The background of the cover is a chalkboard with faint white text, including the word "GENE:" at the top and "more chemical" below it. A hand in a white lab coat is holding a ball-and-stick molecular model with a red sphere, a grey sphere, and a white sphere. Another hand in a black glove is holding a similar model with a white sphere, a grey sphere, and a black sphere. Two thick red diagonal stripes cross the image from the top-left to the bottom-right.

MEDIC FOUNDATION

MAY & JUNE 2024

MEDIC'S MAGAZINE

SNEAK PEEK INTO THE LAB

LOW-COST DIABETES MEDICAL TECHNOLOGY

Our Diabetes team has moved into the second phase of the project, with the goal of developing a non-invasive and continuous monitoring system to detect early diabetic ketoacidosis (DKA). The team is working on compiling a scope review to highlight the lack of existing research in biomarkers which can be used for early DKA diagnosis.

GALVANIC VESTIBULAR TECHNOLOGY

GVS is a non-invasive brain stimulation technique that affects the firing of the vestibular system by conducting an electrical current to the mastoid process behind the ears through electrodes (2-pole system). The research has since evolved into a 3-pole system and our team aims to determine if 3-pole GVS induces improvement in motor performance when compared to 2-pole GVS.

MULTIMODAL CANCER PROFILER PRECISION MEDICINE

Our Cancer Research Team (CREPE) is contributing to work that attempts to identify biological patterns within cancer patients of various types. The team is progressing a software pipeline that works with pathological image representations from different types of cancer, which supports future analysis of the images to discover underlying patterns.

IBD/CROHN'S MONITOR PREDICTION SYSTEM

Our Crohn's and IBD Team have completed the preliminary rounds of research and have been hard at work contacting doctors and professors for stakeholder engagement. Biomarker research is currently being done to establish and identify adequate detection tools for target. Our team is currently being trained on technical skills and generating concepts for the device.

FUTURE EVENTS

After a much-deserved break from an incredibly busy finals season and graduation season, the MEDIC team has pivoted its attention back to its projects and the development of technological devices aimed at helping individuals with various chronic diseases. With the research teams hard at work, we are continuing to make breakthroughs and plan to foster and grow these ideas and convert them into feasible change-making projects. Stay tuned for our summer progress by subscribing!

The Finance and Events team has been hard at work planning additional fundraising events during the summer. After a very successful case competition event, mentoring high school students, this mentorship will continue with a new leadership workshop happening in late summer. More details to follow!

The Care Companions program is taking a break during the summer from visiting senior homes this summer. Despite the lack of in-person interaction, the team is hard at work establishing new connections with additional senior homes across the Lower Mainland. New volunteers will be on-boarded during Fall, and the program will get up and running again in the future.

The MEDIC Magazine will continue its publication of issues during the summer!

CON-GRAD-LUATIONS! 2024 GRADUATES!

As the academic year came to a close, we would like to formally extend congratulations to all the hard-working students who have completed their studies. Your educational journey has surely touched the lives of many throughout your time here at UBC, and we are certain that your future will hold even more promise. Amongst these graduates are our very own Board of Directors, Anjali, Tina, and Madhini! Congratulations to all and best of luck to your futures!



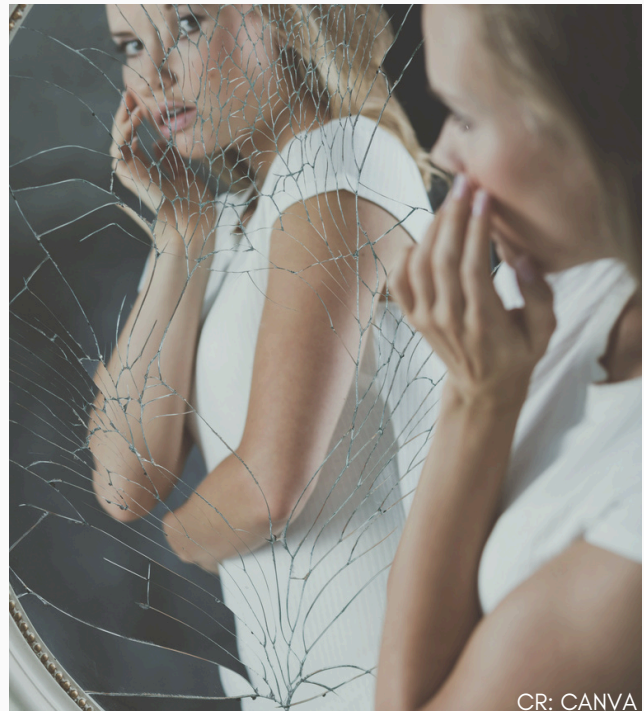
CR: UBC

BPD: A MONTH OF AWARENESS AND HEALTH ADVOCACY

By: Simone Abraham

Borderline Personality Disorder (BPD) is a mental health condition that severely impacts a person's ability to manage their emotions. People with BPD may experience extreme mood swings, leading them to view things in life in extremes. They are highly sensitive to the environment around them and can react with intense emotions to small changes. This results in a quick change in their feelings and the tendency to feel uncertain about themselves which could lead to a lot of emotional pain for themselves. Many of the feelings and behaviours experienced by people with BPD stems from a fear of abandonment or an effort to avoid being abandoned.

