not achieved. It is likely that if more participants are added to future replications of this study, then positive trends between activity levels and quality of life/satisfaction scores will become significant.

Assessment of hyperhomocysteinemia as a potential risk factor in vascular disorders – a case control study

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Introduction: Vascular disorders constitute a major cause of morbidity, mortality in India and globally, of which, hyperhomocysteinemia is an important emerging risk factor. Besides, other risk factors need to be assessed to establish an order of priority in terms of prevention.**Objectives:** To study association of hyperhomocysteinemia as an emerging risk factor in vascular disorders and compare its association with other risk factors.**Materials and methods:** The study is designed as a record-based, multi-centric, case control study including adults with vascular disorders, as cases and those with any other disease or healthy patients seeking a health check-up, as controls from 2019-20 from the database of tertiary care hospitals. Appropriate statistical analysis will be performed using tests of significance, Odd's ratio and multiple variate regression. THE STUDY IS STILL ONGOING, SO I SHALL PROVIDE THE EXACT SAMPLE SIZE, FINAL RESULTS AND CONCLUSION AT THE TIME OF PRESENTATION. (Currently, 50 cases and 15 controls have been included.) **Results:** Patients of 40-50 years age group were more commonly affected with a male predominance(1.78). Correlation analysis (of variables concerning the cases only) showed significant correlation between various risk factors but none for homocysteine[significance(2-tailed)>0.05]. Regression analysis for those variables showing a significant correlation was performed which showed good association between: LDL with HbA1c(Sig. 0.049), total cholesterol(Sig 0.00). Total cholesterol with LDL(0.00), Triglycerides(0.42). Creatinine with Urea(0.00). Urea with Creatinine(0.00), HDL(0.048). Serum sodium with serum chloride(0.00) Calculated Odd's ratio(comparison between cases and controls) was significant for Hyperhomocysteinemia(1.19), LDL(3.02), HDL(1.14), Total cholesterol(1.09), Creatinine(1.71) and insignificant for HbA1c(0.20), B-12(0.37) and Urea(0.73).**Conclusion:** Amongst the independent variables, hyperhomocysteinemia is the most important risk factor, linked to cause vascular diseases in both, the younger population with no co-morbidites and the older, with known co-morbidities. Amongst the dependent variables, LDL is the most important risk factor influenced by HbA1c and total cholesterol.

A Local Quality Improvement Study Aimed to Reduce Blood Transfusion in Elective Gynaecological Surgery at Michael Garron Hospital

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Introduction: According to Ontario Transfusion Coordinators (ONTraC) records in 2018, Michael Garron Hospital (MGH) ranked the highest amongst the twelve participant hospitals for blood product usage in elective gynecological surgeries. MGH's transfusion rate was 16.4% compared to the average rate of 8.1%. **Methods:** A case-series review of blood transfusions during major elective gynecological surgeries was conducted between 2016 and 2018. All possible factors associated with blood product use (age, medical comorbidities, surgical indications, surgical procedures, pathology, preoperative and postoperative hemoglobin levels, surgeon, and pre-operative iron usage) were examined. A cost comparison was completed to evaluate the difference in the cost of optimizing a patient's preoperative hemoglobin level with the price of administering one unit of packed red blood cells (PRBCs). **Results**: Eleven of twelve surgeons used blood products. Thirty-five patients required intraoperative and/or postoperative blood transfusions. The average age and BMI of the patients studied was 41 and 28.14, respectively. The patient population presented with few pre-operative morbidities; two in thirty-five had specified hemoglobinopathies. Transfusion occurred in cases indicated for fibroids and menorrhagia. Surgeries performed included total abdominal hysterectomies + adnexectomies and myomectomies. Nineteen patients had a length between preoperative assessment and surgery of greater than three weeks, providing enough time for sufficient preoperative hemoglobin optimization with intravenous iron. Twenty-six out of thirty-five patients had preoperative anemia (<120 mg/mL) according to the World Health Organization standard. A cost analysis revealed a significant price difference between the administration of prophylactic intravenous iron and the use of postoperative and intraoperative blood product, with the use of blood products being substantially higher. **Discussion:** A quality improvement strategy of adequate preoperative hemoglobin optimization with intravenous iron may reduce blood transfusion use and furthermore reduce costs for MGH. The use of tranexamic acid intraoperatively to reduce blood loss is a consideration for future study.

BACTERIOPHAGES-BASED PREPARATIONS EFFICACY EVALUATION IN COMPLEX OF SUPPORTING THERAPY IN ONCOLOGICAL PATIENTS RECEIVING EGFR INHIBITORS

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Introduction: According to modern data, the incidence of dermatological toxicity (DT) against the background of treatment of various cancers by inhibitors of tyrosine kinase receptors of epidermal growth factor (EGFR, epidermal growth factor receptor) reaches 90-95%. The most common methods of correcting acne-like manifestations of DT are the prescription of systemic antibiotic therapy, which is extremely undesirable for patients with metastatic liver damage. The aim of our study was a development of alternative methods for the prevention and treatment of acne-like manifestations of DT anti-EGFR therapy based on the study of skin microbiota composition. **Methods:**The composition of the skin microbiota was evaluated by sowing the contents of the seedings on standardized environment at the time of inclusion and two weeks from the beginning of the therapy. The study included 24 patients in the standard therapy scheme (STS) and 20 patients in the "Phagoderm" therapy scheme (STSP). Statistical data processing was carried out using PASW Statistics 18. Level of reliability was defined as $p \leq 0.05$ in all comparisons. **Results:** In both groups, the localization of the voids on the face and upper torso 85% and 83% respectively. When comparing microbiota by qualitative composition, no significant difference in flora composition was detected. Both groups were dominated by Staphylococcus aureus and Escherichia Coli. Comparative evaluation of antibacterial therapy effectiveness on the 5th day showed 70% regression of spills in the STS group in 76% of patients, and 80% in the STSP group. In 33% (n-8) of the STS group, systemic antibiotics were cancelled due to an increase in SPGT and AST of 1.5-2 times. **Discussion:** We assume that the inclusion of bacteriophage-based preparations in the maintenance therapy scheme is effective and can be used both as monotherapy in light severity manifestations and in complex therapy in intermediate and severe skin reactions.

BREAST CANCER FEATURES IN NIGERIAN AND UKRAINIAN WOMEN

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Introduction: Breast Cancer(BC) is the most common malignancy in women of all races globally. A number of studies have suggested that there are differences between breast cancer among women In Europe and Africa. In Europe the incidence of BC is higher than in Africa but African women tend to die more from it. Studies on the features of BC among Nigerian and Ukrainian women have not been conducted. **Aim:** To study the difference in BC between white Ukrainian and black Nigerian women. **Materials and Methods:** Statistical date of hospital based studies in Nigeria and National cancer registry of Ukraine. **Result:** The incidence of BC in Nigeria was -24.5 per 100,000 of population, which is significantly lower than in Ukraine-71.4, and in the Sumy region- 77.0. Mean age at presentation of BC varies between Nigeria and Ukraine, it is 48 years in Africa and two-third of the women are premenopausal. Delayed diagnostic of BC in Nigeria is related to lack of acceptance of orthodox treatment, low quality of medical care, local beliefs and ignorance of the disease. This is in contrast to Ukraine, where the system of cancer care for the population is developed, regular screening is available to women of certain ages. This increases the probability of detecting BC at a very early stage. As a result most women in Nigeria only receive palliative care because the BC is advanced and inoperable. **Conclusion:** The Incidence of BC is low in Nigeria compared to the incidence in Ukraine (and in particular in the Sumy region). This may be due to illegality of abortion, high parity with prolonged breast feeding. In Nigerian women BC tends to present at an earlier age, but diagnosed in advanced stages and the results of treatment are unsatisfactory.

Brewing Caregiver Burden: Cross-Sectional Study of Caregiver Burden in Alcohol Use Disorder

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Introduction: Alcohol use disorder is a growing problem. Families of these patients bear the burden of caring for them, feeling responsible for their relapse. The primary caregivers are at increased risk for stressful life events and psychiatric disorders. There is a gap in literature regarding sociodemographic variables of caregiver burden and its relation with variables of alcohol use disorder. **Aims and Objectives:** The study assessed the sociodemographic profile of primary caregivers of patients diagnosed with alcohol use disorder as per DSM V and their severity of caregiver burden. The association and correlations between various variables of sociodemographic factors, alcohol usage and caregiver burden were also examined. **Methods:** Cross-sectional observational study was carried out at a de-addiction centre attached to a tertiary hospital. Using Cochran's formula and purposive sampling technique, primary caregivers of 80 patients were recruited over two months. Information was collected using structured questionnaire and Caregiver burden scale. Statistical analysis and Pearson's correlation was done using GraphPad Prism. **Results:** There is 78.75% prevalence of moderate to severe caregiver burden among the primary caregivers. There was a positive correlation between caregiver burden and quantity of alcohol consumed, monthly alcohol expenditure and years of marriage. The association between caregiver burden and various sociodemographic variables were not found to be statistically significant. **Conclusion:** Alcohol use disorder can affect people of all socioeconomic classes irrespective of their education or employment status. Addressing the quantity of and expenditure on alcohol consumption with focus on caregiver psychoeducation will have significant implications in the rehabilitation of patients with alcohol use disorder. The motivation provided by caregivers is a strong determinant of the outcome of the rehabilitation process. Caregiver support groups can provide the missing spark that spurs patients to recovery.

Case report: Gastrointestinal stromal tumor in a COVID-19 patient

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Introduction: Gastric carcinoma is the fourth most common malignancy worldwide and remains the second most common cause of cancer-related deaths in the world. Even though this type of cancer is relatively rare compared to other types, the biggest problem remains the difficulty of diagnosis. The disease usually develops slowly, over a period of several years. However, patients with higher risk should be screened for early detection and chemoprevention. We report a case of a 79-year old male patient with stenotic antral gastric neoplasm and exophytic jejunal tumor. **Case presentation:** The patient's medical history included SARS-CoV2 infection, diffuse abdominal pain, weight loss, nausea and vomiting for at least two weeks. He denies alcohol and tobacco consumption. Following clinical examination, abdominal and pelvic CT and endoscopic biopsy the diagnosis of moderately differentiated gastric adenocarcinoma and jejunal exophytic tumor was made. The morphological aspects identified were suggestive for a low-grade gastrointestinal stromal tumor, prognostic group 3a. Exploratory laparoscopy and subtotal gastrectomy with gastro-jejunal anastomosis were performed and the evolution of the patient was favorable. Postoperative complications included digestive disorders and acute renal failure. It was recommended to the patient a low-sodium diet, salt-preserved food, sensible alcohol drinking, and maintaining a proper weight. **Conclusion:** Gastric cancer is a malignant disease with a generally poor long-term prognosis. Gastric cancer is due to both genetic factors and lifestyle (which includes alcohol and tobacco consumption, a diet high in fats and carbohydrates, obesity, sedentary lifestyle), infections with certain pathogens (viruses, bacteria) or gastric disorders (ulcer, polyps, inflammation). The treatment planning strategy involves intention of the therapy and technical possibilities, stage of the tumor, patient's performance status. It has been proven that the most effective method is surgery combined with chemotherapy and radiotherapy.

Comparative Evaluation Of Efficacy Of Ritodrine Versus Nifedipine In Prevention Of Preterm Labor In Direct Head To Head Randomized Control Trials: A Meta Analysis

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Introduction: Preterm labor is regular uterine contractions resulting in cervical changes before 37 weeks of pregnancy. Ritodrine, a β2-adrenoreceptor agonist is used to stop preterm labor. Nifedipine, Calcium channel blockers (CCBs), is also used as a tocolytic. There is no data to suggest which drug is superior over other. **Aim:** To compare efficacy of ritodrine versus nifedipine in prevention of preterm labour at day 2 and day 7. **Methods:** All randomised control trials(RCTs) till 2018 which followed PRISMA guidelines 2009, in which Ritodrine and Nifedipine was compared head to head for the treatment of Preterm labor were included. MEDLINE, SCOPUS, EMBASE database were searched for MeSH terms Ritodrine, Nifedipine, preterm labor with primary outcome as number of delivery at day 2 and day 7. Observational studies, unpublished studies, RCTs not following PRISMA guidelines were excluded. Data was analyzed using RevMan 5.3 version® and Odd's Ratio was calculated. Both fixed effect and Random effect model was utilized to calculate the difference. P value <0.05 was considered as statistically significant. The I2 was used to measure the heterogeneity between studies and a value > 30.0 was considered to reflect heterogeneity. **Result:** A total of 6 Head to head RCTs were included. At day 2, according to fixed effect model, statistically ritodrine was having more likelihood for delivery as compared to nifedipine(Odd's ratio=1.492, CI=1.013-2.197, P=0.043) but according to random effect model the difference was not statistically significant(Odd's ratio=1.468, CI=0.919-2.344, P=0.108). At day 7, according to fixed effect model, ritodrine was having more likelihood for delivery as compared to nifedipine(Odd's ratio=1.196, CI=0.852-1.679, P=0.302) and according to random effect model the difference was not statistically significant(Odd's ratio=1.143, CI=0.720-1.815, P=0.572). **Conclusion:** Ritodrine causes more deliveries at day 2 and day 7, so nifedipine is a better tocolytic as compared to ritodrine. KEYWORDS: Nifedipine, Preterm labour, Ritodrine

Co-overexpression of Tumour Necrosis Factor Alpha (TNFα), Junctional Adhesion Molecule-A (JAM-A) alpha(v)beta(3) integrin, RhoA and CD9 is associated with worse prognosis in breast cancer patients.

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Introduction: Junctional Adhesion Molecule-A (JAM-A) belongs to the immunoglobulin superfamily of proteins and is expressed by epithelial cells, endothelial cells, neutrophils and platelets. Localising at intercellular tight junctions in epithelial and endothelial cells, JAM-A regulates adhesion. During neutrophil extravasation across endothelial cells, JAM-A is known to migrate to cell surface, making the endothelial cells less polar and aiding in extravasation. The migration of JAM-A is aided by TNFα expression, RhoA, alpha(v)beta(3) integrins and CD9. Since JAM-A over-expression has been linked with poor prognosis in breast cancer patients, the aim of this study was to determine if genes associated with JAM-A over-expression during extravasation are also linked to breast cancer.**Methods:** An online tool (https://kmplot.com/) was used to test correlations between concurrent high mRNA levels of TNFa, RhoA, JAM-A, CD9 and alpha(v)beta(3) integrin and prognosis in a cohort of breast cancer patients. **Results:** Patients(pt) in cohorts that were systemically treated with any endocrine therapy or chemotherapy who concurrently expressed high mRNA levels of JAM-A, TNFa, RhoA, CD9 and alpha(v)beta(3) integrin had a significantly poorer Relapse-Free Survival (RFS); with median survival of 185.16 months(1975pt) compared to those with lower levels (216.66 months) (1976pt) (n=3951 ?; p<0.0059). Subdivision of the patient cohorts according to estrogen receptor (ER) expression status revealed that in fact patients who were ER+ had better outcomes if they co-expressed lower levels of all genes (median survival of 68.71 months(1541pt) in ER+ compared to median survival of 54.96 months(1541pt); n=3082; p<0.033). **Discussion:** Using publicly-available gene expression data from the Kaplan Meier plotter, we were able to show that concurrent over-expression of all genes is associated with worse outcomes in breast cancer patients overall and in ER+ patients. No correlations were visible for non ER+ patients due to lower number of patients.

COMPARATIVE STUDY OF VARIOUS METHODS OF FETAL WEIGHT ESTIMATION AT TERM PREGNANCY

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Introduction: Accurate estimation of fetal weight helps in care of newborn and is an important parameter for perinatal morbidity and mortality. **Methods:** Study design: prospective, non-interventional, comparative study. Selection criteria Inclusion criteria : All patients with singleton pregnancies with cephalic presentation who came at term with labour pains, for induction of labour or for elective full term LSCS with recent ultrasonography (within 1 week prior to delivery). Exclusion criteria: Abnormal pregnancy. Estimated fetal weight was calculated by: clinical methods - Dare's and Johnson's method. Sonographically by Hadlock's formula. Estimated weights were compared with the actual birth weight. **Results:** <2Kg, all methods could be used as there was no statistically significant differences between them. 2.0-2.5 & >3.5Kg,Hadlock's formula was found to be better. 2.5-3.0Kg,Dare's method correlated well with the actual fetal weight. 3.0-3.5Kg, Johnson's formula correlated well. **Discussion:** 74% of the cases belonged to the group of 2.5-3.5 kg. Here, Dare's method surpassed USG. Overall, USG was most accurate amongst the three methods. When the clinical methods were compared, Dare's method was better than Johnson's method. 60% of the cases were in the group of 2.5-3 kg, where the Dare's method showed least average error for detecting the fetal weight. The estimated fetal weight was well correlated with birth weight with only 15% error in 93% cases in Dare's method and USG, while in Johnson's method, same was true for 76% cases. Study conducted by BJ0110005, KLE University, in 95% of cases, Dare's formula and USG correlated well with actual birth weight with error of 15%. Both studies indicate that Johnson's formula lags behind in estimating fetal weight. USG was found to be most accurate method in both studies, when not available it could be replaced by Dare's method as mean weight difference by the two methods was not statistically significant.

Day 2 Discharge of Low Mortality COPD Exacerbation Patients Does Not Increase 30 Day Readmission

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INTRODUCTION: Based on a previously published model[1], and in response to seasonal increases in hospital admissions, an integrated care (hospital & local community partners) quality improvement project (Home 2day) was implemented to complete acute treatment of COPD exacerbation (COPDE) in low-risk (DECAF score=0,1) admitted patients after 2days length of stay (LOS) in hospital with up to 7 days of multidisciplinary in-home care, before linking with primary care and community supports. We hypothesized that this program would reduce length of stay, while in-home assessment of individual care needs would result in better matching of patient needs and mitigate risk of 30-day same institution respiratory diagnosis readmission. **METHODS:** Location: 450 bed community teaching hospital serving diverse high needs population of 440,000 in Toronto, Ontario, Canada. Home 2day program enrolment was voluntary and limited by weekend/holiday community support availability, similar to usual care and high-risk COPD groups. Home 2day intervention included guideline-based COPD care, just-in-time in-hospital education about standardized self-management action plans, dispensed prescriptions and in-home treatment with home O2, nursing, personal support worker, physiotherapy and infrequently used home specialist virtual visits. The initial 3-month period was analyzed to estimate daily in-hospital and in-home Home 2day treatment costs. Post-hoc analysis of hospital charts identified new use of prednisone or antibiotics within 5 days of readmission as a marker of COPDE action plan use. **RESULTS & CONCLUSIONS:** Day 2 discharge of admitted low-risk COPDE patients did not increase risk of 30day readmission rate, readmission LOS or new pre-hospital readmission prednisone/antibiotics use, but significantly reduced in-hospital stay and likely overall healthcare system costs.

