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The University of Ottawa Healthcare Symposium (UOHS) 2025 Pitch-O-Rama: Undergraduate Elevator Pitch Research Competition

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Abstract
The University of Ottawa Healthcare Symposium (UOHS) is an undergraduate conference that highlights the role of interdisciplinary collaboration in healthcare. Now in its fifteenth year, UOHS brings together students and researchers from fields such as biomedical sciences, engineering, health policy, and digital health to explore current challenges and advancements in healthcare. The conference provides a platform for discussions on emerging technologies, healthcare delivery, and the integration of research into clinical practice. As part of the symposium, Pitch-O-Rama challenges students to present their research in a concise and engaging way. Participants explain the significance of their work in a short elevator pitch, demonstrating how their research contributes to healthcare innovation. Judges evaluate presentations based on clarity, originality, interdisciplinary impact, scientific rigour, and the ability to address a meaningful knowledge gap. The competition allows students to practice effective science communication and consider how their work connects with broader healthcare challenges. This abstract book features the top submissions from the 2025 competition, highlighting research from undergraduate students across various disciplines. For more details about UOHS and Pitch-O-Rama, please visit https://www.uohs-csuo.com/.

Keywords: ulcerative colitis; microplastics; gut-brain axis; stroke biomarkers; inflammation; neurotransmitter; psychiatric stigma; hospital protocols; digital alert systems

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Conference Abstracts
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Exploring the Potential of a Combinatorial Therapy Using Alginate and Prednisone to Treat Inflammation in Ulcerative Colitis

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Introduction: The global prevalence of Ulcerative Colitis (UC) is steadily rising, with Canada reporting some of the highest rates. UC is an inflammatory bowel disease that causes inflammation and decreases the mucus layer in the large intestine. Current immunosuppressive treatments like Prednisone are effective short-term, but have significant side effects if used long-term. We propose the use of Prednisone as an initial therapy to restore the mucus layer, then transition to alginate as a long-term maintenance treatment. Alginate is a natural polysaccharide that Bacteroides in the gut convert into anti-inflammatory factors that reduce inflammation. However, Bacteroides may cause further damage in UC patients with thin mucus layers. Hence, Prednisone is required to replenish the mucus layer before alginate can be used.
Methods: The combinatorial therapy will be tested in Dextran sulfate sodium (DSS) C57BL/6 mice models against independent therapies of alginate alone, prednisone alone, and a control group with no treatment. Inflammatory markers (IL-1β, IL-6, TNF-α, IL-8, IL-10), qualitative observations of the stool, concentration of butyrate, and the integrity of the mucus layer will be measured to analyze the overall effectiveness of the proposed treatment.
Results: Mice that undergo the combinatorial therapy are expected to have the lowest levels of inflammatory markers, ulcers, and blood in the stool. We expect to observe high concentrations of butyrate, the anti-inflammatory molecule that Bacteroides metabolize from alginate.
Conclusion: The combinatorial therapy of alginate and Prednisone will offer a more effective long-term treatment for those with UC. Future outlooks include studying the potential of alginate on related inflammatory diseases such as Crohn's disease.

Microplastics and Mental Health: Investigating Microplastic-Induced Gut Dysbiosis, Neurotransmitter Disruption, and Gut-Brain Axis Dysregulation and its Impact in Depression

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Introduction: The gut microbiome plays a crucial role in producing neurotransmitters such as serotonin, gamma-aminobutyric acid (GABA), and dopamine, which regulate mental health via the gut-brain axis. Disruptions to these microbial pathways have been implicated in depression, with emerging evidence suggesting that environmental pollutants such as microplastics may contribute to gut-brain axis dysregulation. Microplastics can alter microbial composition and function through oxidative stress, inflammation, and microbial membrane disruption, yet their impact on neurotransmitter synthesis remains underexplored. This study investigates how microplastic exposure affects gut microbiota, neurotransmitter production, and behavioral markers of depression.
Methods: Using an in vitro transwell co-culture system, we will assess the effects of microplastics on Lactobacillus rhamnosus and Bifidobacterium longum, two key bacteria involved in neuroactive metabolite production. The study will compare clean polystyrene microplastics, representing food contamination, and sorbed microplastics, which accumulate persistent organic pollutants (POPs) from the environment. Flow cytometry will be used to analyze bacterial viability and stress responses, while neurotransmitter levels will be quantified via high-performance liquid chromatography (HPLC). For in vivo analysis, C57BL/6 mice will undergo chronic microplastic exposure with vancomycin used as a positive control and inert silica beads used as a negative control. Behavioral assessments will include the forced swim test (depressive-like behavior) and the sucrose preference test (anhedonia). Gut microbiome alterations will be evaluated using 16S rRNA sequencing, and neurotransmitter levels will be measured in fecal, blood, and brain samples.
Conclusion: By integrating microbiological, biochemical, and behavioral approaches, this study aims to elucidate the role of microplastics as an environmental risk factor for mental health disorders. Findings could inform regulatory policies on plastic pollution and highlight potential interventions to mitigate microplastic-induced neuropsychiatric effects.

