

# Abstracts Presented at the 2<sup>nd</sup> Annual Advancing Healthcare Innovation Summit: Nov 11, 2022, Cincinnati, OH

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## ORAL PRESENTATIONS

### Abstract No.: A02019

#### The Future of Surgery: Technology Enhanced Surgical Training Report

**Joshua Burke**

*General Surgery, Association of Surgeons in Training, Manchester, UK*

Over the past 50 years the capability of technology to improve surgical care has been realised and while surgical trainees and trainers strive to deliver care and train; the technological ‘solutions’ market continues to expand. However, there remains no coordinated process to assess these technologies. The FOS:TEST Report aimed to (1) define the current, unmet needs in UK and ROI surgical training, (2) assess the current evidence-base of technologies that may be beneficial to training and map these onto both the patient and trainee pathway and (3) make recommendations on the development, assessment, and adoption of novel surgical technologies. The FOS:TEST Commission was formed by the Association of Surgeons in Training (ASiT), The Royal College of Surgeons of England (RCS England) Robotics and Digital Surgery Group and representatives from all trainee specialty associations. Two national datasets provided by Health Education England were used to identify unmet surgical training needs through qualitative analysis against pre-defined coding frameworks. These unmet needs were prioritised at two virtual consensus hackathons and mapped to the patient and trainee pathway and the capabilities in practice (CiPs) framework. The commission received 124 evidence submissions from surgeons in training, consultant surgeons and training leaders. Following peer review, 32 were selected and covered a range of innovations. Contributors also highlighted several important key considerations, including the changing pedagogy of surgical training, the ethics and challenges of big data and machine learning, sustainability, and health economics. This summates to 7 Key Recommendations and 51 concluding statements. The FOS:TEST Commission was borne out of what is a pivotal point in the digital transformation of surgical training. Academic expertise and collaboration will be

required to evaluate efficacy of any novel training solution. However, this must be coupled with pragmatic assessments of feasibility and cost to ensure that any intervention is scalable for national implementation. Currently, there is no replacement for hands-on operating. However, for future UK and ROI surgeons to stay relevant in a global market, our training methods must adapt. This report provides a blueprint for how this can be achieved.

### Abstract No.: A02004

#### Day Surgery Unit Enhancement Through the Use of Modeling & Simulation

**Faisal Ashour**

*National Guard Health Affairs, Jeddah, Saudi Arabia*

An approach to enhance current Day Surgery Unit (DSU) waste in terms of time and cost, this paper describes it with a conceptual framework in terms of modelling and simulation. The concept targets the waiting time for each patient since registry until discharged. This is because of the inconsistent process of which patient to which OR theatre they will be guided to each morning. Several factors have been considered affecting the delay time process for patients that needed to be readjusted in a simulation model such as order of medication prior to the operation. To avoid any mislead that could present unpredictable harm to the workflow process which will affect the system in general, running it in a simulation model is completely safe and efficient before implementing it in real-life situation. In several workflow stages, patients and medical providers spend more time which is considered to be a waste, such as in recovery, order medication, and transportation. To eradicate this problem, the current system suggested to be enhanced to ensure maximum utilization of the DSU in a more efficient way. The proposed approach enables a more realistic and detailed simulation of the patient flow within the DSU. In addition, patients in-take increased up to 15% each day and the utilization of OR1-OR2- OR3 increased slightly. Average waiting time significantly decreased to 20 min as compared to 112 min in the current system for 95% GA & 5% spine patients. The

final simulation model describes the full utilization and accuracy to real-time by 95%.