Elevated resting heart rate is associated with increased Toll-Like Receptor expression in healthy obese adults

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Elevated resting heart rate levels has proven to be a risk factor for adverse cardiovascular events. The extent of this effect has been well documented; however, the underlying pathophysiological factors contributing to this remains in question. This study investigates the relationship between resting heart rate levels and leukocyte inflammatory markers in healthy obese individuals. The participants were obese male and female individuals with no history of concomitant medical conditions nor a history of cigarette smoking or alcohol consumption. ACTi graphical activity was recorded for seven consecutive days as well as their baseline heart rate. Evaluation of subclinical inflammation was determined by measuring the number of plasma lymphocytes, monocytes, and granulocytes using flow cytometry analysis, while plasma inflammatory cytokines were measured using ELISA. There is a positive correlation between elevated resting heart rate levels and M1 pro-inflammatory monocytes expressing CD11b+CD11C+CD206- (r = 0.52; P = 0.0003) as well as activated T-cells expressing CD8+HLA-DR+ (r = 0.27, P = 0.039). No association was found between resting heart rate and the percentage of T cells inhibitor neutrophils (CD16-CD11b+). Interestingly, elevated resting heart rate levels also positively correlated with cells expressing toll-like receptors CD14-TLR4+ (r = 0.51, P ≤ 0.0001) and CD14-TLR2+ (r =0.42, P= 0.001). The TLR4+ cells also displayed increased levels of plasma MMP-9 (r =0.53, P≤ 0.0001,), VEGF (r = 0.47, P = 0.0002) and TNF-α (r =0.36, P= 0.005). In healthy obese individuals, elevated resting heart rate levels is associated with increased markers of chronic inflammation. To an extent this association may explain the pathophysiological link between obesity-related inflammation and cardiovascular disease.

Epigenetic Effects of Gemcitabine, Oxaliplatin, and Cetuximab

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Introduction: DNA methylation and histone modifications play a key role in the epigenetic regulation of gene expression. Aberrant changes in the levels of chromatin modifications affect the processes of proliferation, survival, adhesion, migration, etc. Previously we have shown that cetuximab, oxaliplatin, and gemcitabine activate the expression of the epigenetically repressed GFP gene in the HeLa TI test system. The aim of this study was to investigate the effect of these drugs on integral DNA methylation, level of histone methylation, activity of histone acetyltransferases (HAT). **Methods**: The level of integral DNA methylation was analyzed by restriction analysis of genomic DNA with endonucleases *HpaII* (sensitive to unmethylated CCGG sequences) and *MspI* (sensitive to both methylated and unmethylated sites) and methyl-sensitive ELISA. Analysis of histone methylation levels was performed by Western blotting using antibodies to the H3K27me3 and H4K20me3 modifications. The activity of the HAT family enzymes was analyzed using HAT Activity Assay Kit. **Results**: We showed that treatment of cells with cetuximab and gemcitabine did not affect total cytosine methylation. After oxaliplatin treatment a decrease in the fraction of DNA cleaved by methyl-sensitive endonuclease by 31% was shown by densitometry analysis of DNA electrophoresis, ELISA revealed the decrease of cytosine methylation by 18%, which indicates a small ability of oxaliplatin to demethylate DNA. There was an increase in the enzyme activity of HAT by 20% after oxaliplatin treatment. Changes in the levels of histone modifications H3K27me3 and H4K20me3 were not observed after analyzed drug treatment. **Discussion**: Considering that oxaliplatin showed demethylating activity, as well as a tendency to increase the activity of histone acetyltransferases, it can be assumed that this drug is able to activate epigenetically repressed genes that should be considered when combined chemotherapy protocols are developed. **Acknowledgements**: This work was supported by the Russian Science Foundation (Grant No. 18-75-00115).

Exploring Early Life Feeding Adversities in Adolescent Patients with ARFID

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Introduction: The etiology of Avoidant Restrictive Food Intake Disorder(ARFID) is poorly understood. Since its introduction in the DSM-5, this newly articulated diagnosis is deemed unique from other feeding/eating disorders as it is characterized by chronicity. As there is currently no defined timeframe used to make this diagnosis, this paper explores early life feeding experiences (ELFE) as an early sign of this disorder. **Methods:** A retrospective chart review of 42 adolescents with ARFID was done to differentiate those who experienced early life feeding adversities from those that did not. **Results:** Notable experiences include difficulty with latching to breast after birth, difficulty weaning at 6 months, late to wean and increased food selectivity at weaning. Although only 9 patients (21.4%) met this criteria, significant differences were found when comparing these two groups of patients. Some important trends that were observed include patients without ELFE had a shorter self-reported length of illness but were more medically unstable, which was demonstrated by their lower treatment goal weight (%TGW). Additionally, among those that had ELFE, there was an equal amount of patients that fell within all 3 potential categories of ARFID. The importance of this study lies in the research that is to follow.

Extent of Palliative Care need among cancer patients undergoing chemotherapy: A cross sectional study

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Introduction: Palliative Care is an interdisciplinary approach aimed at optimising quality of life and mitigating suffering. Identifying patients who may benefit from a palliative approach is a recognised challenge, especially in India, as it is associated mainly with end of life care. Therefore, an assessment of the extent of palliative care need in the hospital setting is crucial to appropriately match services and define priorities for care. **Methods:** A cross sectional study was conducted among cancer patients undergoing chemotherapy (without adjunctive palliative care) at a tertiary care center in Western Maharashtra during February, 2020. After due consent, participants were screened for palliative care need according to the Gold Standards Framework (GSF) Prognostic Indicator criteria. Participants also completed the Sheffield Profile for Assessment and Referral to Care (SPARC), a needs assessment tool that measures unmet needs across 7 domains on a scale of 0-3. Data was entered in MS Excel and analysed using SPSS version 23.0. **Results:** Out of 127 participants (mean age = 55.39 + 12.68), 38% met the GSF criteria for palliative care need. Patient self-reported data from the SPARC questionnaire indicated that participants who rated a score of 3 for >1 domains were 4.7 times more likely to meet the GSF criteria. The most frequently reported unmet needs were fatigue (76%), pain (71%), anxiety (49%), dependence (49%) and bowel and bladder issues (38%). Participants aged > 60 reported more concerns about loneliness (p=0.001) and anxiety (p=0.01), compared to younger age groups. **Discussion:** Our results reveal that over a third of cancer patients undergoing chemotherapy met the GSF criteria for palliative care need. It provides evidence of a large unmet need across various domains among these patients, who may benefit from introduction of adjunctive palliative care, and lends support for the use of similar tools in the hospital setting.

IL-6 synthesis by HeLa cancer cells. Synthesis modulation by polyphenols (Taxifolin as an example)

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Introduction: Cancer is one of the leading causes of death of people worldwide. Researchers around the world try to find different ways to impede tumor growth and cancer progression, one of the latest news in this area is the possibility of natural polyphenols to prevent and treat cancer. In our research, we decided to check the possible action of polyphenols such as Taxifolin on the immune microenvironment of the cancer cells. **Materials:** For this purpose, we used HeLa cells, which were cultivated in the culture media (Bovine Serum + DMEM). Then we placed 10000 cells in each well of the plate. The supernatant was taken from each well for the ELISA procedure. ELISA was used for the IL-6 determination in the cell culture. The analysis was provided with the usage of GraphPad Prism. **Results:** There was a relatively high secretion of IL-6 by HeLa cells (271 pg/ml in culture media). Taxifolin raised the concentration of IL-6 in culture media from $271 \pm 11,5$ pg/ml to 301 ± 18 pg/ml. **Discussion:** On this step of our research, we get intermediate results which showed that the presence of natural polyphenol in the cell culture rises the production of IL-6 which plays an important role in tumor suppression. The increasing concentration of IL-6 can stimulate an inflammatory response and can lead to the domination of the tumor immune rejection processes over tolerance. However, the research work still proceeds, the comparison with other polyphenols (Curcumin, EGCG, Resveratrol) will be done for the more precise evaluation of the polyphenols' role in cancer treatment and prevention possibilities.

Incidence of Early Complications After Modified Radical Mastectomy for Breast Cancer

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Introduction: Modified radical mastectomy is the primary surgical treatment for breast cancer. It is often associated with seroma formation postoperatively. Our study aims to address the possibility of this complication along with the likelihood of developing wound infection postoperatively. **Methods:** Patients who met the selection criteria where identified and randomly selected. The age of patients, stage of breast cancer and the complications observed after six weeks were recorded. The data collected was then input and analysed using the SPSS version 21.0. **Results:** Of the 65 patients selected, 3 patients (4.6%) developed a wound infection and 19 patients (29.23%) had seroma formation. An additional 18 patients (27.69%) with stage II breast cancer had seroma formation compared to merely 1 patient (1.54%) with stage I breast cancer. Furthermore, 3 patients with stage II breast cancer developed a wound infection while none of the patients with stage I breast cancer developed this complication. **Discussion:** Modified radical mastectomy is an invasive surgical procedure that can elicit a myriad of complications, including seroma formation and wound infection. The study's findings were consistent with national studies with regards to the incidence of seroma formation in the aftermath of modified radical mastectomy. Nevertheless, studies with larger sample sizes and better control-arms are needed in order to determine the true incidence of postoperative complications.

Is it possible to predict effects of metabolic surgery?

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Introduction: Bariatric surgery was proven to be the most efficient treatment of obesity and type 2 diabetes mellitus (T2DM). Despite detailed qualification, not every patient achieved desirable outcome of T2DM remission after intervention. Recently, DiaBetter and Robert's scores have been developed to predict diabetes remission after bariatric surgery. **Aim:** To validate and compare the performance of DiaBetter and Robert's scores as the predictors of diabetes remission 1 year after surgical treatment. **Material and methods:** The retrospective analysis included consecutive patients with T2DM who underwent Roux-en-Y gastric bypass (RYGB) or sleeve gastrectomy (SG) between 2009 and 2017 in a single tertiary referral center and completed 1-year follow-up. The DiaBetter and Robert's scores were calculated for each patient. Each score relationship with diabetes remission was assessed using logistic regression. Discrimination was evaluated by area under the receiver operating characteristic (AUROC) whereas calibration by Hosmer–Lemeshow test. **Results:** Out of 252 patients enrolled in our study 150 (59.5%) were women whereas 102 (40.5%) were men with median age 48 years. 46.83% of patients underwent SG whereas 53.17% of them had RYGB. The T2D remission rate reached 90.5%. Median of preoperative A1c was 6.75% and preoperative BMI was 45.39 kg/m2, both decreased to 5.8% and 33.09 kg/m2 respectively after 1 year. %EWL after surgery amounted to 53.4%. Either DiaBetter or Robert's score were predictive of diabetes remission in a logistic regression analysis (OR 0.51; p<0.0001 and OR 1.93; p=0.0031, respectively). The DiaBetter score presented excellent discrimination power (AUROC 0.81; p<0.0001) whereas Robert's score had poor discrimination with AUROC=0.67 (p<0.0001). Both scores demonstrated statistically good calibration. **Conclusions:** Both DiaBetter and Robert's scores can be used in preoperative assessment of diabetes remission after bariatric surgery. DiaBetter score seems to be more accurate than DiaRem score in predicting metabolic outcomes after bariatric surgery.

Lung disease in patients with systemic lupus erythematosus

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Aim: The aim of this study was to investigate the frequency of lung involvement in patients with Systemic Lupus Erythematosus (SLE) treated at the Military Medical Academy. **Methods and materials:** 75 patients (68; 90.6% female) were included in this cross-sectional study. They all met the revised EULAR/ACR classification criteria for SLE. The mean age was 45 ± 12 (22-78) years. The disease lasted an average of 11 ± 10 (1-38) years. In all patients, the presence of symptoms and signs of lung disease, radiographic examination of the lungs, spirometry and carbon monoxide lung factor transfer (DLCO). **Results:** At the time of the trial, two patients had clinically manifest lung disease. Also, one had changes in the lung radiography (bilateral fibrosis). Normal spirometry was reported by 67 (89,37%) patients, ventilation disturbances of restriction type light grade 3(4%), moderate-severe degree 4 (5,3%) and severe degree 1 (1.33%). Normal DLCO had 19 (25,33%), decreased mild grade 35 (46,67%), moderately-severe 17 (22,67%) and severe grade 4 (5,33%) patients. None of the patients with normal spirometry and reduced DLCO had any clinical or radiographic signs of lung disease. **Conclusion:** Our study showed that a significant number of patients without clinically and radiographically manifest lung disease and with normal spirographic findings, had a reduced DLCO. Based on these results, we believe that patients with SLE without respiratory symptoms should be monitored pulmonary function (DLCO) periodically for possible development of interstitial lung disease with subsequent pulmonary hypertension.

Midwives' Compliance with the Standard Precautions of Infection Control in the maternity setting

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Background/Aims: Standard Precautions are the basic measures of infection prevention and control that must be adhered to when caring for all patients irrespective of their infectious status. This study aimed to explore midwives' knowledge and attitude to the Standard Precautions of infection control, to understand how the Standard Precautions impact clinical practice, and to identify the barriers to compliance with the Standard Precautions in the maternity setting. **Methodology**: Adopting a quantitative approach, using a self-designed, self-administered questionnaire, fifty midwives working at the Obstetric Wards, Central Delivery Suite, and the Neonatal and Paediatric Intensive Care Unit were selected through convenience sampling. All midwives (N=50) returned a completed questionnaire, generating a 100% response rate. **Results**: Although the midwives' mean knowledge and attitude scores were rather positive, results show that the participants' knowledge of hand hygiene prior to the use of gloves, and their attitude towards the 5 moments of hand hygiene, the use of gloves, and the use of personal protective equipment was rather poor. Overall, midwives seemed to understand the principles behind the Standard Precautions in clinical practice. However, compliance seems to depend on the midwives' attitude and as well as on certain constraints which they experience, mainly high workload, time constraints, and lack of regular training. **Conclusion**: The midwives' perceived risk and susceptibility of acquiring or transmitting and infection are thought to influence their attitude towards compliance with Standard Precautions. Therefore, facilitating opportunities for midwives to undertake regular hands-on training in infection control, that is backed up by information on infection transmission, is essential in order to improve and maintain a positive attitude towards Standard Precautions and enhance compliance.

Patient Attitudes Towards Medical Student Involvement in Obstetrics and Gynaecology

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Aims: The aim of this study is to assess patient attitudes towards medical student involvement in their Obstetric and Gynaecologic care in an Irish health care setting. **Methods:** This was an observational study performed at Our Lady of Lourdes Hospital in Drogheda, Ireland that used self-administered surveys to assess patient level of comfort with students either observing or performing clinical skills in the inpatient and outpatient setting. These included observing or performing history taking, abdominal exam, vaginal exam, vaginal delivery, and observing caesarean section. **Results:** A majority of the women surveyed would allow students to observe all clinical skills. Only 18% of patients would not allow a student to perform a vaginal exam, 25% would not allow a student to perform a vaginal delivery. Increased age appears to be a greater determinant of higher comfortability than parity. **Discussion:** Obstetrics-gynaecology patients in an Irish health care setting are willing to involve medical students in their care. Majority of the patients involved in this study are comfortable with student involvement, whether in an observational or hands-on capacity. These results are an important guide to Irish health care professionals and students as they consider what level of student involvement is appropriate in clinical teaching. Given that this is the first study in Ireland assessing this matter, more research is needed to determine how we can make advances in medical education while maintaining the highest standard of patient care and safety.

Positive Cerebrospinal Fluid RT-PCR Tests of COVID-19 Patients: A Systematic Review.

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Introduction: The respiratory manifestations of coronavirus disease 2019 (COVID-19) are well-reported, but recent evidence implicates the nervous system in the pathogenesis of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). This study aims to summarise the clinical characteristics associated with patients whose cerebrospinal fluid (CSF) tested positive for SARS-CoV-2, to provide clinicians with a better understanding of the neurological involvement of COVID-19 from a clinical and diagnostic perspective.**Methods**: A comprehensive search of PubMed, EMBASE, Scopus, WHO Coronavirus database, bioRxiv, medRxiv, and Web of Science databases was carried out. Original studies reporting positive RT-PCR SARS-CoV-2 tests on CSF samples were included. Key search terms encompassed all variations of "COVID-19" AND "cerebrospinal fluid". **Results**: 525 studies were identified through the systematic search. 56 full-text articles were included and assessed for eligibility post screening and deduplication, of which 13 were qualitatively analysed. A total of 14 patients were reported to test positive for SARS-CoV-2 in their CSF samples. In 21.4% (3/14) of cases, nasopharyngeal (NP) swabs tested negative despite a positive CSF sample. 14.2% (2/14) of positive cases as per NP swab tested negative after supposed recovery, but progressed to neurological deterioration and positive CSF tests. Most commonly reported symptoms included headache (6/14), fever (5/14), vomiting (4/14), cough (4/14), visual disturbances (4/14), diarrhea (3/14), and seizure (3/14). Respiratory symptoms were not commonly reported. 28.6% (4/14) of patients were admitted to ICU, and 14.2% (2/14) expired. **Discussion**: It is important to consider the neurological manifestations of COVID-19 even in the absence of a positive NP swab test. Additionally, SARS-CoV-2 RT-PCR tests of CSF samples may prove to be a beneficial diagnostic modality in the case of COVID-19 nervous system involvement. In order to establish informed guidelines, further evidence is needed to understand the clinical implications of CSF tests in COVID-19 patients.

Pelvic organ prolapse - a search for causes and evaluation of post- operative life quality

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Introduction: Pelvic organ prolapse (POP) is the lowering of pelvic organs below their anatomical location, causing symptoms such as pain or discomfort, substantially decreasing quality of life. The aim of the study was to assess the improvement of quality of life among patients subjected to reconstructive surgery due to POP and determining the most prevalent risk factors of this condition.**Methods:** Retrospective data of 330 patients who underwent a reconstructive surgery due to POP between 10.2015 and 10.2017 in the Dept. of Surgical and Oncologic Gynaecology, Medical University of Lodz, was analysed and a telephone based questionnaire was conducted. Answers regarding post-surgery satisfaction rates and persisting symptoms were obtained from 70 patients. The study group was divided according to the stage of POP and implemented surgical methods, for statistical analysis. **Results:** As for the established risk factors, pulmonary diseases with chronic coughing were present in 15,94% of the patients. All of the patients gave birth to at least one child, perineotomies were conducted in 83,82%, perineal tear during delivery occurred in 36,23% of patients. 61,80% of patients used to work or still work physically. 52% of women returned to work after 3 months or less after delivery. Regarding symptoms, perineal or lumbosacral pain subsided after surgery in 31,81% of the patients. Pelvic pressure and heaviness in the lower abdomen subsided in 63,04% of the patients. In terms of mobility limitation, 76,19% reported improvement after surgery. Urinary incontinence subsided in 47,5%. Mean quality of life on a scale 1-5 before the surgery was 2,12 and after the surgery- 4,24. Prolapse recurrence based on telephone survey was estimated at 24,29%.**Discussion:** Reconstructive surgeries significantly improve life quality of patients and cause POP-associated symptoms to regress. Modifiable risk factors of POP should be avoided due to their influence on recurrence of the disease.

Patient Satisfaction and Evaluation of Virtual Care in Otolaryngology-Head & Neck Surgery During COVID-19

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Introduction: The recent SARS-CoV2 pandemic necessitated the use of virtual platforms to remain connected with patients and continue updates on diagnosis, treatment, and follow-up care. The aim of this quality improvement study is to evaluate the telehealth and telephone platforms and their effectiveness, with the goal of deriving the standard of care achieved through virtual care in the specialty of otolaryngology. **Methods:** To determine each modality's effectiveness, patient satisfaction surveys were completed comparing in-person, telehealth, and telephone visits. Survey participants were recruited through the EMR (electronic medical records) of the Otolaryngology department at Michael Garron Hospital; criteria for recruitment being each patient received care through all three modalities. The research study was conducted in the format of a retrospective telephone survey, involving the administration of 91 patient surveys. The data collected per question, for each modality was quantified using a five-point Likert scale and the Friedman test was used for statistical analysis. **Results:** Preliminary findings indicate that the three modalities were not significantly different, in areas of; comprehension of diagnostic information/results, delivery of serious news, patient-doctor rapport, and technical difficulties, as determined by patient rankings. However survey questions pertaining to physical examinations and the urgency of visits demonstrated significant statistical difference, leading to the conclusion that these areas of care were impacted by the modality being accessed.