The Association between Blood Biomarkers and Stroke Status in the Canadian Longitudinal Study on Aging (CLSA)

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Introduction: There have been few studies that focus on the key differences in blood biomarkers between stroke and non-stroke patients. With strokes leading to a poorer end-of-life outcome overall, it is important to identify which biomarkers are more prevalent in stroke patients to identify at-risk individuals of developing a stroke earlier on, so they can focus on reducing modifiable risk factors that may lead them to developing a stroke.
Methods: We used baseline (2011-2015) and 3-year follow-up data from the Canadian Longitudinal Study on Aging. We excluded individuals who were diagnosed with a stroke at baseline. We performed descriptive analyses on baseline demographic and clinical characteristics analyzed. We then used logistic regression to examine the association between lipid and inflammatory blood biomarkers with incident stroke.
Results: Of the 26,299 Canadians included in this study, the mean age was 63 years (SD = 10), 51.1% were female, and 0.8% developed a stroke at follow-up. Individuals with a diagnosed stroke at follow-up were more likely to be diagnosed with a chronic heart disease (23.3%), diabetes (21.9%), and have a serious functional impairment (15.8%) compared to the no stroke cohort (10.5%, 16.6%, 8.4% respectively). Results from age and sex-adjusted models indicate that individuals with a higher concentration of IL-6 had 1.12 (CI 1.0-1.2) times greater odds of being diagnosed with a stroke at follow-up.
Conclusion: The results indicate that individuals diagnosed with stroke at follow-up are more likely to have other comorbidities present, and greater functional impairment. In addition, there is an association with certain blood biomarkers and stroke status.

Hospital-Wide 'Code White' Announcements: Investigating Stigma in Psychiatric Care and Proposing Digital Solutions

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Introduction: Hospital-wide 'Code White' announcements, a standard protocol in Canadian hospitals, signal situations involving potential violence or aggression, often during psychiatric emergencies. These overhead announcements aim to quickly alert staff, ensuring prompt, coordinated responses to maintain safety and manage crises effectively. However, their public nature may inadvertently contribute to stigma by reinforcing stereotypes associating mental illness with violence (Hatzenbuehler, 2016; Knaak et al., 2017; da Silva et al., 2020). This study hypothesizes that such protocols amplify public perceptions of psychiatric patients as dangerous or aggressive, increasing fear, anger, and social exclusion.
Methods: A cross-sectional, randomized survey will sample 100 hospital visitors. All participants will rate perceived risks of violence and trustworthiness on a 0–10 scale in hypothetical scenarios such as sharing a home, collaborating as a business partner, or dining together. Participants will then be categorized based on their awareness of 'Code White' announcements for comparative analysis. Awareness and understanding will be assessed through two Likert-scale questions. Quantitative data will be analyzed using descriptive statistics, chi-square tests for associations, and linear regression to evaluate how 'Code White' awareness predicts perceptions of dangerousness and trustworthiness.
Results: If hospital-wide 'Code White' announcements are found to correlate with increased stigma by reinforcing associations between psychiatric patients and violence, alternative solutions should be explored.
Conclusion: Evidence highlights the effectiveness of private digital alert systems used in 'Code Blue' protocols for managing medical emergencies (Morris et al., 2023), suggesting their potential adaptation for similar psychiatric crisis scenarios. Implementing private digital notifications presents a practical and scalable solution to enhance public perceptions, uphold dignity in psychiatric crisis management, and support equitable, stigma-free healthcare systems. These insights could guide policy changes to reduce stigma and promote more inclusive crisis management practices.

Conflicts of Interest
The authors, Marwan Bakr and Xinzhu Chen, declare that they have no conflicts of interest.

Authors' Contributions
MB: Coordinated the organization of the Pitch-O-Rama competition, developed the criteria for abstract and presentation judging, reviewed submissions, managed event logistics, recruited judges, contributed to the writing and editing of the abstract book and gave final approval of the version to be published.
XC: Coordinated the organization of the Pitch-O-Rama competition, developed the criteria for abstract and presentation judging, reviewed submissions, managed event logistics, recruited judges, contributed to the writing and editing of the abstract book and gave final approval of the version to be published.

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