### Abstract No.: A02007

#### Reopen the Doors of the World with UVSET Safetouch

**Manish Rangan, Vihan Yerubandi, Humza Sheikh, Aiman Khan, Hisham Ahmad**

*Frisco ISD, Frisco, TX, USA*

The world is a very unclean place and that was proven in large magnitude during this COVID-19 pandemic. Studies have shown that the door handles carry double the bacteria of cell phones and 30 times more bacteria than the toilet seats. According to a University of Arizona study, an infected person walking into an office building using a door handle could infect 60% of people in the office within 8 hours. Likewise, research has shown that without enforcement, hospital workers wash their hands only about 40% of the time on average, and that within just a few hours, viruses can spread to 40–60% of workers or visitors in a facility from just one contaminated door handle – that could be a difference between life and death for the immune compromised patients. Additionally, Influenza causes 40,000 deaths in the US, with nearly all being senior citizens due to their significantly weaker immune systems. When paired with the fact that the pathogens can enter these homes through visitations, it is clear that neglecting these dangers could lead to potentially deadly consequences for loved ones. To solve this problem, high school kids from the DiscoverSTEM program (US-based entrepreneurial education that teaches students to identify problems to form inventive solutions) spent months of research analyzing patterns of disease spread. With the impending dangers of the COVID-19 pandemic, students became motivated to bring the world back to normality and devised a patent pending UV-C based sanitizing product that fits door handles, killing over 99.9% of germs at pre-determined intervals. The product has an innovative, eco-friendly, modular, eye-sleeve design that enables to fit almost all door handles and has near zero UV light leakage. The product is suitable for any place that exposes the vulnerable people to disease spread as we know just in the US alone, there are about 26,000 pediatrician and Ob/Gyn clinics where kids and high-risk pregnant women frequent. Additionally, about 2.1M people reside in the 29,000+ assisted living and nursing facilities in the US. Also, 10k Americans turn 65 every day and the current population of adults aged over 85 is set to grow by 177% by 2050. Finally, there are about 129,000 child care centers in the US. The mission was to give equal opportunity for everyone including the immuno-compromised and vulnerable people to live in this world.

### Abstract No.: A02026

#### Wearable Electronic Device that Informs Police of Mental Disabilities

**Valda Freeman-Karmo**

*KAR-MO, Cincinnati, OH, USA*

**Introduction:** This abstract is a review of the number of police shooting fatalities by race and by perceived mental illness status of the deceased and an innovative concept that can reduce the number of police shooting fatalities of people with mental disabilities. **Background:** Understanding the impact of the police perception of who has a mental illness is critical in developing effective solutions to reduce the number of police shooting fatalities of people with mental illness - 29% of fatal police shootings are of people who are perceived to have mental illness. I have a passion for this work due to having two teenage sons that have mental disabilities that could have tragic outcomes if the police do not understand their mental disability and associated behavior during an encounter. **Methods:** The issue of police shooting fatalities of people with mental illness is well documented due to the Washington Post's database started and maintained since 2015. This database is updated daily, and information was used as of the 9/28/2022 update of the database. 2020 census data, adjusted for 2021 by Statistic, was used to compare the Washington Post database statistics to the current United States demographics. **Results:** Black Americans are three times more likely; Native Americans are 1.8 times more likely; and Hispanic Americans are 1.4 times more likely to be fatally shot by police. When stratifying the data by police perception of mental illness, Black Americans are 1.6 times more likely to be fatally shot by police than White Americans, and all other races are equal or less likely to be fatally shot by police. The results are more striking in the group perceived to not have signs of mental illness: Black Americans are 3.5 times more likely; Native Americans are 2.1 times more likely; and Hispanic Americans are 1.7 times more likely to be fatally shot by police. **Conclusion:** Increasing the police ability to detect when a person has a mental illness can reduce shooting fatalities. One innovative solution is a wearable electronic device that will inform police when they encounter a person with mental disabilities by sending a signal to a receiver device worn by on-duty police. Our next steps are to patent the device and seek supporters to pilot the idea.