Radiomics analysis of PET / CT findings with fludeoxyglucose (18F) as a biomarker in the differentiation of spondylodiscitis and bone metastasis in patients with focal lesions in the spine

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Introduction: Early initiation of targeted treatment can prevent possible irreversible neurological complications of spondylodiscitis (SD) and / or spinal metastases (MET), but differentiation may be a diagnostic problem, especially in the early stages. **Aim:** Identify the radiometric characteristics of PET with FDG helping to distinguish SD and MET. **Methods:** Retrospective analysis of 31 second- and higher-order radiometric elements in 60 patients with confirmed SD (n = 30) and MET of various malignancies (n = 30). A total of 40 SD findings and 40 MET findings were analyzed using LIFEx freeware, which allows the calculation of conventional, textural and shape elements of diagnostic images. The clinical characteristics of the patients (non-parametric Wilcoxon rank sum test) were compared using the statistical software RStudio and their acceptable diagnostic accuracy was tested using the ROC curve. Furthermore, the predictive ability to distinguish SD and MET was tested using machine learning, where three methods were tested (multiple logistic regression, random forest and support vector machines), with three different ways of selecting training and test data (K-fold cross-validation, Leave- One-Out Cross-Validation, Train test split). **Results:** When SD and MET were distinguished, 24/31 radiometric elements were confirmed as statistically significant (p <.05) and in 9/24 the AUC was> 80% for diagnostic accuracy. The highest values were reached by the parameters GLZLM_ZP (cut-off = 0.38, AUC = 83.25%), NGLDM_Contrast (cut-off = 0.17, AUC = 84.7%) and GLRLM_GLNU (cut-off = 46.1, AUC = 88.8%). In machine learning, the most effective method was Random Forest (cut-off = 0.28, AUC = 98.61%) with the method of data selection Train test split. **Conclusions:** The results confirm radiomatic analysis and machine learning as a possible direction in distinguishing SD and MET in PET / CT with FDG and support their further validation.

ROLE OF EPIGENETIC MODIFICATIONS IN FETAL GROWTH RESTRICTION

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Introduction: Fetal Growth Restriction is associated with epigenetic changes in DNA and methylation status of various gene promoters had been studied in cord blood of babies and placenta samples of their mothers. It is hypothesised that promoter methylation of IGF-2 gene will downregulate its expression and thereby control the weight and growth of babies. **Aim:** To determine the promoter methylation status of IGF-2 gene in IUGR. **Methods:** Thirty IUGR and 30 AGA (appropriate for gestational age) neonates were recruited in this study and umbilical cord blood samples were collected at birth. DNA samples were isolated and subjected to bisulfite medication and using specific primers methylation specific (MS) PCR was performed. The status of promoter methylation in IGF-2 was recorded after agarose gel electrophoresis. **Results:** There was a significant difference in methylation status of IGF-2 promoter in IGR when compared to AGA (p<0.05). Hypermethylation of the IGF-2 promoter was found in 64% of IUGR cord blood samples and 13% of AGA. But there was no correlation between methylation status and other risk factors of IUGR. **Conclusion:** IGF-2 hypermethylation is found in the majority of IUGR cord blood samples.

Renin-Angiotensin-Aldosterone System as a Target for Facilitating Sinus Rhythm Maintenance after Electrical Cardioversion in Hypertensive Atrial Fibrillation Patients

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Introduction: Sinus rhythm maintenance after electrical cardioversion (ECV) remains challenging in comorbid atrial fibrillation (AF) patients, arterial hypertension (AH) having established role, both pathophysiologically linked by pressor effects and renin-angiotensin-aldosterone system (RAAS) upregulation. Non-antiarrhythmic drug (non-AAD) upstream therapies, including RAAS inhibition by angiotensin-converting enzyme inhibitors (ACEIs)/angiotensin receptor blockers (ARBs) and mineralocorticoid receptor antagonists (MRAs), come into focus, showing heterogeneous results. This study evaluates, whether and how convincing RAAS inhibition, by ACEIs/ARBs and combination with MRAs, can add benefit to AAD therapy, facilitating sinus rhythm maintenance after ECV in AF patients with pharmacologically controlled AH. **Methods:** The study was conducted among AF patients after successful ECV in Latvian Centre of Cardiology. Additional inclusion criteria were pharmacologically controlled AH and class IC or III AAD prescription, not restricting specific medication intake. After baseline interview, 1-, 3-, 6-, 9-, 12-month follow-up was conducted. Medication effectiveness was evaluated using MS Excel and SPSS Statistics, calculating odds ratios (ORs) and 95% confidence intervals (CIs), with significance level $\alpha=0.05$. **Results:** 99 patients were included. Among participants not using any RAAS inhibitor (20.2%), AF recurrence rate comprised 65.0%. Present RAAS inhibitor (79.8%) therapy demonstrated recurrence rate 48.1%, with 53.4% and 33.3% relapses for ACEI/ARB and concomitant ACEI/ARB and MRA intake, respectively. Compared to non-use, presence of RAAS inhibitor reduced OR for AF recurrence by 50.1% (OR 0.499, 95%CI 0.180-1.383, p=0.181), ACEI/ARB intake by 38.2% (OR 0.618, 95%CI 0.216-1.773, p=0.371), combined ACEI/ARB and MRA use by 73.1% (OR 0.269, 95%CI 0.074-0.979, p=0.046). **Discussion:** RAAS inhibition demonstrated therapeutic potential adjunctive to AADs, showing improved sinus rhythm maintenance tendency in pharmacologically controlled hypertensive AF patients, with statistically significant effect demonstrated by concomitant ACEI/ARB and MRA intake. Highlighting effects beyond blood pressure reduction, findings are supportive of MRA use in AF patients with AH, yet not primarily emphasized for this group.

Role of Microsatellite instability in Endometrial carcinoma

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Introduction: Endometrial carcinoma is the most common gynaecological malignancy in the Western countries. In India and Southeast Asia the incidence of endometrial carcinoma is on the rise. This study aimed at identifying the role of Microsatellite instability in patients with endometrial carcinoma. Microsatellites are repeat sequences of several DNA bases and they are more prone to slippage and error. In tumors, microsatellite repeat number is different from that in normal tissues, which is known as microsatellite instability (MSI). Role of MSI in colorectal carcinoma has been very well studied. However, studies of MSI in endometrial carcinoma have been very few. **Materials and methods:** This descriptive study included 40 patients who were treated for endometrial carcinoma at tertiary care hospital. IHC for four markers - MLH1, MSH2, MSH6 and PMS2 was done. The histological type was classified using WHO criteria and surgical staging was determined using FIGO criteria. **Results:** Out of 40 patients 24(60%) were MS stable whereas 16(40%) were MS instable. 37.50% of MS stable patients were less than 57 years of age compared to 56.25% of MS instable patients which shows that MS instable tumors tend to occur in younger age group. We also found that 12.50% of MS instable tumor presented in advanced stage III-IV disease compared to 45.84% of MS stable patients. There was also a trend for higher grade (G2 and G3) in MS instable tumors(68.75%) compared to MS stable tumors(25%). **Discussion:** Microsatellite instability is associated with higher tumor grade, myometrial invasion>50% and presented in initial stages compared to microsatellite stable tumors. Findings of our study are clinically relevant and may open a door to more large scale studies evaluating genetic makeup of endometrial cancers. **Conclusion:** Our study showed a statistically significant relationship between microsatellite instability and FIGO staging, tumor grade and myometrial invasion.

Sleep hygiene: A cross-sectional study among different years in Medical Students

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Introduction: Poor sleep hygiene is linked with sleep problems, poor sleep quality & excessive sleepiness. Sleep deprivation, a common problem among undergraduate students, leads to daytime sleepiness and poor academic performance.The aim of the study was to assess sleep hygiene among MBBS students of different years of study and any association between socio-demographic and environmental factors affecting their sleep pattern and academic performances.**Method**: It was a cross sectional study. Pre-designed & validated questionnaires consisting of Pittsburgh Sleep Quality Index (PSQI) were distributed amongst students of different years of medical studies. Google forms app was used for collecting the responses, data analysis was further done using IBM-SPSS 20.**Results**: A total of 341 medical students were enrolled, of whom 69.5% medical students reported daytime naps, and 70% were said to lose out on sleep time to perform better in exams, and 73.1% reported irregular sleep-wake schedules during the week. 55 to 71% of 3rd and 4th year medical students reported poor to very poor sleep quality as compared to the 1st and 2nd year medical students ($p<0.05$). PSQI score was 10.08 with Standard Deviation of 2.76. 66.1% of medical students of 3rd year and 61% of 4th year reported global PSQI Score of 11 to 21 as compared to 1st (46.2%) and 2nd year medical students (33%).**Discussion**: Medical students of higher study years suffer more from poor sleep quality and difficulty in sleeping compared to students of 1st and 2nd years of study which may be due to larger academic load on higher study years.This study suggests that necessary interventions should be taken by medical educators and planners for improvement of quality of life of Medical students.

Social Distancing Causally Impacts the Spread of SARS-CoV-2: A U.S. Nationwide Event Study

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Introduction: To date, no study has examined the effectiveness of social distancing, while controlling for social mobility and social distancing restrictions in the United States. We utilise the quasi-experimental setting created by the nationwide protests precipitated by George Floyd's tragic death on May 25, 2020, to assess the causal impact of social distancing on the spread of SARS-CoV-2. **Methods**: Our sample period spans from January 22, 2020, to June 20, 2020, and consists of 474,422 county-days representing 3,142 counties from all 50 states and the District ofColumbia. To assess the change in COVID-19 case counts following the protests, we employ a differences-in-differences estimation strategy in a multivariate setting, in which we control for social distancing restrictions and social mobility across counties. We also control for covariates that may influence SARS-CoV-2 transmission, and implement placebo tests using a Monte Carlo simulation. **Results**: We document a country-wide increase of over 3·06 cases per day, per 100,000 population, following the onset of the protests (95%CI:2·47–3·65), and a further increase of 1·73 cases per day, per 100,000 population, in the counties in which the protests took place (95%CI:0·59–2·87). Relative to the week preceding the onset of the protests, this represents a 61·2% country-wide increase in the infection rate, and a further 34·6% increase in the protest counties. **Discussion**: Our study documents a significant increase in COVID-19 case counts in counties that experienced a protest, and we conclude that social distancing practices causally impact the spread of SARS-CoV-2. The observed effect cannot be explained by changes in social distancing restrictions and social mobility, and placebo tests rule out the possibility that this finding is attributable to chance.

Synergistic Activity of Antimicrobial Combinations Against Carbapenem-Resistant Enterobacteriaceae

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Carbapenem-resistant *Enterobacteriaceae* (CRE) (such as *Klebsiella pneumoniae*) are becoming increasingly common within the community and hospital settings, mainly affecting immunocompromised patients. One of the ways in which carbapenem resistance can be brought about is by β-lactamases. These enzymes are divided into 4 classes (A-D), in which NDM-1 (Class B) and OXA-48 (Class D) are endemic in Malta. Furthermore, β-lactamases hydrolyse β-lactam antibiotics, therefore making these organisms resistant to a wide range of antibiotics. This results in high mortality rates since the treatment available is very limited. Combination therapy has shown to enhance the treatment of these infections. It involves the use of two or more antibiotic combinations that are synergistic. However, the best course of treatment for these infections has not been identified. This pilot study was carried out to identify antibiotic combinations that were synergistic for the treatment of CRE, specifically of *K. pneumoniae* NDM-1 and OXA-48. The epsilometer test was used on 12 strains of *K. pneumoniae* (either colistin sensitive or resistant, and NDM-1 and/or OXA-48) to identify whether synergism was present. These strains were selected from the frozen collection bank and were obtained from patients who had bloodstream infections. Four antibiotic combinations were used; meropenem-fosfomycin, meropenem-tigecycline, meropenem-ertapenem, rifampicin-tigecycline. Meropenem-fosfomycin had the best outcome, being synergistic in 50% (N=12) of the strains used. The possible reason why all the strains were not synergistic could be due to additional resistance mechanisms that may have been present. Further research is required to identify the gold standard for testing synergism, together with the best treatment for *K. pneumoniae* NDM-1 and OXA-4.

The association between Maternal Micronutrients Supplementation and child birthweight in Sa'ad Abualela hospital and Suba teaching hospital, Khartoum, Sudan in 2019

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Introduction: Birth weight is a strong predictor for child health and development and is influenced by many factors including maternal health. Micronutrients supplementation during pregnancy is beneficial in improveing the maternal health and maybe of potential benefit to fetal outcomes.This study aims to asses the effect of antenatal multiple micronutrients supplements on infant birth weight compared with the routine iron-folate supplements. **Methods:** This was a cross- sectional study of 223 women with no chronic illnesses conducted in Sa'ad Abualela and Suba university hospitals, Khartoum, Sudan. Data were collected through structured interviews and the birth weights were recorded as measured by midwives .women were asked about their socio-demographic data and health factors. Their height and weight were measured to classify their BMI. Informations about their antenatal micronutrients intake status, type of supplements and duration of intake were also collected.Data were analysed using SPSS 21. **Results:** Of 223 women participated in this study 13.6 % of live born children were of low birth weight. Mean 2.89 ± 0.56 .The proportion of low birth weight was higher in female than male infants. A total of 68.78% mothers consumed multiple micronutrients (n=152), while 20.81% were on the iron-folate supplements(n=46). There was a small non-significant increase in birth weight in the mothers receiving multiple micronutrients compared with the ones receiving iron–folic acid supplements (2.94 ± 0.56 vs. 2.86 ± 0.44 kg) respectively. (p=0 .25) . No additional benefit was elicited of multiple micronutrients in reducing the risk of low birth weight which was surprisingly higher in this group (13.8%) than the iron-folate group(13.1%). **Conclusion:** In Sudan, Multiple micronutrients confers no additional benefit over iron-folic acid supplements in reducing the risk of low birth weight. in relatively healthy mothers. However, they resulted in non-statistically significant increase in the mean birth weight.

The prevalence of E-cigarette uses among medical students at Umm Al-Qura University; a cross-sectional study 2020

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Background: Electronic cigarette (e-cigarette) is becoming increasingly popular worldwide, and commercially a commonplace in the media. Health concerns and the avoidance of smoking are the most frequently reported factors for conventional smokers to turn to e-cigarettes. However, there is insufficient information about the use of e-cigarettes in Makkah city; therefore, this study aims to determine the prevalence of electronic cigarette uses among medical students at Umm al-Qura University (UQU). **Methods:** A cross-sectional study was conducted in February 2020 among medical students at UQU, Makkah, Saudi Arabia. Data were collected using a prevalidated printed version of a self-questionnaire to determine the prevalence and the main factors that influence medical students to smoke e-cigarettes and to evaluate their awareness, knowledge, and attitude. **Results:** Out of 1249 medical students, 910 participated in the survey, about 31.8 % of them confirmed using e-cigarette regularly. 14.7% think e-cigarettes are medically approved method for smoking cessation, while 59.5% believe it can cause addiction similar to tobacco cigarettes. Among the regular users, 24.3% used it to quit tobacco smoking, 18.9% think it is less harmful, 20.3 % use it because it is less costly, and 18.9% because of stress. Also, 28.4% found it tasty. 30.8% believed that it is less harmful, about 74% stated that they received information about e-cigarettes and only 16% of them received it from medical school. **Conclusion:** The prevalence of e-cigarette uses among medical student in UQU found to be relatively high, and their overall knowledge is insufficient, which conflict our hypothesis. **Keywords:** electronic cigarettes; e-cigarette; medical students; smoking cessation; smoking

Tamoxifen and doxorubicin hydrochloride chemotherapy: in vivo efficacy of different doses, formulations, and treatment schemes

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Introduction: The use of combination therapy in cancer treatment helps to decrease the treatment doses, and consequently reduces non-specific cytotoxicity and resistance. We aimed to investigate whether liposomal and non-liposomal doxorubicin (DOX), alone or in combination with tamoxifen (TAM), could exhibit antitumor effects. **Methods:** We assessed the efficacy of various anticancer treatment regimens against the development of Walker 256 tumors in white rats (32 animals weighing 250–300 g). DOX (5 mg/kg) was administered, either non-formulated or formulated in liposomes, alone or in combination with TAM (0.5 mg/kg), intraperitoneally in the following two different regimens: prophylaxis (once daily for 15 days) + treatment (once daily for 5 days), and treatment only (once daily for 5 days). The prophylaxis + treatment regimen was also used in the context of combination therapy with a lower dose of TAM (0.25 mg/kg) and a shorter treatment period (3 days). Tumor growth was recorded. Data are presented as mean ± standard deviation. The Student's *t*-test was used for two-group comparisons; $p<0.05$ was considered significant. **Results:** The administration of liposomal DOX, 5 days after tumor inoculation, led to a significant inhibition of tumor growth, 17 days after the start of the experiment; 43% *versus* the control group. Noteworthy, tumor growth suppression was similar in the context of DOX monotherapy (in liposomes) and combination therapy. Further, the combination of liposomal DOX and TAM was the most effective approach for suppressing tumor growth (via prophylactic + treatment regimen); a significant difference in the tumor growth curves was observed from day 5, with a growth inhibition of 32%. **Discussion:** The most effective anticancer approach was the administration of liposomal DOX in combination with TAM in a prophylactic + therapeutic regimen, which provided considerable safety and a significant inhibition of tumor growth.

Utilization patterns of drugs used in the treatment of rheumatoid arthritis in a tertiary care hospital in Oman

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Introduction: Rheumatoid arthritis (RA) is an autoimmune rheumatic disease (ARD) in which different synovial joints are affected. Patients are prescribed anti-rheumatic agents for symptomatic treatment and/or to delay the progression of the disease. Those agents include glucocorticoids, disease-modifying antirheumatic drugs (DMARDs), biological medications and non-steroidal anti-inflammatory drugs (NSAIDs). The aim of the study was to identify the utilization patterns of glucocorticoids and DMARDs prescribed to RA patients who visited Sultan Qaboos University Hospital (SQUH). **Methods:** A retrospective study was conducted in which the data of 200 RA patients who visited SQUH's rheumatology clinic were noted down. The data included patients' data besides the antirheumatic agents that were prescribed in their last one to two visits. The data was accessed using the hospital's system. We noted down all types of data and variables collected from their records such as the doses, routes of administration and the general prescription patterns according to age and gender. Data were analyzed using SPSSv23 for any important statistical associations. **Results:** Out of 200 RA patients (179 females and 21 males), 37.0% were prescribed two medications. More than three-quarters of the patients (77.0%) were prescribed DMARDs while glucocorticoids were prescribed to 49.5% of the patients, and both classes of drugs were more commonly prescribed to the oldest age group (>= 65 years old). Most of the patients (89.5%) were prescribed oral medications. **Discussion:** The data in this study showed that there were differences in the prescription patterns of antirheumatic drugs among the genders and age groups. Methotrexate was the most commonly prescribed medication which was in accordance with previous studies. The study would help doctors know the utilization patterns of antirheumatic drugs but more work is needed regarding this topic in Oman as the current researches are few and outdated.