Each person's experience with BPD is unique but some of the common experiences that people with BPD can relate to are impulsive and dangerous behaviour, difficulty controlling their anger, and feelings of dissociation. These symptoms are added on top of experiencing an unstable sense of self which could lead to thoughts of self-harm and recurring thoughts of suicidal behaviours. Another symptom is experiencing highly varying moods, with each episode lasting from a few hours to even a few days. This tends to cause instability in relationships affecting their daily lives. The severity, frequency and duration of these symptoms can vary based on each individual and their diagnosis.



A common misconception that people have is that people with BPD are dangerous. This is simply not true as in most cases people with BPD are more likely to hurt themselves than anyone else. While it is true that they experience elevated levels of anger, it does not necessarily mean that they are a threat to others. Since their feelings usually stem from a feeling of isolation, we should make sure that we do not add to that feeling and make them feel excluded and alone in such situations.

Another dangerous misconception is that BPD isn't treatable. This prevents people from seeking treatment if they believe it cannot be effectively managed. Treatments like Dialectical Behaviour Therapy (DBT) and Cognitive Behaviour Therapy (CBT) have been proven effective in treating BPD. DBT helps people accept their thoughts, feelings and behaviours which helps them focus on methods to

help change them while CPT is about learning to change your negative thoughts and behaviours. Medications such as antidepressants and mood stabilisers have also proven to be excellent courses of treatment when used in conjunction with therapy. One of the most important things to recognise is that starting treatments as early as possible can help increase the chances of recovery from BPD.

Borderline Personality Disorder Awareness Month is a crucial time to shine a light on the common misconceptions that surround BPD as they can be harmful and lead to stigma, which can make it difficult for people that live with BPD. Individuals diagnosed with BPD have a significantly higher rate of self-harming and suicidal

behaviour than the general population which makes it extremely important to identify the signs and symptoms early on so that the appropriate course of treatment can be taken. By educating ourselves and increasing awareness, we can create a meaningful difference in the lives of those people affected by BPD.

Learn more here:

<https://www.nimh.nih.gov/health/topics/borderline-personality-disorder#:~:text=Borderline%20personality%20disorder%20is%20a,impact%20their%20relationships%20with%20others>

<https://novascotia.cmha.ca/may-is-borderline-personality-disorder-awareness-month/>





ANAPHYLAXIS AWARENESS MONTH: ALLERGY ALERTS

By: Mihika Mishra

Food allergies are a major cause of potentially life-threatening anaphylactic reactions and a public health concern in Canada, especially among children. Over 3 million Canadians (7.5% of the population) are affected by food allergies, impacting 1 in 2 households either directly or indirectly. With no cure and unpredictable reactions, avoiding allergenic foods is essential.

Anaphylaxis is a severe allergic reaction that can be fatal if not promptly treated. It can be caused not just by food, but also insect stings and medications amongst others. Symptoms can include swelling of the throat, having trouble breathing, and a sense of impending doom.

For those at risk of anaphylaxis, preparedness includes avoiding known allergens, recognizing symptoms, using an epipen for severe reactions and calling for



emergency medical help immediately.

Epinephrine, an ingredient in epipens, is the first line of treatment for anaphylaxis. It is a hormone secreted by the adrenal glands and acts quickly to reverse symptoms. It should be administered immediately if anaphylaxis is suspected as any delay can be dangerous and more importantly, “the risk of an untreated severe allergic reaction outweighs the risk of inappropriately receiving epinephrine.”

After epinephrine administration, the affected person should be taken to the emergency room by ambulance for monitoring, as symptoms can return or persist. Either protracted anaphylaxis, where symptoms last hours or days, or biphasic anaphylaxis, where symptoms may reappear hours or days after they

have been treated, may occur. Antihistamines and glucocorticoids can be used as treatment for anaphylaxis, supplementary to epinephrine. Anyone who has experienced anaphylaxis should carry an epinephrine auto injector at all times and consult an allergist, as they have a greater risk of experiencing another episode. Visiting an allergist is important if the specific cause for the reaction is unknown. Once they have been determined, complete avoidance of those allergens is crucial.