**Abstract No.: A02012****Affordable EEG-Controlled Wheelchair Attachment for Fully Immobilized Individuals**

**Raahi Jogani, Aarish Bhojani, Sofia Sethuraman, Nadia Sethuraman, Zaid Marwat, Abdullah Hasani, Hisham Ahmad, Raed Sharib, Isha Agrawal, Sheza Asif, Vihan Yerubandi**

*DiscoverSTEM, Dallas, TX, USA*

Those who are paralyzed must rely on a caretaker to complete day-to-day tasks and remain mobile. To combat this issue, research has been conducted to leverage visually evoked potentials using electroencephalography (EEG) to control wheelchairs. However, most of the resulting products from this research have been expensive and inaccessible to patients. To address this issue, we have developed an inexpensive attachment for wheelchairs such that any power wheelchair can be easily converted to an EEG-controlled wheelchair. After extensive research on both the P300 and the steady-state visually evoked potential (SSVEP) paradigms, we found that SSVEP is the more practical paradigm for applications related to real-time selections, such as when the user is driving the wheelchair. The P300 paradigm, however, is more effective for static selections in which it is not necessary to make immediate classifications. For instance, the P300 paradigm may be better suited for a system in which the user selects a preprogrammed location that can be autonomously routed to. Our group has designed a prototype EEG-controlled wheelchair that consists of an EEG headset, a laptop, a Raspberry Pi circuit, a servo motor, a 3D printed fork to guide a joystick, and a joystick-controlled electric wheelchair. Our innovation can easily be attached to any electric wheelchair with a joystick without damaging or permanently modifying the wheelchair. The system is also portable since the connection between the headset and the laptop is via Bluetooth and the connection between the laptop and the Raspberry Pi is via the user datagram protocol (UDP). While the EEG headset we are currently using holds eight electrodes, since we are only using visually evoked potentials, the EEG system can be reduced to one or two electrodes placed over the occipital lobe to reduce costs. The other materials, such as the circuitry, servo motor, and fork are relatively inexpensive, making the attachment affordable. With this innovation, we aim to restore paralyzed users' autonomy and independence by providing them an uncostly means of moving without assisted care.

**Abstract No.: A02023****Connecting the Dots Between Advanced Primary Care and Value-Based Payment: Opportunities and Barriers for Addressing Super-Utilizers**

**Raghavi Anand, Kayleigh Hope**

*Maryland Department of Health, Baltimore, MD, USA*

**Background:** Public health innovators believe that value-based care is the future of health care delivery. Maryland's advanced primary care delivery model has shown promise in lowering a proportion of COVID-19 rates, inpatient admissions, and deaths. However, a small group of patients known as super-utilizers do not appear to benefit from this healthcare delivery model. We aim to utilize provider feedback to inform strategies to address disparities. Previous intervention strategies focused on care coordination, demonstrating great potential for improving quality and reducing costs, but were insufficient for this complex group whose utilization is largely driven by socioeconomic challenges and health disparities. This warrants an innovative approach to address the dynamic super-utilizer climate. **Definitions:** *Value-based care:* Value-based primary care delivery allows physicians to provide patient-centered care through the support of equitable and accessible care rather than incentivizing volume. *Super-utilizers:* A small group of patients who utilize disproportionate, high-cost healthcare. *Super-utilizers* visit the Emergency Department (ED) six or more times in a one-year period. *Maryland Primary Care Program (MDPCP):* MDPCP is a voluntary program open to all qualifying Maryland primary care providers and provides funding and support for advanced primary care delivery. MDPCP Medicare patients, the focus of the analysis, have access to advanced primary care, yet are still frequenting the ED. **Methods:** We analyzed administrative Medicare claims data and ED admission diagnoses from Oct 2020 - Sept 2021 to identify super-utilizers (n=1423) at MDPCP primary care practices (n=32) and corresponding EDs (n=311) to determine specific areas of challenge for these super-utilizers. This claims data informed which practices to target for interviews. Clinicians at these practices were then invited to participate. **Results:** Interviews with primary care providers and ED care team members illuminated three main categories that further the super-utilizer problem: 1) ineffective patient education regarding super-utilizers, 2) provider burnout, and 3) difficulty in inducing and sustaining patient behavior change. The fishbone diagram is a cause-and-effect diagram depicting the aforementioned three categories, with contributing factors shown in the branches. **Discussion:** Analysis of the interviews with primary care and ED providers indicate that key action areas lie in creating stronger mental health networks, emphasizing the importance of continuity of care, and closing communication gaps between EDs and primary care offices. **Conclusions:**

These interviews identify disparities exacerbated by value-based primary care delivery. Action areas will eventuate in opportunities for intervention and the design of program-wide quality improvement initiatives.