A novel low-dose, intermittent gonadotropin-releasing hormone (GnRH) antagonist stimulation protocol for in-vitro fertilization (IVF)

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Introduction: Follicle stimulating hormone (FSH) therapy used in IVF can produce premature luteinizing hormone (LH) surges and ovulation, both of which can be suppressed by GnRH antagonists (ANT). Standard ANT dosing is 0.25 mg daily from cycle day 5 or 6 until ovulation trigger. There are literature reports suggesting efficacy with lower daily GnRH ANT doses. This study was undertaken to determine if an IVF protocol using intermittent low-dose ANT can suppress premature LH surge and ovulation without compromising treatment outcomes. **Methods**: In this retrospective chart review, IVF patients were stimulated with recombinant human FSH starting on cycle day 3. The first half-dose of ANT (0.125 mg cetrorelix) was administered between cycle days 6 to 8, and 2 to 3 days apart thereafter to maintain LH levels between 1.5 and 10 IU/L. Oocyte maturation and ovulation were triggered with recombinant human chorionic gonadotropin (rhCG) 36 hours prior to oocyte retrieval. **Results**: Mean LH levels at baseline, prior to the second or third half-doses of ANT and just before rhCG trigger were 5.24 ± 0.26, 7.83 ± 0.88, 5.63 ± 0.66 and 2.44 ± 0.22 IU/L, respectively (n=50 cycles). An average of 14.58 ± 0.95 oocytes were retrieved/cycle with 53% and 36% of the embryos continuing to cleavage and blastocyst stages, respectively (n=67 cycles). Of cycles that were completed to embryo transfer, 39% resulted in positive pregnancy tests with 32% persisting to clinical pregnancies (n=56 cycles). The average age of patients was 35.8 ± 0.5 years. One percent (1%) of patients required one, 63% required two, 33% required three and 3% required four half-doses of ANT (n=67 cycles). **Discussion:** Our study is the first to report an intermittent low-dose ANT IVF protocol using an average of 2.39 ± 0.07 doses/cycle. Serum LH and premature ovulation were reliably suppressed in all cases, with no detrimental effects on oocyte, embryology or clinical outcomes.

A Type 1 Diabetes Troubleshooting Guidebook in the Era of COVID-19

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Background: Type 1 diabetes is a complex, chronic disease; patients must be empowered and educated in their self-management in order to reach glycemic targets and decrease distress. This is essential to improving health outcomes and avoiding complications. However, many patients and health care providers do not know where to access reliable information regarding self-management. The aim of this research was to improve patients' self-management of type 1 diabetes by developing an easily understandable guidebook, which provides comprehensive information on various situations that patients may encounter. **Methods:** We used resources including clinical guides, journal articles and patient resources to create an outline for the guidebook. We solicited feedback from diabetes educators and endocrinologists, and conducted a focus group with patients to ensure the topics were relevant to them. Patient from the Michael Garron Hospital Type 1 Diabetes Support Group completed a survey about the content and usefulness of the guidebook. After incorporating the feedback, we wrote the guidebook using the gathered resources and it was assessed again. We then adapted the final guidebook to a website format. **Results:** Over half of respondents to the survey indicated they would use the guidebook once a month or more. Every proposed topic was rated to be 'helpful' or better by at least 45% of people. The final guidebook contains 21 overall sections, such as how to deal with hypoglycemia and attending virtual visits. **Discussion:** If properly utilised, the guidebook will serve as an educational and patient-centered intervention tool to improve people's self-management of type 1 diabetes, thereby reducing negative health outcomes. This online tool is especially useful in the midst of the COVID-19 pandemic, when there is limited in-person access to physicians. Future research could examine if the use of the guidebook significantly improves health outcomes and seek patient feedback to improve the website.

Administration Synbiotic Drink of Kepel (Stelechocarpus burahol) on Malondialdehyde (MDA) Serum Level in Hyperlipidemic Rats Model

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Aim: This research aims to know the effect of the synbiotic drink of Kepel (*Stelechocarpus burahol*) with addition of *Lactobacillus casei* and *Lactobacillus plantarum* isolates on malondialdehyde (MDA) serum level in hyperlipidemic rats model. **Method:** This research used pre-post test randomized control group design. There were 25 male rats (*Rattus norvegicus*) aged 8-10 weeks and weighs 180-220 grams divided into 5 groups. The control group (C) and interfered groups (B) were given high-fat diet 20 grams of ad libitum for 4 weeks. The normal group (N) was given standard food. For the next 4 weeks, B group was given the synbiotic drink of Kepel by sonde method at dose 1.2 mL (B1), 1.8 mL (B2), and 2.4 mL (B3). The MDA level was measured before and after intervention. A paired-samples T test was used to analyze the difference. **Result:** The MDA serum level before intervention were (mean±std. deviation) (N) 0.96±0.19; (C) 8.19±0.19; (B1) 8.39±0.68; (B2) 8.67±0.26; and (B3) 8.62±0.48. After the next 4 weeks intervention, MDA level were (N) 1.88 ± 0.21; (C) 9.29 ± 0.43; (B1) 4.85 ± 0.12; (B2) 3.26±0.20; and (B3) 2.63±0.43. Paired T test showed there were significant increasing MDA level in N group (mean difference = -0.92±0.29; p=0,002) and C (mean difference = -1.10±0.33 p=0,002), and reducing MDA level in B1 (mean difference = 3.54±0.74; p=0,000), B2 (mean difference = 5.41±0.45; p=0,000), and B3 (mean difference = 5.99±0.68; p=0,000). **Conclusion:** Administration of the synbiotic drink of Kepel (*Stelechocarpus burahol*) with addition *Lactobacillus casei* and *Lactobacillus plantarum* isolates significantly reduce MDA level in hyperlipidemic rats model.

Age-Dependent Variability of Leukocytosis in Appendicitis: a preliminary analysis

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Introduction: Acute appendicitis is the most common cause of acute abdomen and the most common indication for emergent abdominal surgery. Diagnosis is based on clinical presentation, serum lab values, and radiological imaging. However, up to 50% of patients do not present with classical clinical findings, and the associated ionizing radiation of CT imaging makes this option less desirable. Although previous studies have established the correlation of CBC, ANC, and CRP values to the presence of acute appendicitis, no prior investigations have evaluated variations in these lab values based on age. The ability to distinguish the presence and extent of acute appendicitis based on age stratification of these values would allow for early, individualized management and avoidance of unnecessary laparotomy. **Methods:** A retrospective chart review involving local hospital records between January 1st 2010 and December 31st 2019. Each chart was reviewed for relevant data and compiled on a separate secure document as deidentified information. Data was analysed for mean, standard deviation, interquartile range, and values were interpreted as a function of age, duration of symptoms, and presence of perforation. **Results:** Initial analysis of 28 paediatric patient charts revealed a preliminary positive trend between age and WBC/ ANC. The mean WBC level in the presence of perforation was 14.54, and the mean WBC level in the presence of acute inflammation without perforation was 16.25. The mean ANC in the presence of perforation was 11.89, and the mean ANC in the presence of acute inflammation without perforation was 13.36. **Discussion**: Interpretation of appendicitis labs (WBC, ANC, CRP) as a factor of age may be useful in the management of suspected appendicitis. Interestingly, elevations of WBC and ANC values did not consistently differentiate between acute inflammation and perforation. Although this initial analysis supports the study hypothesis, further study and analysis is needed.

An Audit of Pre-operative Anti-microbial Prophylaxis in Plastic Surgery: Compliance with Local and International Guidelines

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Background: Surgical antibiotic prophylaxis has been widely used for prevention of surgical site infections (SSI's). WHO Global guidelines strongly recommends the administration of pre-operative prophylactic antibiotics, depending on the type of surgery, to reduce SSI's (2). However, Within Gulf Cooperation Council (GCC) countries, antibiotic resistance has been rising due to unregulated prescribing practice (9). This study aims to assess adherence to local/international guidelines in the Plastic Surgery Unit of Salmaniyya Medical Complex. **Methods:** This is a retrospective standards based clinical audit, including adults who have undergone plastic surgeries from 1st of January 2019 to 30th of April 2019. Recommendations provided by South-Australian-guidelines-for-Surgical-Antimicrobial-Prophylaxis, NHS-Greater-Glasgow-Foundation-Trust, and local hospital guidelines were used. This was followed by an implementation and re-audit period of three months each. **Results:** There were 106 patients who met the inclusion/exclusion criteria throughout the primary audit. With respect to choice and dose of antibiotics, only 21 (19.8%) of cases were adherent to global/local guidelines. Similarly, only 11.5% of those cases have met the recommended timing for pre-operative antibiotic administration. After the implementation period, adherence to guidelines regarding choice and time of antibiotic administration has increased to 36.8% and 32.6% respectively. **Conclusion:** Practice in SMC in plastic surgery pre-operative antibiotic administration, shows poor compliance to both local and international guidelines in terms of type pf antibiotic, dose, and time of administration. We were able to improve adherence to international/local practice in both areas significantly by sharing our results with the medical staff involved in the plastic surgery unit and operating theatres.

An investigation of the potential growth promoting effects of marine-derived extracellular matrix components on neurons cultured in vitro

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Introduction: The adult mammalian central nervous system (CNS) lacks intrinsic repair capacity. Following injury, astroglia secrete various chondroitin sulphate proteoglycan proteins (CSPGs), including 4-sulfated CSPGs (C4S) around the injury site that potently inhibit axonal regrowth. However, another secreted variant, 6-sulfated CSPGs (C6S) possesses growth-promoting properties, indicating that not all CSPG family may be growth inhibitory. In contrast to mammals, the fish CNS also contain CSPGs but are capable of regenerating their axons after injury throughout their adult lives, suggesting they may contain variants that promote axonal regrowth. The aim of this in vitro study was to screen CSPGs derived from 5 different fish species for axon-growth promoting properties. **Methods:** Aqueous solutions of each CSPG diluted to 5µg/m, with poly-L-lysine as control, were used to coat sterile coverslips before being seeded with mouse motor neurons (NSC-34). After 7 days the neurons were fixed and stained with phalloidin-FITC and DAPI. Fluorescent images were acquired using a Nikon 90i microscope and analysed using the Neurite tracer plugin software for ImageJ. **Results:** NSC34 neurons extended long neurites on all candidate substrates and exhibited a similar morphology compared to control. Quantification of mean neurite length revealed that neurons grown on CSPGs with the lowest C4S/C6S ratio had the longest neurite outgrowth, while groups with the higher C4S/C6S concentrations showed the lowest mean neurite outgrowth. **Discussion:** These results suggest that neurons are capable of extending neurites when grown on marine CSPGs. They also indicate that C6S is conducive to stronger neurite outgrowth but also, those marine CSPGs with higher C6S concentration ratios are capable of negating the growth inhibitory effects of C4S. Fish CSPGs containing the lowest C4S/C6S concentration ratios properties could be engineered onto scaffolds to bridge CNS lesions and help support and direct axonal regrowth.

Assessing Post-Operative Anxiety and Depression in Patients with Thyroid Pathology Amidst COVID-19

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Introduction: Due to the unprecedented nature of the COVID-19 pandemic, elective surgery around Canada has come to a screeching halt. This has caused surgery wait lists to greatly increase in size. Increased wait times can lead to negative psychological impacts on patients having to experience uncertainty and stress, during the pre-operative and post-operative time period. **Methods:** Patients that were placed on the Michael Garron Hospital (MGH) thyroid surgery wait list were telephone interviewed and evaluated using the Hospital Anxiety and Depression Scale (HADS). HADS scores were analysed to assess psychological morbidity. Patients' perspective on elective surgery postponement were obtained via a descriptive survey. **Results:** A 36% response rate was achieved over a 3-week time period, with 16 patients completing the HADS tool and the descriptive survey. Mean HADS anxiety score was 7.86 and mean HADS depression score was 7.07, both of which fail to qualify as abnormal levels. 93.8% (15/16) participants indicated they experienced anxiety prior to having thyroid surgery. 62.5% (10/16) of participants indicated that increased communication with a healthcare provider before their surgery would reassure them of their health during the pandemic. 56.25% (9/16) of participants indicated having increased information regarding their surgery prior to the operation would reassure them regarding their health during the pandemic. **Discussion:** Patients were found to experience no post-operative anxiety or depression according to the HADS tool. 93.8% of patients indicated they experienced anxiety prior to their operation. Patients indicated that increased communication with healthcare professionals and receiving more information regarding their surgery can help reassure them of their health. This can guide hospital administration's actions and decision plans in the event of future elective surgery postponements, such as during another pandemic or a second wave of COVID-19.

ASSOCIATION BETWEEN ELECTRONIC CIGARETTE USE AND ASTHMA SYMPTOMS AMONG ADOLESCENTS: A SYSTEMATIC REVIEW

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Introduction: Electronic cigarettes (e-cigarettes) have gained substantial popularity among adolescents in recent years. The potential health effects of e-cigarette use are unclear. **Objective:** The aim of this study was to systematically review observational studies that have investigated associations between e-cigarette use and asthma symptoms among adolescents. **Methods:** A literature search of MEDLINE database through PubMed search engine was conducted for relevant observational studies. A total of 603 articles were identified and screened. Nine studies met the inclusion criteria and were included in this review. **Results:** Most of the reviewed articles showed positive associations between e-cigarette use and asthma symptoms in adolescents. The odds ratio for the association between current e-cigarette use and asthma or wheeze were 1.12 (95% CI, 1.01-1.26), 1.48 (95% CI, 1.24-1.78), 1.34 (95% CI, 1.15-1.57), 1.78 (95% CI, 1.15-2.76), 1.86 (95% CI, 1.28-2.71) and 2.36 (95% CI, 1.89-2.94) in six of the nine studies. **Conclusion:** Our review of the current literature indicates that e-cigarette use is positively associated with asthma symptoms based on results provided by cross-sectional studies. Hence, longitudinal studies are needed to corroborate the observed associations. Public health strategies are needed to raise awareness among adolescents on the potential harm of e-cigarette use and restrictions should be placed on e-cigarette sales and marketing to minors.

Can We Diagnose Thoracic Outlet Syndrome Faster with Neurophysiological Diagnostics?

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Introduction: Thoracic Outlet Syndrome (TOS) is a group of conditions characterized by compression of the nerves, arteries and veins in the lower neck and upper chest area. On average, 6.5 physicians of different specialities need 4.3 years to develop TOS diagnosis. In our work, we would like to find a way to improve the diagnostic process. **Methods:** Sixteen healthy subjects and 16 patients in the age between 18 to 36 took part in the study. Patients with clinically confirmed TOS were qualified from the outpatient clinic. In both groups, we performed neurophysiological studies such as the test of raised hands, Von Frey's Filaments, electromyography (EMG), electroneurography (ENG), and motor evoked potentials (MEP). **Results:** Sensory perception studies revealed changes in innervation more ulnar than the median nerve in the patient's group. We also observed abnormalities in amplitudes of EMG recordings. ENG findings showed an axonal type of nerve injury. MEPs recordings, which were novum of our study, revealed the loss of efferent impulses transmission along the motors pathways for the cervical level to upper extremities effectors of "efferent block type". **Discussion:** Detection of TOS symptoms with neurophysiological tests in more than 50% of patients indicates the usefulness of complementary noninvasive diagnostics. Especially MEPs seem to be a fast and specific test for evaluating TOS symptoms regarding changes in motor impulses transmission.

Characterizing the Tumour Immune Microenvironment in Early Breast Cancer

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Introduction: Ductal carcinoma *in situ* (DCIS) is a neoplastic proliferation of epithelial cells confined to the luminal compartment of mammary ducts, which precedes invasive ductal carcinoma (IDC) formation. Only 20-50% of DCIS progresses to IDC, however it remains unclear what determines the likelihood of progression. We hypothesized that interactions between early tumour cells and the immune system leads to changes in the composition and activation state of the tumour immune microenvironment to become more suppressed, thereby contributing to the ability for DCIS to progress to IDC. **Methods:** Using a panel of epithelial, immune and signalling markers, we characterized the tumour microenvironment of coexisting DCIS and IDC by imaging mass cytometry (IMC), across multiple patient samples, while controlling for inter-individual heterogeneity. Single-cell information was extracted and utilized to categorize cells and reconstruct spatial organization maps. Immune phenotype composition, cell-cell interactions, and tumour infiltrating lymphocytes (TILs) were evaluated, and nearest neighbour analysis was performed. Statistical analysis was done using ANOVA, Shannon's diversity index, and Kullback-Leibler Divergence. **Results:** Although significant inter-patient heterogeneity was observed with respect to immune cell composition, overall, the activation state of the immune microenvironment indicated a suppressed phenotype was acquired with progression to IDC. This is evidenced by a significant increase in TILs as well as a decrease in the proportion of CD8 T cells to CD4 T cells observed in IDC tumours in comparison to DCIS tumours. There was also a significant increase in the tumour proliferation marker, Ki67, with progression to IDC. An increase in Treg:CD8 T cell and Treg:macrophage ratios was also observed, pointing towards a suppressed microenvironment, conducive to tumour outgrowth. **Conclusion:** These results support our hypothesis that the immune microenvironment acquires a suppressed phenotype with DCIS progression and can serve to help guide future research investigating potential prognostic criteria for DCIS patients.

Clinical Findings and Methods of an Ophthalmic Mission Trip to Colombia

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Introduction: Medical Ministry International (MMI) is a Canadian charitable organization that coordinates healthcare missions to underserved people in developing countries. A key goal is to support local health workers in the developing country in providing high quality and affordable health care to make a lasting change. We report on the baseline clinical findings of a mission trip to Ciénaga de Oro, Colombia, present the methods used in the mission and the efforts to establish a local eye care service with long-term sustainability. **Methods:** Data were collected on patients seen during a two-week mission trip from January 13- 24, 2020. Data included eye health and the services given. **Results:** Altogether 5,529 patients were seen by the team. The most common diagnosis made was refractive error, for which 4066 patients (74%) received eyeglasses. Another 835 (15%) had consultation by an ophthalmologist, of which 260 (5%) received surgery. Out of the 260 surgeries performed, 174 of which were cataract extractions with intraocular lens insertions (66.9%), 9 adult strabismus (3.5%), 15 paediatric strabismus with general anaesthetia (5.8%) and 51 pterygia with graft (19.6%). **Discussion:** These findings demonstrate how global missions such as this one are valuable in reducing avoidable blindness where there is a shortage of ophthalmologists and eye care professionals, as in Colombia. Mission trips like this one can help greatly to reduce prevalence of preventable blindness in developing countries; however, further training and increasing the capacity of local ophthalmic services is required to provide improved long-term eye care to the community.