During Anaphylaxis Awareness Month, it is important to spread awareness and ensure readiness to protect those with food allergies. Keeping yourself and others around you informed is crucial.

Learn more here:

<https://www.health.harvard.edu/blog/epinephrine-is-the-only-effective-treatment-for-anaphylaxis-2020070920523>

<https://foodallergycanada.ca/campaign/food-allergy-awareness-month/>



CR: CANVA

DID YOU KNOW?

The high price of EpiPens, crucial medical devices used for treating severe allergic reactions, has sparked considerable public outrage and debate over the past decade. The controversy primarily centers on the dramatic price increases implemented by Mylan, the pharmaceutical company responsible for producing EpiPens. EpiPens, which deliver a dose of epinephrine to counteract anaphylactic shock, are essential for many individuals with severe allergies. Originally priced at around \$50 for a two-pack in 2007, the price skyrocketed to over \$600 by 2016, making it inaccessible to families. This sixfold increase places a significant financial burden on individuals and families who depend on these life-saving devices.

Learn more here:

<https://www.cbsnews.com/news/epipen-price-hike-controversy-mylan-ceo-heather-bresch-speaks-out/>

IMMUNIZATION WEEK: BEING PROTECTED

By: Gina Zhang

Lupus, formally known as systemic lupus erythematosus (SLE), is a chronic autoimmune disease where the immune system becomes hyperactive and attacks normal, healthy tissues. This leads to widespread inflammation and damage to various body systems, including the joints, skin, kidneys, blood cells, brain, heart, and lungs. The exact cause of lupus remains unknown, but it is believed to result from a combination of genetic, environmental, and hormonal factors.

Lupus predominantly affects women, particularly those of childbearing age, with a higher prevalence among women of African, Hispanic, Asian, and Native American descent. Symptoms can vary widely among individuals, making diagnosis challenging. Common manifestations include fatigue, joint pain, skin rashes, and fevers. One of the hallmark signs of lupus is a facial rash resembling butterfly wings across both cheeks, though not all patients exhibit this symptom. The disease can also cause more severe complications, such as kidney inflammation (lupus nephritis), cardiovascular issues, and neurological problems.

Diagnosing lupus often involves a comprehensive approach, including a thorough medical history, physical examination, and various laboratory tests. Blood tests can reveal certain antibodies,



such as antinuclear antibodies (ANA), that are frequently present in lupus patients. Additionally, doctors may perform a biopsy of affected tissues, such as the skin or kidneys, to assess the extent of inflammation and damage.

Managing lupus requires a multifaceted treatment strategy tailored to the individual's specific symptoms and disease severity. Nonsteroidal anti-inflammatory drugs (NSAIDs), corticosteroids, antimalarial drugs, and immunosuppressive agents are commonly used to control inflammation and suppress the overactive immune response. Lifestyle modifications, such as regular exercise, a balanced diet, and stress management techniques, can also play a crucial role in managing the disease.

Living with lupus can be challenging due to the unpredictability of disease flares and remissions. Patients often experience

periods of intense symptoms, followed by times of relative calm. This unpredictability can impact daily life, making it essential for individuals with lupus to maintain regular follow-ups with their healthcare providers to monitor the disease and adjust treatments as necessary.

Ongoing research aims to better understand lupus and develop more effective treatments. Advances in genetic studies have provided insights into the hereditary aspects of the disease, while clinical trials are exploring new therapeutic options that target specific pathways involved in the immune response. Increased awareness and education about lupus are also crucial in promoting early diagnosis and improving outcomes for those affected. In summary, lupus is a complex autoimmune disease characterized by

chronic inflammation and damage to various body systems. Its diagnosis and management require a comprehensive and individualized approach, encompassing medication, lifestyle changes, and regular medical supervision. Despite the challenges posed by lupus, ongoing research and increased awareness offer hope for improved treatments and better quality of life for patients, ensuring a future for those with the disease.