### Abstract No.: A02025

#### Mental, Emotional and Behavioral Reporting System

**Soorya Narayanan, Yara Abo Auda, Arjun Kommidi, Raisha Bhojani, Hisham Ahmad, Meher Saanvi Singh, Iliyan Ali, Saanchi Gabri, Simran Babaria, Hidvika Dubey, Sadaf Syed, Rida Naqvi, Jiya Singh and Akshara Kommidi**

*DiscoverSTEM, Plano, TX, USA*

Mental, emotional, and behavioral wellbeing has taken the forefront in the healthcare industry today. The study suggests that 1 in 5 US adults experience mental health issues each year. Researchers have also suggested that there is a communication gap between children and parents leading to a situation where parents are the last ones to know if their child is facing any hardship. This increasing gap can be seen as children enter adolescence and widen due to stigma, opposing views or lack of support. To combat this, we innovated a patent-pending system, a global finalist at the international innovation competition conducted at NASA Kennedy Space Centre, with the vision to tackle increasing cases of deteriorating mental health among teenagers and breakdown in communication between parents and children. The system created takes the child's mental, emotional, and behavioral feedback from the authority using the app in the form of behavior, mood and comments and works using 638 personality traits i.e., positive, neutral, and negative as peer-to-peer input and classifies an individual into four major personality traits. With time, it generates something like a "credit score" of his/her overall wellbeing and sends smart suggestions/ alerts to the authority. Reports that will be generated in the app include mental health indications, suicidal tendencies, the onset of depression and workload pressure. This AI algorithm will also detect a recovery and/or happiness tip about the child. For example, if an activity is reported to make the child happy the system will record it and be used in the future to plan a well-balanced daily, weekly, and monthly routine. We envision that this system should not only be restricted to households but also used in every sector ranging from armed forces to corporates thus, it is designed to provide significant features which will help in university applications and admissions, volunteering applications, hiring process and also at a gun shop to check aggressive tendencies of the consumer before handing the ammunitions. We believe this is the best system to predict and prevent mental, emotional, and behavioral issues and has the power to reach

millions of populations as it is concentrated on solving two major problems existing in today's world using the artificial intelligence algorithm.

### POSTER PRESENTATIONS

#### Abstract No.: A02022

#### Evaluation of the Clinical Outcome and the Cost-effectiveness of Cyclosporine Short Infusion versus Continuous Infusion Post Allogenic Stem Cell Transplantation

**Shaymaa El-Awady, Nagwa Sabri, Amal El Afifi, Marwa Ahmed**

*Ain-Shams University, Cairo, New Cairo, Egypt*

**Background:** Currently there is no consensus about how cyclosporin A (CsA) should be administered in hematopoietic stem cell transplant (HSCT), with some centers giving two intermittent infusions and others continuous 24 h infusions. We decided to determine whether administering CsA at a daily dose of 3 mg/kg/day intravenously in 2 h (short infusion) twice daily is feasible and safe with respect to the conventional continuous 24 h infusion. Moreover, we evaluated both arms in terms of cost using an analytic decision model. **Methods:** A prospective randomized study of adult patients undergoing first allogeneic HSCT at Ain Shams University Hospital Bone Marrow Transplantation Unit in Egypt between 2018 and 2021. Patients were grouped according to the CsA administration method, the intervention method of 2h continuous infusion (CI) /12h versus the conventional method of 22h CI every 24 h. The primary outcomes were the occurrence of acute graft-versus-host disease (aGVHD) and CsA toxicity adverse events. Secondary outcomes included the correlation between time concentrations and area under the concentration-time curves (AUCs) and the effect of the infusion method on the obtained AUCs. An analytic decision model was developed to estimate the cost-effectiveness of the two administration methods. The clinical events were modeled with a decision tree. **Results:** The study enrolled 31 patients with related allogeneic HSCT; most patients (38.7%) had an initial diagnosis of AML. There was a non-significant difference between the two study groups in the development of aGVHD, the distribution of different aGVHD types, the transplantation outcomes, and mortality. There is no significant difference in the obtained AUCs from both infusion methods at all time points. The total QALYs (quality-adjusted life-years) per patient for the intervention group was 1.766663 compared with 0.73625 for the standard care group. The total costs per patient for the intervention and the conventional groups were 3802.147 USD and 13239.22 USD, respectively. These results yielded an incremental cost-effectiveness ratio (ICER) of -9158.53 for the intervention group. **Conclusion:** We did not find continuous infusion administra-