Cochlear Implantation in Children with Asymmetric Hearing Loss

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Introduction: Cochlear implantation is a surgical procedure used to treat bilateral profound sensorineural hearing loss. In a population of 99 unilateral cochlear implanted paediatric patients, this study aimed to quantify their initial level of asymmetric hearing loss (pre-implantation). Also, the functional benefits of cochlear implantation are dependent on many factors, such as device usage compliance, environment, and pre-implant speech and language abilities. These variables were also considered to determine the benefits of cochlear implantation in this cohort of patients. **Methods:** This audit reviewed the clinical charts, device parameters, and outcomes for each patient. This information was obtained via Beaumont Hospital National Hearing Implant and Research Centres' records. Data from each child's pre-operative auditory brainstem response (ABR) or audiogram for both ears classified the children according to their hearing loss asymmetry. Their cochlear implant's device related details were analysed, and speech perception and intelligibility improvements were noted to see the functional benefits of cochlear implantation. This was done using the Category of Auditory Performance (CAP) and Speech Intelligibility Rating (SIR) scores. **Results:** Patients were categorized into 1 of 3 groups based on their hearing loss asymmetry ranging from least to most severe. This was done using the variables decibel difference between the implanted and non-implanted ear and hearing loss ratio. The decibel differences for Groups 1 to 3 were, <10, 10-29.9, and ≥30, respectively and the ratio of hearing loss were, ≥0.9, 0.8-0.9, and <0.8, respectively. Additionally, after implantation, device related information showed no remarkable differences among groups, while all three groups experienced an improvement in both post-implantation CAP and SIR scores. **Discussion:** Upon obtaining a scale to quantify each patient's initial degree of hearing loss asymmetry, this study confirmed the functional benefits of cochlear implantation for all three groups of children with regards to hearing, speech, and language performance.

COMPARISON BETWEEN FIRST-TIME AND REPEATED CESAREAN SECTION PLACENTAS

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Introduction: What exactly can we get from pathological interference for placental samples? What does it change in gynecological ward? This research target was to determine the differences of histopathology in first-time and repeated Cesarean section placentas delivered by women in 3rd trimester and compare them. **Methods**: This retrospective study included placental samples from 100 women with a singleton gestation who delivered at 3rd trimester. Differences between placental samples as placental weight, inflammatory process and signs of vascular malperfusion of 80 first-time Cesarean section pregnancies and 20 samples of repeated SC pregnancies were analysed. **Results:** 65% (n=52) first-time SC placentas and 30% (n=6) repeated SC placentas had maternal inflammatory response. 3.75% (n=3) of first-time SC placentas and none of repeated SC placentas had fetal inflammatory response. 43% (n=34) first-time SC placentas and 25% (n=5) repeated SC placentas had decreased placental weight. 6.25% (n=5) placentas from first-time SC and 5% (n=1) from SC scar placental sample had hemorrhage. 37.5% (n=30) first-time SC placentas and 25% (n=5) repeated SC placentas had increased syncytial nodule index level. 45% (n=36) placentas from first-time SC and 25% (n=5) from SC scar placentas had fetal retardation. **Discussion:** Signs of inflammatory process and uteroplacental blood malperfusion (UBM), such as - decreased placental weight, multiple placental infarctions and increased syncytial nodule index level are more common in first-time SC pregnancy. Although it may seem that repeated cesarean sections are much more dangerous to the health of the mother and fetus. On the one hand, this could indicate that repeated caesarean section does not increase the complication, but in order to evaluate it, we should additionally analyze all possible confounders in the future, e.g. hypertension that is likely to be more common.

Correlation between physical activity & levels of depression and anxiety in Greek young adults. A cross-sectional study

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INTRODUCTION: Depression and anxiety disorders are among the underestimated threats for public health and especially the health of adolescents and young adults. Although physical activity is used in medical practice for treating these diseases, the number of studies investigating the correlation between exercise and mental illnesses is rather small. This study aimed to investigate the association between physical activity and the levels of depression and anxiety in Greek young adults. **METHODS:** A cross-sectional study was conducted on 268 adults (91 males) aged between 18 and 26 years. Data were obtained via online-administered questionnaires. Beck's Depression Inventory (BDI) was used to assess the participants' depression status. Hamilton's Anxiety Rating Scale (HAM-A) was used to assess anxiety status. A chi-square test was performed and Pearson's correlation coefficient was estimated for evaluating the association between categorical and continuous/ordinal variables, respectively. Student's t-test and ANOVA were applied for comparisons between groups. **RESULTS:** Cronbach's coefficient α (0,755) indicated an acceptable level of internal consistency. Participants doing physical activities once per week or more, for at least 10-20 minutes, exhibited significantly lower levels of depression and anxiety (p=0,002 for BDI scores, p<0,001 for HAM-A score). Interestingly, although the frequency and duration of exercise did not show a significant correlation with the depression and anxiety status, a significant correlation of the latter with the participants' perception of the overall significance of exercise was identified (Pearson's r= -0,214 for BDI scores, p<0,001 and -0,190 for HAM-A score, p=0,002). **DISCUSSION:** Practicing physical activities seems to be correlated with lower depression and anxiety scores in the study population. Further investigation will allow additional modifiable (eg lifestyle) and non modifiable (eg gender, age) factors affecting the above association to be revealed.

Developing a Virtual Community-Based Deprescribing Program

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Introduction: Inappropriate use of psychotropic medications is associated with a higher risk of adverse drug events (ADE). Evidence-based guidelines recommend gradual tapering and monitoring to mitigate withdrawal symptoms. Short-term inpatient stays are not amenable to the tapering of these medications. We will therefore use virtual care technologies to expand the scope of deprescribing at Michael Garron Hospital (MGH) (Toronto, Canada) and design and implement a hospital-based deprescribing program. Patients will be monitored ensuring their safety during the process of deprescribing of benzodiazepines, antipsychotics, and antidepressants. **Methods**: Patients admitted to MGH taking psychotropic medications are identified using our electronic health record for a consult by a physician/pharmacist dyad. Patients/substitute decision makers are involved in a shared decision-making process consistent with their goals of care. Patients eligible and amenable will provide informed verbal consent to follow-up via virtual care mediums. Patients will be monitored over the course of their tapering schedule. Measured outcomes will include the proportion of patients who qualify for deprescribing, those who consent to virtual follow-up, and those who can successfully utilize this technology. We will measure the rate of complete cessation and dose reduction, and patient, primary care physician, and community pharmacist satisfaction with deprescribing. Balancing measures include patient barriers to virtual follow-up, ADE, and rehospitalization rates. **Results:** We have designed an exhaustive protocol for this program which is under review from MGH Deprescribing Team members. We have also developed patient materials, including recruitment and post-consultation, drug-specific deprescribing information. **Discussion**: Inappropriate use of these psychotropics is prevalent in older Canadians and older adults worldwide. This program will demonstrate the utility of virtual technologies in deprescribing initiatives for both the East Toronto community and beyond.

Development of antisense oligonucleotide therapy for fibrodysplasia ossificans progressiva

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Fibrodysplasia ossificans progressiva (FOP) is an autosomal dominant disorder characterized by progressive heterotopic ossifications (HO) where bone forms in skeletal muscle and soft tissues following trauma. HO is induced by inflammation and is cumulative, thus patients are immobile by their 20s. FOP is caused by a mutation (R206H) in the Activin A receptor type I (ACVR1) gene leading to a hyperactive receptor that induces HO outside of the skeletal system. Currently, there are no proven treatments for FOP, however reduction in ACVR1 gene expression is a promising therapeutic target. This can be established using antisense oligonucleotide (ASO) treatment which is a short deoxynucleotide strand designed to bind to target mRNA sequence and induce the mRNA degradation via Ribonuclease H1. Furthermore, the central portion of the deoxynucleotide monomers can be of a chimeric origin, named gapmer, that allows for allele-specific design. Four ASO treatments using 2' methoxyethyl (2'MOE) gapmers have been developed against the FOP ACVR1 mutation for a preferential knockdown of the FOP allele mRNA and thus reducing expression of the mutated ACVR1 receptor protein. In this project, the allele-specific knockdown effect of the FOP ACVR1 mRNA was tested *in vitro* using Human Embryonic Kidney derived clonal cells (HEK293T). Cells were transfected with either wild type or FOP ACVR1 DNA plasmids and treated with either a non-allele-specific/mock 2'MOE gapmer (used as a control) or with one of the four allele-specific 2'MOE gapmers. Protein was extracted from the transfected cells and measured using Western Blotting . Western Blot results showed an efficient allele-specific knockdown of the FOP ACVR1 allele compared to the wild type allele. Successful preferential knockdown of the FOP ACVR1 allele paves the way for in vivo testing and ultimately a new treatment agent for FOP patients that can eventually halt the progression of the disease.

Diagnostic Accuracy of Nipple Discharge Fluid Cytology: A Meta-Analysis and Systematic Review of the Literature

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Importance: Nipple discharge is the 3rd most frequent complaint of women attending rapid diagnostic breast clinics. Nipple smear cytology remains the single most utilized diagnostic modality for the investigation of fluid content, although little is known about its overall diagnostic accuracy. **Objective**: To conduct a systematic review and meta-analysis of the diagnostic accuracy of nipple discharge fluid assessment. **Design, Setting, and Participants**: This systematic review interrogated Medline, Embase, and Scopus databases using Covidence Software, for all studies interrogating the diagnostic data of nipple discharge fluid cytology compared to histopathology gold standard. Quality scoring (QUADAS-II) was undertaken for each study. Data from studies published from 1956 to 2019 were analysed. The analysis included 8,648 cytology samples from 59, 991 women with a presenting complaint of nipple discharge. Both hierarchical and bivariate models for diagnostic meta-analysis were utilised to attain overall pooled sensitivity and specificity. **Main Outcomes and Measures**: Pooled sensitivity, specificity, and positive predictive values of each diagnostic modality were calculated. **Results**: Of 837 studies retrieved after de-duplication, a total of forty-five studies fulfilled the criteria for review and meta-analysis. This analysis included 8, 648 cytology samples. The diagnostic accuracy meta-analysis of nipple discharge fluid illustrated a sensitivity of 0.78 and specificity of 0.43 for benign breast disease, and a sensitivity of 0.46 and a specificity 0. for breast cancer. Furthermore, patients presenting with blood-stained discharge yielded an overall malignancy rate of 0.58 with a positive predictive value of 0.27. **Discussion**: Pooled data from all studies suggest that the diagnostic accuracy of nipple smear cytology is limited. Our recommendation is that a tailored approach to diagnosis is required, given variable sensitivities of currently available tests. In the conquest to discover superior diagnostic techniques for nipple fluid analysis, emerging technologies must have a diagnostic accuracy which is greater than cytology.

Early onset ventricular dysfunction in the neonate: clinical course and outcomes

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Introduction: The transition from intrauterine to extrauterine life involves a series of complex cardiovascular changes. A failure of this transition can result in persistent pulmonary hypertension, hypoxemia, and acidosis causing left ventricular dysfunction (LVD). This retrospective study sought to determine the clinical presentation, echocardiographic findings, and outcomes of newborns who present with LVD. **Methods:** Preterm and term neonates between 33-42 weeks gestation who were diagnosed with LVD at less than 48 hours of life seen at a quaternary level 4 neonatal intensive care unit from January 1st 2012 through May 30th 2020 were included. LVD was defined as reduced cardiac function on echocardiography (fractional shortening on m-mode less than 28% or ejection fraction less than 50%) in the absence of known structural heart disease or cardiomyopathy. **Results:** Nineteen (n= 7 female) patients were included with a mean gestational age of 38.2 weeks (range 35-41 weeks). Mothers were aged 31.1 ± 4.6 years (mean $\pm$ SD; n=19); 21% had illicit drug use during pregnancy, 15% depression or anxiety, 15% chronic infections, 10% diabetes, 5% multiple sclerosis, 5% severe preeclampsia on aspirin, 5% morbid obesity, and 37% had no significant medical history. Of the 19 patients, 16% died, 32% had definitive diagnoses, and 37% had isolated LVD of unknown etiology, with all babies recovering left ventricular function within 14 days of life. Both lowest pH (p=0.049) and highest lactate (p=0.046) were statistically significant predictors of mortality in these patients. **Discussion:** Left ventricular dysfunction can occur as a primary abnormality in the transition from placental to post-natal circulation. The high prevalence of maternal risk factors may indicate that the fetal environment is a precursor to developing LVD postnatally. Further study is warranted to determine if maternal substance use is a risk factor for the development of left ventricular dysfunction in neonates.

Efficacy and Safety of Esketamine as Treatment for Treatment-Resistant Depression: A Systematic Review and Meta-Analysis

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Introduction: Treatment-resistant depression (TRD) refers to inadequate response after taking at least two antidepressant drugs. Esketamine, an enantiomer of ketamine, has high affinity to NMDA. Nowadays, esketamine is widely used for TRD therapy, as an oral, intravenous, or intranasal drug. However, there was no review for efficacy and safety of esketamine as TRD treatment. Therefore, we conducted a systematic review to evaluate the efficacy and safety of esketamine in TRD patients. **Methods:** Literature search was performed through databases Pubmed, ScienceDirect, CochraneLibrary, Wiley, Scopus, and ClinicalKey using (Treatment-resistant depression) AND esketamine AND efficacy AND safety as the keyword from inception to October 2020. Risk of bias was assessed with Cochrane ROB-2. The primary outcome was the change from baseline in Montgomery-Asberg Depression Rating Scale (MADRS) total point at the end of the treatment period. The secondary outcome was MADRS response rate, remission, and Treatment-Emergent Adverse Events (TEAE). A meta-analysis was conducted using the quantitative data. **Results:** Six high-quality studies of RCT with a total of 474 patients were included. Esketamine was significantly more effective than placebo in reducing endpoint MADRS (MD=-6.11, 95%CI [2.95, 9.26], p=0.0001) and having higher odds ratios for rate of response (OR=1.94, 95%CI [1.07, 3.50], p=0.03). However, the remission rate between esketamine and placebo/ketamine showed insignificant difference (OR=1.69, 95%CI [0.97, 2.96], p=0.07). Patient undergoing esketamine therapy was associated with several TEAE, with statistical significant difference compared to placebo or ketamine in vertigo (OR=9.38, 95%CI [4.46, 19.73], p<0.0001), dissociation (OR=9.05, 95%CI [4.70, 17.41], p<0.0001), and increased blood pressure (OR=2.71, 95%CI [1.39, 5.28], p=0.003). **Discussion**: In conclusion, we recommend esketamine as an adjuvant therapy for Treatment-Resistant Depression as it is considerably effective. However, several adverse events such as vertigo, dissociation, and increased blood pressure must be taken into consideration. Variation of dose and administration becomes the limitation of this study.

Evaluation of the effectiveness of SGLT-2 inhibitors in the treatment of type 2 and type 1 diabetes in everyday clinical practice

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Introduction: Despite improvement in treatment effectiveness, people with diabetes are at increased risk of microvascular, cardiovascular and renal complications leading to the premature death. Sodium-glucose transporters -2 (SGLT-2) inhibitors have become a significant breakthrough in the treatment of diabetes. The aim of this study was to assess the effectiveness of therapy with this class of drugs in everyday clinical practice. **Methods:** The study group consisted of 247 patients (among them 11 with type 1 diabetes) treated with SGLT-2 inhibitors for at least 3 months. 145 people were treated with oral drugs and 102 with insulin ± oral medications. We assessed the effect of this therapy on HbA1c value, body weight, and systolic and diastolic blood pressure (SBP and DBP). **Results:** The mean age of the study participants was 60.5 ± 9.9 years (with 84 people aged ≥65). During the mean follow-up of 20.0±10.9 months, HbA1c decreased from 8.15±1.37 to 7.42±1.29%, P<0.001. Body weight also decreased significantly, from 92.3±15.5 to 89.1±15.4 kg, P<0.001. Mean SBP decreased from 152.1±17.7 to 148.3±19.9 mm Hg, P=0.002, while DBP did not change significantly, 82.9±10.4 vs. 82.1±10.6 mm Hg. Improvement of HbA1c and body weight was achieved irrespective of gender, age range, and the method of therapy. In the subgroup of type 1 diabetes patients, despite the small number, a significant improvement was also achieved in HbA1c 8.84±0.77 vs 7.76±1.15%, P=0.006 and body weight 80.6±13.9 vs 76.5±13.7 kg, P=0.019. Overall 17 participants had side effects and 5 persons discontinued treatment due to recurrent urogenital fungal infections. **Discussion:** SGLT-2 inhibitors, in the real-life setting, effectively lowered HbA1c level independently of sex, age, treatment, and type of diabetes. Body mass and systolic blood pressure were also significantly reduced. The therapy was well tolerated and only 2.0% of patients discontinued treatment due to adverse events (despite lack of reimbursement).

Financial And Psychosocial Impact of COVID 19: A Cross Sectional Community Based Study

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Introduction: In addition to continuous rise in cases and mortality due to Covid-19, lack of information and misinformation from unverified news sources has led to mental health crisis like anxiety and depression symptoms. The pandemic has also led to unemployment and decrease in family income. Hence in this study we intend to understand its financial and mental impact in the general population. **Materials and Methodology:** A Cross sectional Community based study was conducted among the general population. Sample size of 100 was calculated and the study participants were selected using convenience sampling. Informed consent was taken before involving them in the study. A pretested validated anonymous online questionnaire was prepared and sent using google forms to collect information regarding their socio-demographic variables, financial status and the effect of media on their daily life. Patient Health Questionnaire -9 (PHQ-9) was used to assess depression among them. Data was analyzed using proportions, percentages, Independent sample t test and and statistical significance was set at p < 0.05. **Results**: Of the participants who reported a drastic decrease in family income 19% mentioned that the pandemic has affected the availability of basic resources like food and water, 27% reported that a family member has lost a job during the pandemic. According to PHQ-9 scaling, 7% of the total participants were severely depressed, while 9% had moderately severe depression, 21% were suffering from moderate depression, 36% had mild depression and 27% had no symptoms of depression. Drastic reduction in family income was found to be responsible for higher PHQ9 scoring and was statistically significant (p< 0.05). **Discussion**: The pandemic has had a significant financial and psychosocial impact on society. We recommend that Governments around the world to create an emergency fund for an unprecedented situation like this.

Glimepiride induced hypoglycemia mimicking vertebrobasilar acute ischemic stroke - case report

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The aim of our study was to describe the case of the man with sulfonylurea induced hypoglycemia manifesting as acute encephalopathy with focal neurological signs misdiagnosed as posterior circulation acute ischemic stroke (AIS). So far, only about 10 cases of hemiparesis or tetraparesis caused by sulfonylureas induced hypoglycemia were described (including only one case with persistent neurological deficits after sugar level alignment).

A 64-year-old patient treated with glimepiride (2 BID) for type II diabetes mellitus, after radical prostatectomy for prostate cancer, was admitted to Stroke Unit. Upon admission, patient was unconscious, with upward gaze deviation, four-limb paresis, extensor response to pain, bilateral positive Babinski's sign. Non-contrast head CT and CT-angiography did not reveal any abnormalities. Low serum glucose level (46 mg/dl) was noted and corrected with intravenous glucose infusion (80 mg/dl). Based on acute onset of focal neurological signs the initial diagnosis of AIS was made. Due to exceeding of treatment window no reperfusion therapy was performed. In further serum glucose measurements hypoglycemia was noted. For the next 72 hours repeated intravenous glucose infusions were needed to maintain its levels above 70 mg/dl. Magnetic resonance head imaging performed in 3rd and 7th day did not reveal ischemic changes. Hypoglycemic encephalopathy due to glimepiride poisoning was diagnosed.

In our case, preoperatively taken sulfonylureas resulted in prolonged hypoglycemia misdiagnosed as AIS. Prolonged insufficient brain nutrition can result in permanent or long-lasting brain damage, manifesting itself as impaired consciousness and focal neurological signs.