Learn more here:

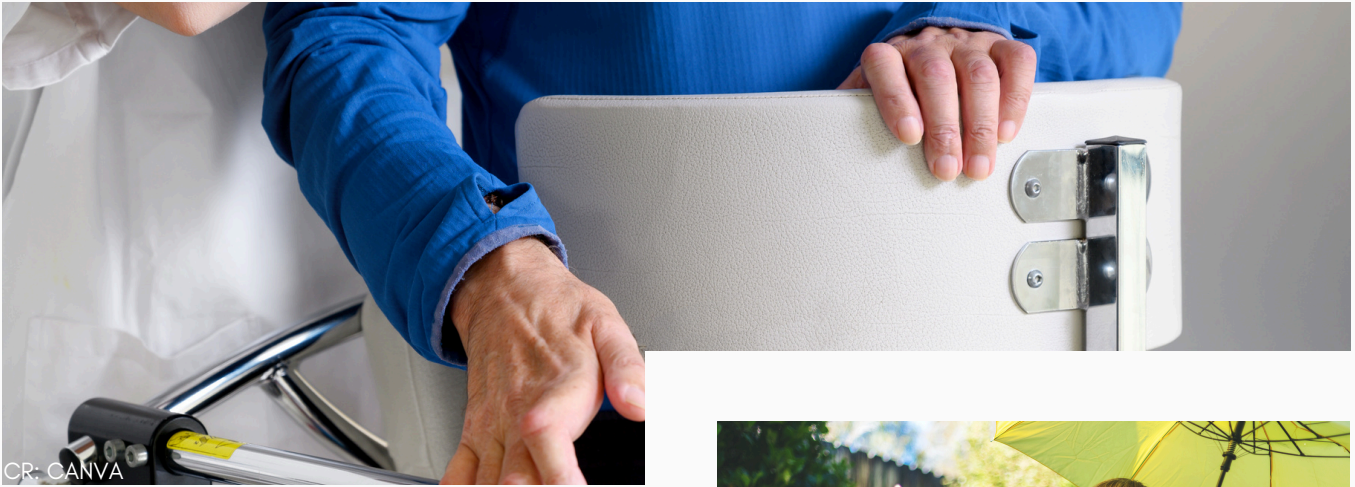
<https://www.niams.nih.gov/health-topics/lupus>

<https://www.cdc.gov/lupus/signs-symptoms/?>

[CDC_AAref_Val=https://www.cdc.gov/lupus/facts/detailed.html](https://www.cdc.gov/lupus/facts/detailed.html)



CR: CANVA



ALS AWARENESS MONTH: A DEBILITATING KILLER

By: Simone Abraham

ALS Awareness Month, observed every June, aims to raise awareness about amyotrophic lateral sclerosis (ALS), also known as Lou Gehrig's disease, a neurological disorder that affects motor neurons, the nerve cells in the brain and spinal cord responsible for controlling voluntary muscle movement and breathing. As these neurons deteriorate, individuals diagnosed with ALS progressively lose their ability to initiate and control muscle movements, ultimately leading to total paralysis, although cognitive function typically remains unaffected.

The ALS Society of British Columbia (ALS BC) is a registered non-profit charity that is committed to supporting ALS patients, their families and caregivers to ensure the best quality of life possible. With promising ALS therapies advancing in late-stage clinical trials and the UBC Faculty of



Medicine prepared to accelerate ongoing research, it made it the perfect time to invest in building research capacity for ALS right here in BC. One of ALS BC's key goals is to improve clinical care by fostering innovative ALS research and treatment at the University of British Columbia (UBC). To support this objective, ALS BC has committed to donating an additional \$20M to UBC.

Project Hope is an initiative dedicated to discovering a cure for ALS. Dr. Eric Piro, a professor in ALS Research at UBC, has been appointed to play a crucial role in advancing treatment options for patients in BC. His expertise and leadership are instrumental in establishing BC as a leading centre for ALS research, ensuring that patients in BC have access to the latest clinical trials and improved care. Dr.

Piro is assembling a world-class ALS Clinical Care and Research Team to support Project Hope, inviting patients to participate in groundbreaking clinical trials and research projects aimed at finding a cure for ALS.

Dr. Piro's plans include assembling a specialist team alongside a research nurse to help bridge the gap between clinical trial research and patient care. The ALS Clinical Research Team is crucial in advancing the understanding of ALS by collecting essential clinical data and biological samples for their ALS database and biorepository. The team aims to identify biomarkers critical for understanding disease causation, progression and response to experimental therapies. Collaborations with

neuroimaging experts and other UBC researchers will enhance the team's ability to monitor the disease's impact and explore new treatment avenues.