HEALTH SEEKING BEHAVIOR AND LIFESTYLE OF PEOPLE WITH COMORBIDITIES DURING COVID-19 PANDEMIC: A PILOT STUDY

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Introduction: COVID 19 has dramatically changed how outpatient care and follow-ups are delivered to comorbid population(DM, HTN,CAD).Fear of COVID infection have kept patients away from hospitals despite their need for follow-ups which could have poor clinical outcomes. Thus the research question:

☐ How did health seeking behavior and lifestyle of comorbid population change during COVID pandemic?

Methods: A quantitative cross sectional study based on non-random convenience sampling through telephonic interviews among adults with chronic diseases attending OPDs, followed by filling of semi-structured questionnaire in google forms.

Independent variables: age, comorbidity, gender, educational level

Dependent variables: Health seeking behavior, lifestyle practice

Statistics: Categorical data: frequency, percentage

Test of significance: Chi square test

$P < 0.05$ – significant

Results: Among a total of 44 people (average age : 64.6), taken part in the study, 63.6%was with DM, 43.2% HTN, 15.9% CAD, 2.3% cancer, 2.3% chronic liver disease and the rest with other conditions for which have been taking treatments for at least 2 years.

50% of the study participants had regular follow ups scheduled among which 43.2% had faced delays since the COVID spread , 38.6% followed the same medication since then. There has been an increase of 18.2% in telemedicine use among the population compared to null use in the pre-COVID era. This can be attributed to the fear of getting infected by COVID19 as reported by 86.2% participants. A decrease of 6.3% in physical activity has been identified.Food habits remained more or less same.

Conclusion: The fear of COVID infection have made people avoid hospital visits at any costs. The practice of attending clinicians physically, have reduced greatly and got replaced by telemedicine which had not been a practice before the pandemic. A slight decrease in physical activity is seen in these population which may make them more vulnerable.

Health service use and associated costs attributable to diabetes in the Mitchelstown Cohort Study

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Introduction: The number of people with diabetes is increasing globally and with evidence of rising medical expenditure per person, the growth in economic burden will continue. Accurate cost of illness estimates are needed to inform national policy and identify potential cost savings. **Aim:** To estimate health service use and costs attributable to diabetes. **Methods:** A sample of middle-aged adults (≥ 50 years) from the Mitchelstown Cohort Study, collected between 2016-2017 was analysed**.** Diabetes was defined using self-report doctor-diagnosis, HbA1c and fasting plasma glucose levels. Health service use in the previous 12-months included; number of general practitioner (GP) visits, emergency department visits, hospital admissions, outpatient visits, and day procedures. Multivariable negative binomial regression was used to estimate the association between diabetes and frequency of visits. Frequency of visits was applied to unit costs for each health service, calculating mean costs per person with and without diabetes. **Results:** Of 1,332 patients analysed, prevalence of diabetes was 10.4% (95%CI:8.9,12.2) [Diagnosed 7.4% (95%CI:6.1, 8.9), Undiagnosed 3.1% (95%CI:2.3,4.2)]. Diabetes was associated with a 49% increase in GP visits. Diabetes was not associated with additional hospital admissions, emergency department visits, outpatient visits or day procedures. The annual mean cost of health service use among those with diabetes was €1,597.80 per person compared with €1,352.67 for those without. **Conclusion:** While diabetes was associated with additional GP visits, it was not associated with additional service use in secondary care. Structured diabetes management in primary care may contribute to reduced health service use and costs attributable to diabetes.

Histomorphometric changes of lung lymphoid follicles in young rats under experimental alloxan hyperglycemia

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INTRODUCTION: Diabetes has been and remains a global problem today, leading to disability, disability and death. **METHODS:** The studies were performed on 48 white laboratory rats of both sexes. Experimental animals were divided into two series: experimental and intact. Each experimental group is divided into subgroups: the first - with a term of hyperglycemia of 30 days, the second - 60 days, the third - 90 days, the fourth - 120 days. For experimental simulations of hyperglycemia, alloxan monohydrate was used. The perimeter of the lymphoid follicles (PLF) was measured. The level of glucose and glycosylated hemoglobin HbA1c in the venous blood of rats was determined before each slaughter of animals. **RESULTS:** The level of glucose in the blood of experimental animals from 30 to 120 days ranged from 13.3 ± 0.1 to 19.3 ± 0.2 mmol / l, from the end of the second month of the experiment, the level of HbA1C ranged from 7.1 ± 0 , 05 to 8.6 ± 0.08. In the intact group, the level of glucose in the blood was within normal limits. On the 30th day, the PLF in intact and experimental animals was 449.3 ± 0.82 μm and $449, \pm 0.17$ μm, respectively. From 60 days, hypertrophy of pulmonary lymphoid follicles with pronounced vascularization was noted, in comparison with intact animals, the PLF index was 2.3 times higher. Involute changes in lymphoid follicles and malnutrition were observed in intact animals at day 90. In experimental animals of the same age , PLF increased 1.3 times compared with the 60th day. On day 120 of the experiment, PLF in experimental animals increase by 3.8 times compared with intact animals. **DISCUSSION:** Against the background of chronic experimental hyperglycemia, young animals developed hypervascularization and hypertrophy of pulmonary lymphoid follicles, thereby causing obstruction in the lower respiratory tract.

Identifying Ductal Carcinoma In Situ (DCIS) using the iKnife

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Introduction: Breast cancer is the most common cancer in women with a very high incidence and mortality rate in the UK and Ireland. Breast conserving surgery (BCS) is the most frequently performed procedure for treating women with early stage breast cancer. With a burden of establishing a positive margin in real time, there is an emphasizes on the need of an accurate IMA tool like the iKnife. **Purpose**: To construct a histopathologically validated spectral database for DCIS using ex vivo laser assister REIMS(LA-REIMS) towards improving the diagnostic accuracy of the iKnife for immediate margin assessment. **Method**: Following Ethical approval, a total of 55 patient samples were collected from patients undergoing a mastectomy for extensive DCIS. Samples were analysed using LA-REIMS intended to mimic the iKnife. The tissue is then processed, stained and validated by a consultant histopathologist. Results were analysed to identify biochemical differences between cancerous and normal tissues. **Results**: Linear discriminant analysis was used to demonstrate spectral differences between tissue types. LA-REIMS recognition accuracy with benign (B1 and B2) (n = 34) and malignant (B5a and B5b) (n = 31) provided sensitivity of 89% and specificity of 82% (Figure 1a) and correct classification rate (CCR) of 75%.

Improved cookstove interventions to reduce household and ambient air pollution among the global poorest communities: A scoping review

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Introduction: Each year, the combined effects of household and ambient air pollution (HAAP) lead to approximately seven million premature deaths globally and contributes to a number of cardiovascular and respiratory diseases. The burden is highest in low and middle-income countries, with the major source of (HAAP) being combustion of fossil fuels for cooking and lighting. Despite the anticipated increase in access to clean cooking over the next twenty years, the absolute numbers of those in Africa who do not have access to clean fuels is expected to increase. Recognizing that these communities are unlikely to be able to afford the more expensive cooking technologies, it is important to identify affordable stove interventions that could reduce the impact of HAAP among the poorest communities. **Objectives:** To explore evidence in relation to the cookstove-intervention options available to the global poorest communities to reduce HAAP, the characteristics (e.g. type, cost, availability), and health impact of these interventions. **Methods:** This review followed the Joanna Briggs Institute's framework. All biomass stove intervention studies conducted from 2014 to date, in Africa, and in English were included. Four reviewers conducted preliminary screening, followed by a full-text screening; 20% being double screened with uncertainties being resolved through discussion. Data extraction was completed for the remaining studies by all. **Results**: Evidence in relation to stove type, efficiency, emissions, safety and price based on the Clean Cooking Catalogue data was recorded and compared with field results where available. Reduction in HAP and health outcomes were summarized. Where data were available, we also report availability and accessibility. The quality of included studies were assessed. **Conclusion:** The outcome of this review, along with additional evidence from the literature, will be used to develop a tool kit guide to HAAP interventions for the poorest communities globally.

Induced Pluripotent Stem Cells in the Potential Treatment of Type 1 Diabetes

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Introduction: Type 1 diabetes mellitus is a metabolic disease characterized by autoimmune destruction of pancreatic islets, causing a lifelong insulin deficiency. Insulin remains the mainstay of treatment for type 1 diabetes, but there have been tremendous strides in cell replacement therapy via allogeneic whole pancreas and islet transplantation. These methods are limited due to scarcity of tissue and the requirement of chronic immunosuppression. Induced pluripotent stem cells (iPSCs) have the ability to regenerate and differentiate into specialized cells due to genetic reprogramming with the Yamanaka factors (Oct3/4, Sox2, c-Myc, Klf4). **Methods**: Peripheral blood mononuclear cells (PBMCs) were taken from a patient with surgically-induced diabetes. These cells were cultured for expansion and then reprogrammed into human iPSCs by introduction of the Yamanaka factors via a retroviral vector (Sendai virus). The iPSCs were expanded for 8 passages before they were tested for pluripotency by genetic analysis and immunofluorescence. **Results**: Genetic analysis was performed via RT-PCR followed by gel electrophoresis, demonstrating the presence of Klf4, Oct4, Sox2, and c-Myc. However, this also confirmed the persistence of genetic material from the viral vector. Immunofluorescence verified the presence of Oct4 and Sox2, while also proving the expression of other pluripotency markers (Nanog, SSEA4, TRA-1-60, TRA-1-81). **Discussion**: Characterization of the cells confirmed that the newly created iPSCs were truly pluripotent. Differentiation of these cells could yield functional patient-specific specialized cells, including functioning pancreatic beta cells. Tissue engineering with iPSCs could potentially have future applications in the treatment and possible cure of type 1 diabetes.

Infection Rates in Autologous HsCT with pRBC Transfusion

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Introduction: Infection remains a dominant source of morbidity/mortality for patients undergoing myeloablative chemotherapy and autologous stem cell transplant (ASCT). We sought to determine the relative risk of infection with the use of packed red blood cell (pRBC) transfusion to treat chemotherapy associated anemia with. **Methods:** Patients who underwent ASCT at Pennsylvania Hospital between 1995 and 2019 were identified. Data on transfusion status and infection were obtained from patient discharge and transplant summary forms including: Participation in bloodless medicine program, number of units of pRBCs transfused, and documented post-transplant infection. Standard 2 variable relative risk analysis and odds ratio were used to assess association between transfusion use and post-transplant infection rate. **Results:** 306 patients were identified to have undergone ASCT with 176 (57.7%) participating in the bloodless medicine program, 46 (15.1%) having no need of pRBC, and 83 (27.1%) receiving at least 1 unit of pRBC. Median number of PRBC in transfused patients was 2 units. Rate of infection amongst those who did not receive PRBC was 33.3% while it was significantly higher in those who did at 49.4%. Patients who received PRBC were at higher risk of developing infection (Relative risk (RR) 1.48, odds ratio (OR) 1.95, 95% confidence interval (CI) 1.17-3.26, p=0.01) than those who did not. Further analysis showed that higher quantity of pRBC units further increased infective risk in patients who got 4 or more units of pRBC (RR=1.97, OR=4.14, CI=1.814-9.450, P=.0007). **Conclusion:** Infection after ASCT was more common with the use of pRBC transfusion to treat anemia while number of pRBC units was positively correlated with rates of infection. This area needs further study to better plot timelines of events as well multiple regression analysis to control for confounding variables such as relative levels of neutropenia before onset of infection.

Inter-rater variability for manual feature selection in retinal vascular optical coherence tomography imaging

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Introduction: The movement towards quantitative diagnostic biomarkers in medical imaging has shown increasing promise in disease identification and early detection. This is particularly true in more mature imaging modalities, including in Optical Coherence Tomography Angiography (OCT-A). OCT-A imaging can provide vital information regarding the state and morphological features of vascular networks, and particularly, has been used regularly in the examination of retinal vascular networks, with potential implications as a direct monitoring window into cerebrovascular networks. **Methods:** In this preliminary study, 7 individual raters familiar with retinal OCT-A imaging are presented with a series of 40 images where maximal vessel diameter, and the basis evaluations for branchpoint count and tortuosity are determined through semi-automated or manual inputs, and variability of the recorded measures between raters are examined. **Results:** The preliminary results demonstrate the variability that one may expect in a standard clinical dataset, and a potential hurdle that may need to be overcome when determining ground truths for training data in supervised neural networks. **Discussion:** Features such as vascular fraction, fractal dimension, branchpoint count, tortuosity, and maximal vessel diameter hold particular promise as important biomarkers of interest; however, many of the current methods for determining these metrics are semi-automated or manual, requiring user judgement and input. Thus, the subjective nature of the user input may result in significant inter-rater variability, potentially causing quantitative evaluation to be left too variable for proper diagnostic accuracy; however, this has not been demonstrated. Moreover, with the emergence of new automated methods that could be employed, particularly with the use of machine learning, and understanding of this variance is key, especially with regards to supervised learning methods where ground-truths may be determined from rater data.

INTERACTION OF BREAST PAIN SEVERITY WITH ANXIETY AND DEPRESSION IN PATIENTS OF MASTALGIA

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INTRODUCTION: Mastalgia is a common complaint among women attending the General Surgery OPD of SSKM Hospital, Kolkata. Considerable psycho-social distress is seen with a grave fear of malignancy. Definite data on the interaction of Mastalgia with anxiety and depression from our OPDs is unavailable. We aim to assess the severity of breast pain with anxiety and depression among patients. **METHODS**: Descriptive Observational Cross-sectional Study in 101 Mastalgia patients, selected by Purposive Sampling was conducted. Predesigned structured questionnaire, Numeric Pain Rating Scale, Hamilton Anxiety Scale (HAM-A), Hamilton Depression Scale (HAM-D) used. Cross-tabulation of pain severity, anxiety, depression done. Chi-square test and chi-square test for trend employed for inter-group comparison of categorical variables. Linear association- age, pain severity, anxiety and depression explored through scatterplots, quantified by Spearman's rank correlation coefficient Rho. **RESULTS**: 101 Mastalgia patients, ages 18y-70y, (mean 34.79, median 34, S.D 9.430), proportion of subjects with: Anxiety- 80/101 (79.21%), (HAM-A Score Mean 23.12, Median 23, S.D 11.195), Depression- 86/101 (85.15%), (HAM-D Score Mean 11.91, Median 12, S.D 5.103), Pain scores range 3-10 (Numeric Scale- Mean 6.44, Median 6, S.D 1.982). Significant association: pain severity-anxiety and depression, Pearson's chi-square test p value: 0.020 (pain severity -anxiety), 0.004 (pain severity -depression). Chi-square for trend p value: 0.0017 (pain severity -presence of anxiety), <0.001 (pain severity -presence of depression). Poor linear association (Spearman's rank correlation coefficient) between pain severity- anxiety and depression; age- anxiety and depression: Pain-HAM-A: Rho 0.191&p=0.0553, Pain-HAM-D: Rho 0.224&p=0.0242, Age-HAM-A: Rho -0.137&p=0.1730, Age-HAM-D: Rho -0.136&p=0.1749. **DISCUSSION**: This study shows- high proportion of Mastalgia patients, irrespective of pain severity and age, suffer from psycho-social distress. Even patients with low/moderate pain report considerable anxiety, depression (fear of malignancy). Counselling strategies adopted to alleviate psycho-social distress may help treatment, better functioning of health care facilities by reducing the daily patient load in developing countries.

Investigating disruptions to the ocular surface microRNA regulatory network in patients with primary Sjogren's syndrome

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Primary Sjogren's syndrome is a systemic autoimmune disease characterized by lymphocytic infiltration and destruction of the salivary and lacrimal glands mainly in women above 40 years of age. This research focuses on microRNA network dysregulations, its relation to the inflammatory state of the disease, and its effect on the ocular surface. MicroRNA expression and protein levels are inversely related as an abnormal overexpression of a microRNA will result in an abnormal decrease in the associated protein and vice versa. Based on patients' conjunctival epithelial cells provided by Ocular Immunology Research Group and a microRNA assay conducted by Ocean Ridge Bioscience, a bioinformatics approach was initiated to identify the microRNA of interests. Elected microRNAs were researched via mirDB database to detect target genes and their target score. Then, using miRalk 2.0, the targets were validated and DianaLab was used to highlight the regular pathway(s) that the microRNAs are involved in. The sequences then were investigated in PubMed to reveal possible involvements in other autoimmune or inflammatory diseases. Next, they were checked for specificity and homology across multiple animal species using Go Analysis. Eight microRNA sequences showed substantial links to genes related to the inflammatory process; A, B, C, D, E, F, G, and H* (Table 1). Unfortunately, none of the sequences showed homology across species and they were all unique to the human eye. However, this might be since some of the sequences were very recently discovered and not yet incorporated into the software. In conclusion, the eight microRNAs expressed strong links to inflammatory pathways and all are potential diagnostic, therapeutic and prognostic candidates. However, additional homology investigation is of crucial importance to fully understand their potential.

Investigating the genetic changes in macrophages mediated by Il-10

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Macrophages play an essential role in the regulation of inflammation. In persistent inflammation however, macrophages may cause severe tissue damage and are implicated in a number of inflammatory and autoimmune diseases such as multiple sclerosis. Conversely, macrophages can also adopt an anti-inflammatory phenotype, producing anti-inflammatory mediators that potentiate tissue regeneration and repair. IL-10 is a known inducer of this anti-inflammatory phenotype. The aim of this study is to interrogate the genetic changes in macrophages induced by IL-10, and to decipher mechanisms that promote an anti-inflammatory state. This will aid the rationale for harnessing macrophages therapeutically and help elucidate their role in disease processes. Murine bone-marrow derived macrophages were harvested and treated with LPS and IL-10. Following 24 hour exposure, an Affymetrix array was conducted. This project involved systematically analysing the array to identify each gene, and completing a literature search using PubMed to interrogate each gene's potential relevance to four topics related to macrophage function – IL-10 signalling, mitochondrial metabolism, glucose metabolism and multiple sclerosis. Analysis of the array showed 132 genes were significantly upregulated, whereas 142 were significantly downregulated upon IL-10 exposure versus control macrophages. Following exclusion of duplicates, 97 unique entries were identified. Of these, 85 genes (88%) had human homologs, and 94 genes (97%) were protein coding. Following systematic literature review, 40 genes yielded no relevant publications. Following review, seven genes of the remaining 57 had relevant publications across the four topics; namely IgG receptor Fcgr2b, membrane glycoprotein Neuroregulin1, transcription factors Nfil3 and Bhlehe40, metalloprotease Steap4, hormone Adrenomedullin and the enzyme Arginase2. This research serves as a reference study identifying key genes associated with the anti-inflammatory macrophage phenotype following IL-10 stimulation. The seven genes of interest highlight key mechanisms through which the macrophage orchestrates this essential function, and represent potential areas for future therapeutic benefit.

Investigating the Impact of COVID-19 on Breastfeeding Rates and Support Structures at Michael Garron Hospital

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Introduction: The Breastfeeding Clinic at Michael Garron Hospital plays a pivotal role in maintaining the hospital's "Breastfeeding Friendly" designation by the WHO. The pandemic forced closure of the clinic from mid-March to mid-June 2020. In-hospital lactation consultations were also limited. We assessed the impact of closure of the breastfeeding clinic on breastfeeding rates, and sought to identify the main challenges to breastfeeding in mothers who were confirmed or suspected cases of COVID-19. **Methods**: We used an explanatory sequential mixed-method approach. Breastfeeding rates from March-May 2019 were compared to 2020. This was followed by a retrospective telephone service evaluation of 3 mothers who tested positive for COVID-19 (100% response rate), and 18 who were under investigation (42% response rate). A reflexive thematic analysis of qualitative data was conducted to identify the barriers and facilitators to breastfeeding. **Results**: There were no significant differences in the breastfeeding initiation rates. However, the adjusted breastfeeding rates, which account for infants who received one feed other than human milk for a documented medical reason, were significantly lower for March, April, and May 2020. In March and April 2020, 95% of mothers intended to breastfeed, and 91% were provided with breastfeeding education, yet the adjusted breastfeeding rate was 65%. The retrospective telephone survey identified anxiety about the virus, reduced lactation consultation, and isolation as major barriers to breastfeeding. Facilitators included video lactation consultation, and increased time with the baby. **Discussion**: While breastfeeding initiation was successful, continuity was impaired, potentially due to reduced support postpartum as a result of lockdown. The pandemic has presented compounding difficulties to breastfeeding. This work enabled us to learn directly from patients about their experience, prepare for similar situations, and broaden access to lactation services.

Irish Traveller Health and Wikipedia

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Background/Intro: Wikipedia is an internationally available online resource. As such, Wikipedia is a convenient tool for public health and should be used to distribute relevant information to the international patient and healthcare communities. It would be valuable to have an easily accessible and readable summary on the studies done regarding the health of the Irish Traveller community. **Methods:** The Wikipedia article on Irish Travellers was appraised and assessed for readability. Google search results on "Irish Traveller Health" were also read. An EMBASE search was run using the terms "Irish Travellers". Results were chosen to be used in the study based on their relevance to the Irish Traveller community health. The Wikipedia page, Google search results, and EMBASE search results were also assessed based on the audience they targeted. **Results:** Using the Flesch Reading Ease test, it was determined that the "Irish Travellers" Wikipedia page was a college level article. Google search results for "Irish Traveller Health" were predominantly targeted towards healthcare professionals, but one result was directly written for the Irish Traveller community. The EMBASE search results were categorised into 13 categories based on the contents of the papers. **Discussion:** The Wikipedia page should be improved by increasing its readability, to make it more digestible for a wider audience . To improve the readability of information on Irish Traveller community health, information on Traveller health should be moved from the general page to a separate one. Further pages with more specific and technical information should be created for use by health professionals and students. The "Irish Traveller Health" Wikipedia page should also include links for health-related resources for the community. Additionally, further research like the "All Ireland Traveller Health Study" should be done in order to continue to assess the strategies for improving the healthcare of Irish Travellers.

Maxillary Sinus Ameloblastoma: Transnasal Endoscopic Management

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Ameloblastoma (AM) is a slow growing and aggressive benign tumor with an odontogenic epithelial origin arising from the mandible or maxilla. The odontogenic neoplasm invades local tissues asymptomatically and accounts for 1% of oral tumors and over 10% of odontogenic tumors. A 64-year-old man with a history of allergic fungal rhinosinusitis (AFRS) undergoing a revision image-guided endoscopic sinus surgery was found to have a fibrous mass suspicious of malignancy projecting inferolaterally and attached to the floor of the left maxillary sinus. Diagnostic biopsies were taken, and additional surgery was required to successfully resect the tumor via a transnasal endoscopic dissection. Multiple permanent pathology samples concluded the diagnosis of an AM. Endoscopic investigations led to the incidental discovery and ultimate complete endoscopic resection of the AM. The utilization of an endoscopic resection compared to the traditional maxillectomy with reconstruction results in significant less short and longterm morbidity for the patient.

Neuroprotective effects of Beta-sitosterol against beta-amyloid-induced microglia-mediated neuroinflammation

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Background: Recent studies have shown that neuroinflammation plays a bigger role in the pathogenesis of Alzheimer's Disease. Hence, a potential therapeutic agent should be able to not only eliminate beta-amyloid, but to also inhibit neuroinflammation. Beta-sitosterol, a naturally occurring phytosterol has been shown to exhibit anti-inflammatory properties. However, the anti-neuroinflammatory effects of Beta-sitosterol have yet to be investigated. Hence in this study, the anti-neuroinflammatory effects of Beta-sitosterol on beta-amyloid-induced BV2 microglia-mediated neuroinflammation and its neuroprotective effects on SH-SY5Y neuroblastoma cells against microglia-mediated neurotoxicity were investigated. **Materials and methods:** The Beta-sitosterol cytotoxicity on BV2 and SH-SY5Y cells were determined using MTT cell viability assay. Effects of Beta-sitosterol on the production of pro-inflammatory cytokines (IL-1beta and TNF-alpha) were assessed using ELISA kits. Subsequently, Promega Cell Viability Assay kit was used to evaluate the neuroprotective effects of Beta-sitosterol on SH-SY5Y cells against microglia-mediated neurotoxicity. Statistical analysis was performed using the graph pad prism software version 7. Data were analysed using one-way analysis of variance (ANOVA) followed by the Tukey's post-hoc test. **Results:** Our data showed that maximum non-toxic concentration of Beta-sitosterol was 125ng/mL. Hence, the three chosen concentrations were 125ng/mL, 31.5ng/mL and 0.78ng/mL, to provide a wider range of concentrations of Beta-sitosterol for subsequent assays. All three concentrations of Beta-sitosterol down-regulated the production of pro-inflammatory cytokines (IL-1beta and TNF-alpha). Furthermore, conditioned media of BV2 containing all three concentrations of Beta-sitosterol increased the cell viability of SH-SY5Y cells in comparison to conditioned media containing beta-amyloid alone, thus conferring a neuroprotective effect on SH-SY5Y cells. These findings corresponded to the inhibitory effects of Beta-sitosterol on the production of pro-inflammatory cytokines

Operating Theatre Practices and Post-Operative Infection

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Introduction: Surgical site infection (SSI) accounts for 19.6% of all hospital-acquired infection. Studies have estimated that up to 60% of SSIs are preventable through imploring evidence-based measures. Implementation of national and international recommendations can significantly reduce SSI rates. This study focused on pre- and perioperative practices and whether they were consistent with current guidelines. **Methods:** An audit was conducted in two Irish hospitals in March 2020. Twenty-three patients were audited using a structured pro-forma. Data were collected in the following categories; procedure type, patient risk factors, physiological parameters, skin preparation, antibiotic prophylaxis and theatre practices. **Results:** The majority of patients underwent clean and elective procedures. Antibiotics were not indicated for clean procedures yet 80.9% of patients received antibiotic prophylaxis. Blood glucose testing was only performed in those with known diabetes mellitus despite recommendations to monitor blood glucose levels in all patients. Regarding skin preparation, the skin in 91.3% of patients was cleaned with a chlorhexidine-alcohol solution, and all patients requiring hair removal had it done with disposable clippers, both of which are in line with current guidelines. Surgical hat wearing was 100% across all procedures but surgical mask wearing was inconsistent over time. As procedures increased in duration, higher numbers of staff were recorded in the operating theatre and more door openings were noted on average. **Conclusion:** To improve surgical outcomes, an awareness of measures taken to reduce SSI is paramount. Some inconsistencies in practice have been highlighted in this report, and where there is room for improvement.

Operating Theatre Practices, Microbes in Air and Post-Operative Infection

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Introduction: Surgical site infections (SSI) account for 20% of all nosocomial infections. Intra-operative infection prevention and control (IPC) measures including adherence to aseptic technique. We observed adherence to IPC practices by healthcare workers during surgical procedures and sampled the air for airborne bacteria and particles. **Methods**: General surgical procedures were audited for compliance with IPC measures (including appropriate use of personal protective equipment and antibiotic prophylaxis) over three weeks. For six procedures, air sampling was with the AES Chemunes Sampl'air Lite Air Sampler and Columbia blood agar plates were incubated for 24 h. For four procedures, airborne particles were also measured using a ParticleScan ProTM Airborn Particle Counter. Patients were followed up in the outpatients or by telephone seven days post-procedure. **Results**: A total of 31 operations were observed; 25/31 (80.6%) were clean wounds, 3/31 (9.6%) clean-contaminated, 1/31 (3.2%) contaminated, and 2/31 (6.4%) infected. 100% of healthcare workers wore hats, 70.6% wore masks and 50.5% wore scrubs. 22 (70.9%) patients received appropriate prophylaxis, 2 (6.4%) received pre- and intra-operative prophylaxis and 7 (22.6%) did not receive prophylaxis. Airborne bacterial counts were 12-74 (CFU)/m³ with a mean of 34 (CFU)/m³. Colony counts to the number of people in St Joseph's were high compared to Beaumont. Airborne particle counts of >1μm were 25-146 with a mean of 75.5 and >5μm were 0-10 with a mean of 4.4. Of 26/31 available for follow up, there were no SSI. **Discussion**: Most procedures were low risk for SSI, hence there were no SSI. Compliance with IPC was generally good but a larger study is required to correlate SSI, IPC and bacterial/particle counts.

Outcomes of multidisciplinary treatment of fibromatosis – retrospective analysis from a reference center.

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Introduction: Fibromatosis is a non-metastasizing neoplasm with a highly unpredictable course. Surgery remains the mainstay in common practice. However, due to potential morbidity and high recurrence rates, in recent years more conservative management with non-steroidal anti-inflammatory drugs (NSAIDs) has been advocated. How do the surgery and the active surveillance practices compare across different treatment options for fibromatosis? **Methods:** We retrospectively reviewed 258 patients (178 female, 80 male) diagnosed with aggressive fibromatosis between 1999 and 2018 and treated at Maria Sklodowska-Curie National Research Institute of Oncology in Warsaw. Kaplan-Meier estimator, long-rank test, Cox regression model, and Chi2 tests were used for statistical analyses. **Results:** 123 patients (47.7%) underwent surgical resection and 103 (39.9%) were treated with NSAIDs alone in the first line. The remaining patients received chemo-/hormone- or radiotherapy. Disease recurrence or progression occurred in 91 (35.3%) patients – in 24.4% of patients treated with surgery and 45.6% on NSAIDs (p=0.001). Location outside the abdominal wall (HR 2.8; 95% CI 1.5-5.0) and active surveillance with NSAIDs in the first line (HR 3.6; 95% CI 2.2-6.0) were independently associated with a higher risk of disease progression. 5-year disease-free survival rate was 65% in the whole population, 78% in treated with surgery, and 48% with NSAIDs. Considering the combination of first and second lines together, the disease control rate was approximately 85% and was not significantly different in both groups. **Discussion:** Although surgery in the first line was associated with better control rates, we proved that watchful observation with NSAIDs allows us to avoid unnecessary surgery in a significant number of patients, especially those with fibromatosis located in the abdominal wall. Surgery in the first line or active surveillance with NSAIDs followed by surgery after progression results in a similar disease control rate.

Patient Experiences with a Remote Monitoring Pathway for COVID-19

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Introduction: In response to the COVID-19 outbreak, Michael Garron Hospital developed the CovidCare remote monitoring pathway to provide timely clinical evaluation and management for patients with suspected or confirmed COVID-19. Remote monitoring is increasingly used, but limited data exist on patients' experiences with these pathways for managing COVID-19. This study aims to describe patients' experiences with CovidCare, specifically two patient populations: those with medium- or high-level alerts that A) did not return to the emergency department (ED) and were successfully managed at home, and B) those who returned to ED but were not admitted. **Methods:** Semi-structured phone interviews were conducted, transcribed, and analysed using grounded theory. **Results**: Across 35 interviews (response rate of 66%), three main themes were identified: the program provided emotional support (a sense of security, reduced feelings of depression and loneliness, and decreased fear and anxiety); was informative (taught patients COVID-19-related precautions, instructed patients on how to self-monitor COVID-19 symptoms, and informed patients about self-care when coping with COVID-19), and motivated patients to self-monitor and self-manage (facilitated self-management, prompted self-management, and encouraged self-monitoring). Patients in both groups also reported nurses at times urging them to go to ED despite feeling able to manage at home, and only a few patients in Group B returned to ED for issues directly related to COVID-19. **Discussion:** The CovidCare pathway was well-received by most interviewed patients. Both groups identified the tendency for nurses to recommend ED assessment for worsening symptoms; however, only a few patients in Group B returned to ED for issues directly related to COVID-19, limiting further analysis into why this advice may have affected them differently. Further research should explore the tendency of the CovidCare pathway to recommend ED assessment to improve its efficiency and applicability for other remote monitoring programs.

Patient Perspectives on Deinsuring Adult Tonsillectomy and Septoplasty Surgeries in a Publicly Funded Health Care System

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Objectives: In several publicly funded health care systems, including Ontario, Canada, adult tonsillectomies and septoplasties have been suggested to be deinsured from the government health insurance plan. Thus, the objective of this study was to explore patient perspectives regarding out of pocket (OOP) payment for these procedures in the event they were no longer covered by the Ontario health insurance plan. **Methods:** An anonymous survey was administered to patients consented to undergo a tonsillectomy or septoplasty at a community otolaryngology-head & neck surgery (OHNS) practice. The survey asked patients if they would pay the projected cost for their surgery OOP and the maximum amount of time they would wait for their surgery. The survey also contained questions on socioeconomic status and disease severity. **Results:** Seventy-one patients were included. Overall, 21% of patients were willing to pay OOP for their surgery. Forty-nine percent of patients reported that the maximum acceptable amount of wait time for their surgery was two to six months. There was no significant correlation found between any of the demographic variables or disease severity and willingness to pay OOP for these surgeries. **Conclusion:** In this study, a small percentage of patients who met the clinical indications for tonsillectomy and septoplasty would pay for their surgeries in the event they were not covered by the government health insurance plan. These surgeries are common operations and deinsuring them could have implications for both patients' quality of life and OHNS practices.

Patterns of Metastatic Disease in Stage IV ALK-rearranged Non-Small Cell Lung Cancer Patients

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Introduction: Anaplastic Lymphoma Kinase (ALK) gene rearrangements occur in 2-4% of Non-Small-Cell-Lung-Cancers (NSCLC). This study aims to determine the patterns of metastatic disease in these rare Stage IV ALK-rearranged NSCLC Patients, as there is limited real-world data on this topic. **Methods:** In a cohort of Stage IV ALK-rearranged NSCLC patients from Princess Margaret Cancer Centre, a comprehensive Canadian Cancer Centre, manual data ion was performed from the electronic patient records, supplemented with patient-reported demographic survey data. Descriptive summary statistics were performed. **Results:** Of 105 Stage IV ALK-rearranged NSCLC patients, 54% were female. The median (range) age was 60 (31-92) years; 31% were Caucasian; 40% were Asian; 75% were lifetime never-smokers; 75% were de novo Stage IV. The median (range) number of metastatic sites was 1 (1-6) at baseline, and after 1 year, 2 (1-10) sites. At baseline, 53% of patients had 1 metastatic site; 27% had 2 sites; while 10% had 3 sites, and 10% had 3-6 sites. From baseline to 1 year after baseline, the proportion of patients with bone metastases had risen from 32% to 43%; for brain, 25% to 37%; for liver, 11% to 14%; for lung, 17% to 28%; for adrenal, 6% to 11%; and for pleural-pericardial disease, 44% to 60%. Some ALK-rearranged NSCLC patients exhibited unusual areas of metastases, including leptomeningeal, choroidal, kidney, peritoneum, pancreas and adnexa. **Discussion:** Compared with historical local cohorts of general NSCLC patients, ALK+ NSCLC patients were younger, more likely to be lifetime never-smokers and of Asian descent, with greater prevalence of pleural-pericardial disease, bone and brain metastases and presenting with some unusual patterns of metastatic spread. Stage IV ALK+ NSCLCs form a distinct clinical and demographic patient group, when compared to the general NSCLC population and evaluating the metastatic patterns can provide a better understanding about the disease progression.

Psammocarcinoma of the Ovary: a Systematic Review

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Psammocarcinoma is a rare subtype of serous epithelian neoplasms. In the literature it most commonly described in the ovaries and the peritoneum. It is characterized by massive psammoma body formation, low grade cytologic features, and invasiveness. Its clinical behavior is similar to serous borderline tumors.

We performed a search in PubMed and ScienceDirect with the following terms: "ovary, psammocarcinoma" and "ovarian cancer, psammocarcinoma". A total of 211 results came back before the beginning of October 2020. We excluded all studies and reports for other cancer localization, type and duplicating articles. We paid special attention to the patient's: age, cancer staging, type of surgery, chemotherapy, recurrence.

After a careful evaluation of the results 44 cases of psammocarcinoma of the ovary have been discovered. The median age for them is 52.8 years (19-73). The most common stage by FIGO is IIIB (in 11 patients). Stage III is the most common – 24 of the cases while there are 17 cases with unknown staging. The surgical interventions differ in many cases as the age, stage of the cancer and the circumstances differ. However, the most common is radical hysterectomy with bilateral salphingo-oophorectomy, omentectomy. In some cases, taking biopsy from the peritoneum and lymph node dissection were performed. There are cases of debulking in order to protect the natal capabilities. The most common adjuvant chemotherapy includes Carbapenem and Paclitaxel (PC therapy) – 7 patients. One female underwent neoadjuvant PC chemotherapy. Finally, 7 out of the 24 patients with follow-up either died of the disease or had recurrence.

Ovarian psammocarcinoma is a rare and aggressive oncological condition. Of the total of 44 patients, found in PubMed and ScienceDirect.com there were many instances of poor description of the case itself. Yet, the late diagnosing of the disease and its aggressive nature are a fact.

p16 expression in Urothelial tumors: Experience from a tertiary care hospital of coastal India

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Introduction: Human papilloma virus(HPV) has several hypothesizes that it can be a causative agent for cancers involving the epithelium such as urinary bladder. p16 immunohistochemistry(IHC) is a proven surrogate marker for HPV infection. Controversial results have been seen in studies on relation between urinary bladder cancer and HPV with positive p16 expression ranging from 4% to 50%. Hence we conducted the study to evaluate p16 antigen expression in urothelial tumors and correlate with clinico-pathological and morphological features of the tumors. **Methods:** p16 expression was evaluated in 72 cases of urothelial tumors and 20 cases of non-neoplastic bladder lesions. IHC was done and p16 staining intensity was graded on a scale from 0 to 3+. Nuclear and cytoplasmic staining of more than 50% cells was taken as positive(3+). A descriptive analysis was made of all the study variables. In order to compare the variables, cross tables were generated, and associations were analyzed. **Results:** p16 expression was seen in 19(26.4%) of the cases. High grade urothelial neoplasms were significantly associated with p16 expression.73.7% of the tumors with positive p16 expression were of invasive type. There was no significant association between characteristics like age, gender, size of tumor and p16 expression. None of the non-neoplastic urothelial lesions or precursor lesions showed positive p16 expression. **Discussion:** p16 expression can help assess prognosis of patients by correlating with tumor grade and stage. The presence of p16 in urothelial tumors will provide a new target allowing individualized treatment. Optimal evaluation of HPV vaccine for preventing bladder cancer may be done.