Project Hope is a movement driven by hope and science aimed at better understanding, treating and ultimately defeating ALS. Through the involvement of patients in these clinical trials it helps research teams develop new therapies and take a step closer to a cure for ALS. Through the collaboration of dedicated professionals and the support of the community, Project Hope is paving the way for significant advancements in ALS research and care

Learn more here:
<https://projecthopealsbc.ca/>



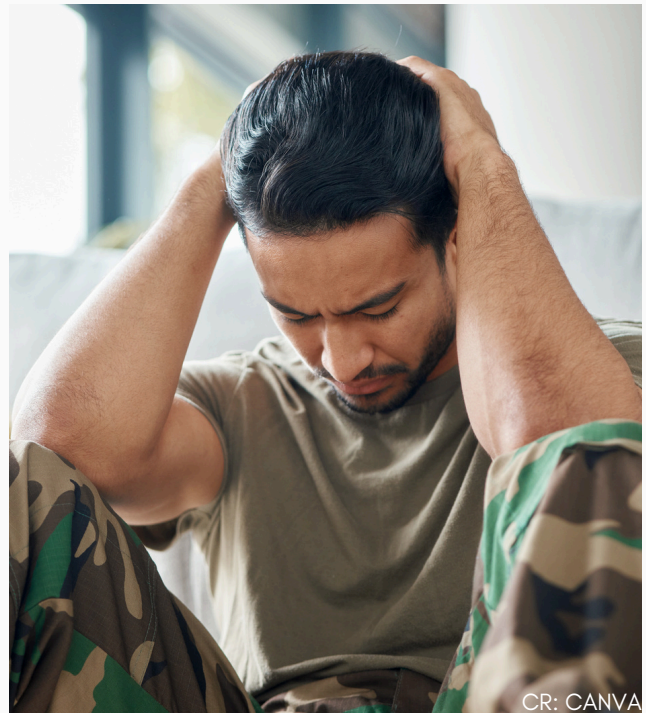
POST TRAUMATIC STRESS: STRUGGLING SILENTLY

By: Gina Zhang

Post-Traumatic Stress Disorder (PTSD) is a significant mental health condition that develops in individuals who have experienced or witnessed traumatic events. These events, ranging from natural disasters and accidents to military combat and personal assaults, deeply impact the psychological well-being of individuals, often leaving lasting effects on their lives. The complexity of PTSD lies in its diverse causes, multifaceted symptoms, and the varied approaches needed for effective treatment.

PTSD is commonly triggered by events that involve a perceived threat to life or safety, causing intense fear, helplessness, or horror. Military combat is a well-documented cause, as veterans frequently face life-threatening situations and combat stress. Additionally, violence in various forms, including physical or sexual assault, domestic violence, and childhood abuse, significantly contributes to the development of PTSD. Moreover, catastrophic events such as serious car crashes and natural disasters can lead to this disorder. Certain occupations, particularly those of first responders like police officers, firefighters, and paramedics, also involve regular encounters with traumatic situations, increasing the risk of PTSD.

The symptoms of PTSD are diverse and can significantly interfere with an individual's



daily life. Typically, these symptoms manifest within three months of the traumatic event, although they can sometimes appear years later. Intrusive memories are a hallmark of PTSD, with individuals experiencing recurrent, unwanted distressing memories of the event. Flashbacks and nightmares are common, often making it difficult for individuals to escape the trauma mentally. Avoidance is another critical symptom, where individuals go to great lengths to avoid thinking about or discussing the traumatic event, often steering clear of places, activities, or people that serve as reminders.

PTSD also brings about negative changes in thinking and mood. Those affected may experience feelings of hopelessness and have negative thoughts about themselves or others. Memory problems are frequent, and individuals often struggle to maintain close relationships. Furthermore, there are

noticeable changes in physical and emotional reactions. Individuals with PTSD may become easily startled or frightened, remain constantly on guard for danger, and engage in self-destructive behavior. Sleep disturbances and irritability are also common, exacerbating the difficulty in coping with daily life.

Diagnosing PTSD involves a comprehensive evaluation by a mental health professional. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) outlines specific criteria for diagnosis, including the presence of symptoms from the various categories for at least one month, causing significant distress or impairment in social, occupational, or other important areas of functioning. Statistics from the National Center for PTSD indicate that approximately 7-8% of the U.S. population will experience PTSD at some point, with higher prevalence among veterans and assault survivors.

Effective treatments for PTSD are available and can significantly improve the quality of life for those affected. Psychotherapy is a cornerstone of treatment, with cognitive behavioral therapy (CBT), prolonged exposure therapy, and eye movement desensitization and reprocessing (EMDR) proving particularly effective. These therapies help individuals process traumatic memories and develop healthier coping mechanisms. Medications, especially selective serotonin reuptake inhibitors (SSRIs), are often prescribed to manage symptoms. Support groups and self-help strategies also play a vital role in providing a sense of community and shared experience, helping individuals feel less isolated.

Learn more here:

<https://www.nimh.nih.gov/health/topics/post-traumatic-stress-disorder-ptsd>





CREDITS

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