Repetitive Intermittent Hyperglycemia Drives the M1 Polarization and Inflammatory Responses in THP-1 Macrophages Through the Mechanism Involving the TLR4-IRF5 Pathway

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Repetitive intermittent hyperglycemia (RIH) is an independent risk factor for macro-/microvascular complications associated with type-2 diabetes (T2D). Glucose fluctuations (GF) commonly occur in T2D patients with poor glycemic control or following intensive therapy. Reducing blood glucose as well as GF is critical in controlling T2D and its complications. The IRF-5 located downstream of the nutrient sensor TLR-4, is emerging as a key metabolic regulator. It remains unclear how GF may alter the IRF5/TLR4 expression and inflammatory responses in monocytes/macrophages. First, we determined IRF5 gene expression by real-time qRT-PCR in the white adipose tissue samples from 39 T2D and 48 non-diabetic individuals. Next, we cultured THP-1 macrophages in hypo- and hyperglycemic conditions and compared, at the protein and transcription levels, the expressions of IRF5, TLR4, M1/M2 polarization profile and inflammatory markers against control (normoglycemia). Protein expression was assessed using flow cytometry, ELISA, Western blotting, and/or confocal microscopy. IRF5 silencing was achieved by siRNA transfection. The data show that adipose IRF5 gene expression was higher in T2D than non-diabetic ($P = 0.006$), corrilating with HbA1c ($r = 0.47/P < 0.001$), HOMA-IR ($r = 0.23/P = 0.03$), TNF-α ($r = 0.56/P < 0.0001$), IL-1β ($r = 0.40/P = 0.0009$), CCR-2 ($r = 0.49/P < 0.001$) expression. IRF5 expression in macrophages was induced/up-regulated ($P < 0.05$) by hypoglycemia (3 mM/L), persistent hyperglycemia (15 mM/L-25 mM/L), and RIH/GF (3-15 mM/L) compared to normoglycemia (5 mM/L). RIH/GF also induced M1 polarization and inflammatory profile (CD11c, IL-1β, TNF-α, IL-6, and MCP-1) in macrophages. RIH/GF drove the expression of MMP-9 ($P < 0.001$), a known marker for cardiovascular complications in T2D patients. All these changes were counteracted by IRF5 silencing in macrophages. In conclusion, RIH/GF promote the M1 polarization and macrophages inflammatory responses via the mechanism involving TLR4-IRF5 pathway, which may have significance for metabolic inflammation.

Risk factors of congenital heart defects in children

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Congenital heart diseases (CHD) are the most common congenital anomalies, occurring in almost 1 in 100 births. The study of the frequency of CHD was conducted in Chernivtsi region (Northern Bukovina) on the basis of the medical-genetic center. To analyze the risk factors, a retrospective research method was used by studying 91 selected genetic charts of children with CHD (47 male and 44 female) aged 0-18 living in Northern Bukovina. 133 charts of healthy children (77 male and 56 female) were used to identify risk factors. All data were analyzed by non-parametric methods of variation statistics using MedCalc program (2006). The analysis of risk factors revealed that the female gender of the child is a risk factor for the development of CHD (OR = 1.29). The analysis of the ordinal number of pregnancy revealed that the second (OR = 1.59) and third (OR = 1.74) pregnancy are probable risk factors for the development of this pathology. Folic acid intake during the first trimester prevented the development of CHD (OR 2.33). The study found that stressors are: unplanned pregnancy (OR 3.1); out-of-wedlock pregnancy (OR 1.48); stress during pregnancy (OR 3.61). Maternal congenital heart defects increased the development of CHD in offspring by approximately 2-fold (OR 2.25). Some factors, such as hard physic work of the mother during pregnancy (OR 2.82), sedentary work (OR 2.26) and incomplete secondary education of a woman (OR 3.61) and man (OR 18.62), young age of the father (OR 3.28) are significant in the development of fetal CHD. The results of this study can be used in family preconception counseling and in identifying high-risk pregnant women. Women with relevant risk factors should eliminate as much of them as possible before conception to minimize the risk of congenital heart disease in their children.

Stage bifurcation stenting of subtotal stenosis of inferior vena cava

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Introduction: Chronic obstructive diseases of the inferior vena cava (IVC) can be complicated by the development of IVC syndrome. Open IVC surgeries are rarely used, as they are technically complex. Endovascular methods of treatment are considered promising. **Materials and methods:** Clinical case report. Patient, 48 years old. For six months, she made complaints about pelvic pain. She was observed by many specialists without direct results. 25.01.2019 patient underwent multislice computed tomography (MSCT). Subtotal stenosis of the infrarenal IVC was revealed. She was hospitalized in the Clinical Hospital No.1 of the Presidential Administration. Balloon angioplasty of IVC by "Atlas" catheter 18x60mm, both CIV (common iliac veins) by "kissing" technique by 12x60mm catheters was performed before and after stenting. 18x100 mm "Venovo" stent 5 mm higher than bifurcation was implanted in the infrarenal IVC part. Intravascular ultrasound (IU): in IVC the stent is disclosed throughout. Narrows of both CIV are marked. It was decided to perform bifurcation stenting of both CIV with access to IVC. On the next phlebography and IU: the right ovarian vein decreased in diameter from 15 to 7 mm, a perfect blood outflow from both kidneys was noticed. Two 14x100 mm "Venovo" stents were implanted. Angioplasty of both CIV was performed; angioplasty of the IVC by "kissing" technique was performed. **Results:** On the phlebography and IU - stents are passable. After 2 days, the patient was discharged; rivaroxaban was prescribed at a dose of 20 mg/day. **Discussion:** Endovascular interventions in combination with intraoperative intravascular ultrasound are an effective technique for restoring blood flow during occlusion of the inferior vena cava. Safety of stenting of IVC with overlapping of opening of renal veins is confirmed.

Streptomyces Hygroscopicus Subspecies Hygroscopicus Ethyl Acetate Extract Fraction Decreases The Expression Of DLD-1 Cell Line Nucleus DNA In Colorectal Cancer

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Colorectal cancer occupy the 3rd rank for the highest occurrence number and the 2nd leading cause of death in the world in 2018. Many anticancer drugs have been developed from various natural agents, including microorganisms. This study aimed to prove the effect of Streptomyces hygroscopicus Subsp. Hygroscopicus Ethyl Acetate Extract Fraction in decreasing the expression of DLD-1 cell line nucleus DNA in Colorectal Cancer. The fractionation was using Flash Column Chromatography (BUCHI Reveleris PREP Purification System) while the DNA expression was measured using immunofluorescence (DAPI). Thirty fractions was obtained. The Cell Line was cultured and was given the fraction with 80, 8 and 0.8 ppm dose within 2x24 hours. From the immunofluorescence analysis, it was found that fraction 13, 15, 16, 18, and 19 can decrease the DNA expression of the Cell Line below 100%. Statistical Analysis shown the difference of the DNA expression percentage between various dose of the 5 mentioned fractions and control ($p=0.000$). Post Hoc Tukey HSD result has shown a DNA expression percentage difference between various dose of the 5 mentioned fractions and control ($p<0.005$). Correlation test has shown a correlation between the increasing dose of the 5 fractions and the nucleus DNA expression with a very strong correlation coefficient score ($p<0.05$). The 5 fractions of S. hygroscopicus Ethyl Acetate Extract can decrease the proliferation ability which is measured by Nucleus DNA expression percentage of The DLD-1 Cell Line in Colorectal Cancer.

The 2020 John Bradley Summer Research Program: the transition from traditional to online during a public health crisis - a mixed-methods analysis of its impact on multiple stakeholders

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Introduction: Since 2015, the John Bradley Summer Research Program (JBSRP) has matched health sciences students with supervisors to undertake applied evidence-based projects within an academic program. The program aims to strengthen understanding of research principles via faculty-led lectures and facilitate hands-on research experience. Historically, the program was delivered face-to-face, but due to the Covid-19 pandemic, student projects were supervised remotely and the JBSRP transitioned into an online, remote, pilot program. **Hypothesis:** Is it feasible to transition an already-established research program with notable scholarly outputs to a fully online, live, remote format during a public health crisis? **Methods:** A mixed-methods design was implemented. The literature was reviewed to inform program transformation and survey development. Fisher's exact test was performed based on responses from a Likert-scale student survey administered in 2019 and 2020. Likert-scale survey responses from multiple stakeholders on success and barrier factors were quantitatively analysed. Qualitative thematic analysis of Student Reflective Journals (SRJs) was undertaken. **Results:** There was no statistically significant difference between 2019 (75%) and 2020 (86.4%) students who would recommend the program. The majority of 2020 students (>85%) agreed/strongly agreed to various statements about success factors and 91% rated their overall experience as very good/excellent. Thematic analysis of SRJs highlighted three main elements of success factors (convenience, opportunities and interaction) and barrier factors (challenges, social component and session length). **Discussion:** It was feasible to transition to a fully online and successful research program. The preponderance of students who would recommend the program and rate it very highly suggest that perceived success factors outweighed barrier factors. Across cohorts, convenience was a consistent success factor. Further research is needed on how pandemic-related constraints exacerbated perceived barrier factors such as social interaction obstacles. The finalised study has laid the foundation for the 2021 hybrid JBSRP and may inform similar scholarly initiatives.

The Relationship Between Mean Corpuscular Volume and Vitamin B12 Level: A Retrograde Study in Canadian Patients with Asymptomatic B12 Deficiency

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Introduction: Vitamin B12 (B12) is required by the body to synthesize red blood cells (RBC). A deficiency of B12 may lead to the development of megaloblastic anaemia, which is characterized by a decreased haemoglobin and increase mean corpuscular volume (MCV). This correlation between B12 and MCV is heavily emphasized in medical school curricula. However, a reduced B12 level is not always correlated with an increased MCV and vice versa. This may introduce issues when MCV is used as a diagnostic tool for B12 deficiency. The purpose of this study is to investigate the relationship between B12 deficiency and MCV in a Canadian cohort with asymptomatic B12 deficiency. **Methods:** Using electronic medical records patients with B12 deficiency (n=83) were selected, along with controls (n=53). These patients were diagnosed using blood tests measuring their B12 and MCV levels. B12 levels of these patients were compared to their MCV levels at the time of diagnosis. Ethical approval was obtained. The data was analysed in STATA 16 using logistic regression to model the effectiveness of using MCV to screen to predict B12 deficiency. **Results:** The logistic regression model showed no significant association between MCV and B12 levels (OR:1.04, CI 0.98-1.12, p=0.175). The model controlled for age and sex. **Discussion:** These results show that MCV levels are not a reliable indicator of B12 deficiency. The heavy emphasis on the relationship between B12 levels and MCV in medical school curriculum may lead to confusion among medical students. Some primary care facilities still use MCV to screen for B12 deficiency. This method is inaccurate and may delay diagnosis's, worsening patient outcomes. The relationship between MCV and B12 levels should continue to be a part of medical school curriculum, but students should be taught that elevated MCV is not a sensitive predictor of B12 deficiency.

The Use of HbA1C Value as Prognostic Factor of Chronic Kidney Disease in Diabetes Mellitus Patients: A Meta-Analysis

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Chronic kidney disease (CKD) in diabetes mellitus is related to the condition of hyperglycemia in diabetic patients. The incidence of diabetic kidney disease is often associated with an increasing level of HbA1C as a marker of hyperglycemia. Elevated HbA1C value is suspected to affect the progression of CKD. Therefore, we tried to assess the use of HbA1C value as a prognostic factor of CKD progression in diabetes mellitus patients by doing a systematic review. The literature search was conducted by searching through five databases: PubMed, Cochrane Review, EBSCOHost, Scopus, and JSTOR. The study was selected using inclusion and exclusion criteria. All selected studies were subsequently assessed through a critical appraisal process by evaluation at the aspects of validity, importance, and applicability using the appraisal tools of the *Centre of Evidence-Based Medicine* (CEBM). Pooled analysis was then done using Comprehensive Meta-Analysis software. Based on the criteria of inclusion and exclusion, there are seven suitable articles that were then critically appraised, consisting of six cohort studies and one meta-analysis. Cheng *et al*, Ceriello *et al*, Penno *et al*, and Hernandez *et al* used HbA1C variability as a statistically meaningful independent factor, while Komiya *et al*, Oh *et al*, and Piscitelli *et al* used the average HbA1C value. A pooled analysis on the hazard ratio or odds ratio in all studies has revealed that both variability of HbA1C (HR=1.35; CI 95%=1.223-1.478; p=0.000, I_2=73.1%) and mean of HbA1C (HR=1.223; CI 95%=1.115-1.341; p=0.000; I_2=51.268%) have a significant prognostic value on the progression of CKD in diabetic patients, in particular on patients with mean HbA1C of >7.5% and high variability (standard deviation value). In conclusion, The HbA1C value, in particular variability, can be used as an prognostic factor on the progression of CKD in diabetes mellitus patients.

Virtual Clinics in Paediatrics; A Systematic Review of Child and Caregiver Satisfaction.

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Background: Following the Covid-19 outbreak the methods through which clinical consultations are delivered have greatly shifted. 'Virtual healthcare' or 'telemedicine' has become an increasingly dominant means of facilitating consultations between patients, caregivers and physicians while maintaining social distancing protocols. This is a sudden change from traditional face-to-face consultations. Prior to this pandemic, uptake of telemedicine was far slower than expected. **Objective:** This systematic review aims to analyse published literature on the level of satisfaction of paediatric patients and their caregivers with virtual healthcare. **Methods:** A systematic search of Pubmed, Medline, The Cochrane Library and Embase was conducted. s were examined and studies evaluating patient and/or caregiver satisfaction of real-time virtual paediatric consultations were included. Included studies were appraised using the McMaster Critical Review Forms for Quantitative/Qualitative Studies. **Results:** Current telemedicine research primarily explores its cost effectiveness and is often restricted to the adult cohort. There are limited reviews regarding patient and/or caregiver satisfaction specifically in the field of paediatrics. Forty-four studies were eligible based on the inclusion criteria. Varying study designs were included and study methods primarily measured patient and/or caregiver satisfaction using Likert-like scale questionnaires or semi-structured interviews. Overall, majority of studies reported high levels of satisfaction with virtual healthcare. However, qualitative analysis found methodological issues in the included literature. In particular, a lack of transparency in the definition and measurement of satisfaction makes some studies difficult to interpret. **Conclusion:** The majority of paediatric patients and caregivers appear to be satisfied with the use of virtual healthcare and many find it a comparable alternative to face-to-face consultations. However, due to the methodological limitations of the published research and the dramatic increase in the use of telemedicine during the Covid-19 pandemic there is necessity for further exploration.

Who Best Predicts Future Health Service Use? A mixed-methods prospective study in Primary Care

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Introduction: Population aging is leading to an increasing incidence of frailty and associated negative health outcomes. The Frailty and Vulnerability Evaluation (FAVE) tool is a self-administered tool designed to capture medical, functional, and important social risks. We aimed to assess correlations between a patient's complexity score (sum of the number of chronic conditions and medications), their own and their family physician (FP) ratings of current, future frailty, and vulnerability with future healthcare utilization. **Methods:** Using a prospective, mixed-methods design, we surveyed 274 patients aged 65+ across 10 primary care practices in urban, suburban, and rural Ontario. Chart data was ed 1-year after FAVE administration to assess healthcare utilization, including FP and specialist visits (SP), labs, imaging, ER visits, and hospitalizations. In addition, chronic conditions and medications data were retrieved. FP judgements regarding their patients' future frailty and vulnerability were obtained through the Rockwood Clinical Frailty Scale, with a chart audit at 1-year follow up, using composite outcome incidence (COI) (i.e., if patients experienced ER visit, hospitalization, and/or death). The primary outcome was the correlation of a patient's complexity score (CS), their own and FP's clinical judgments of frailty and future vulnerability, with 1-year healthcare utilization (COI). **Results:** Preliminary data of 201/274 patients [mean age, 80.12 ± 6.67 years; 41% male; 59% female] demonstrated an average CS of 16.54. Physicians (n=178) who rated patient's future functional risk as high, had the greatest COI (62.3%), while patients who rated their future health as poor demonstrated the greatest COI (57.5%). Additionally, increased clinical frailty was associated with a higher COI (57.1%). **Discussion:** Our data demonstrates patient and physician rating of clinical frailty and future health service utilization do not display significant incongruency. This suggests patient and physician ratings along with clinical tools may be useful predictors of clinical frailty and overall healthcare utilization.

Our External Reviewers, Judges, & Workshop Leaders:

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We are deeply grateful for your time and guidance.
Without you, ICHAMS 2021 would not be possible!

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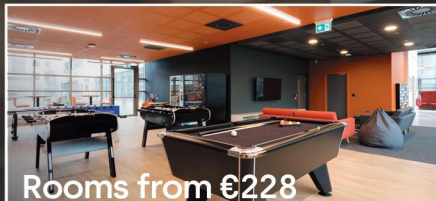
Thank You

There are a few people who have greatly assisted us
in planning and executing such a large scale conference. We would
like to take a moment to acknowledge the efforts of:

Dean Hannah McGee and Margaret McCarthy
The Dean's office was ICHAMS first supporter and continues to support us in many
ways. Our access to facilities and staff is unparalleled and is the cornerstone of
making ICHAMS happen. The Dean and Margaret have always been willing to lend
their expertise and have been fantastic mentors throughout this process.
Thank you for everything this year, we are extremely grateful.

Prof Arnold Hill, our Head of Medicine at RCSI
Prof Hill has always been one of the strongest supporters. He has always been a strong
advocate of promoting undergraduate student research. Thank you Prof Hill!

Gordon Jamieson and the Alumni Office
Gordon began working with us in ICHAMS 2020 and has completely revolutionised the
conference by helping us to secure sponsorship to a magnitude we have never before
reached. Growing the conference is one of our long-term goals, but is often limited by
funds. We are eternally grateful to Gordon for helping us realise our goals of growing the
conference and helping us seek out sponsors interested in helping further research from
the ground up.

Lorraine Hegarty, Barry McGowen, Sarah Miller & Justin Ralph
In ICHAMS 2020 we introduced the use of a new payment and registration platform. Due to
the pandemic, ICHAMS 2021 has had to move virtually, using a new hosting platform. Along
with our goals to grow the conference, we also aimed to incorporate technology and
increase usability for our abstract reviewers and delegates alike. With this came many
logistic glitches with managing funds and using a new software. The support we
experienced from finance and the IT office to embark on this endeavor has been
unparalleled and has helped us run the first digital edition of ICHAMS. Thank you to finance
and IT!

Thank You

ExOrdo Team
We would like to provide a big thank you to our delegate registration and abstract review software team at ExOrdo who are so quick to answer our many, many questions and have helped us immesurably with the set up and use of their fantastic Irish-based conference software.

Stuart Hadden and the CrowdComms Team
Due to the COVID-19 pandemic, we were unable to host our conference in person this year and had to move online for the first time in ICHAMS history. The team at CrowdComms was incredible working with us to make this a swift and seamless transition, answering our questions, and assisting us with troubleshooting prior to the conference.

Brona Murphy, our Academic Advisor
Last but absolutely not least, we would like to thank Brona for providing us with endless support and advocating for the conference throughout our time planning it. We couldn't have asked for a better academic advisor and would have been lost without her.
Thank you Brona!

Finally, thank you to **all the delegates** for your attendance and engagement with the conference. We are thrilled to host you online this year and hope you enjoy your time at the conference. We hope to be able to bring you back to Dublin next year.

All the best,
The ICHAMS 2021 Organising Committee