tion of CsA associated with more aGVHD or kidney toxicity. We found that the strategy of (2h/12h) was more cost-effective than the conventional one (22h CI every 24 h). Unless necessary, cyclosporine is recommended to be administered as a twice-daily infusion.

### Abstract No.: A02016

#### Digital Health

**Seema Nagwani**

*CitiusTech Healthcare IT, Mumbai, Maharashtra, India*

**Introduction:** Digital health is a broad term encompassing health information technology, mobile apps (mHealth), wearable devices, virtual/telehealth, personalized medicine etc., so as to support and take correct decision at the right time with the right information. In current times, from large health systems to small ones, all are struggling to maintain the balance between handling more patients, more procedures, more regulations, and more financial pressures than ever before. Digital health has taken an exponential curve since the spread of COVID-19 and digital tools have high ability to accurately diagnose and thus provide seamless experience to patients, providers, pharmacies, payors and across all consumer touchpoints. *Factors driving need for Digital health:* Rising patient expectations to design omni-channel interactions, to have refined care workflows and thus provide personalized patient experience. *Healthcare Convergence & integration* – Data flowing from fragmented healthcare systems (wearables/ payors and wide healthcare ecosystem) demands a need for data interoperability within healthcare ecosystem. *Disjointed information leading to patient dissatisfaction* – Routing patient to fragmented systems for appointment, bill-pay, encounters, health status check, Rx refills, Care plan navigation all calls for a universal digital platform thus focusing more on 'quality of life' dimensions. *Healthcare regulations* - The 'alphabet soup' of regulatory forces such as Pricing transparency, 21st century cures act, eBenefit verification/ prior authorization within 72 hours of receiving request, adjusting SDoH (Social determinants of Health) factors to derive better outcomes. *The Way Forward:* See roadmap for the proposed "Digital Health adoption and maturity model." **Conclusion:** Patients are expecting 'retail' industry experience to be replicated into healthcare industry. Digital health prioritizes and places 'patient' at the center of the care-continuum. There are various dimensions on which digital health can be measured. For the future of healthcare will continue to be patient centric and organizations need to let their technology investment shift their resources to have more timely and meaningful interactions with patients to make their healthcare journey more meaningful.

### Abstract No.: A02024

#### At the Heart of the Matter: Improving Communication Between the Lab Bench and the Community

**Stephanie Kidder Bowers, Kelly Grimes, Tanya Baldwin, Jose Guirao Abad, Malina Ivey**

*Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA*

Over the past two decades, technological advancements in molecular biology and bioinformatics have skyrocketed. Although these techniques have advanced our knowledge of how the heart functions, cardiovascular disease remains the leading cause of death among adults globally. This presents a challenge to cardiovascular scientists and clinicians, whose arenas of focus can often be out-of-sync with each other. Our current healthcare system leads to scientists not centering their research on the most pressing needs of society at large and equally leads to clinicians not knowing how to apply new gains in scientific knowledge directly to their patients. Such lapses in communication between these disciplines limit our collective ability to provide optimal care to individuals suffering from cardiovascular disease. Innovations in cardiovascular healthcare must therefore include new ways to improve how researchers and physicians engage, as well as the individuals they are striving to help. The latter is especially crucial because, despite dynamic progress towards personalized medicine at both the bench and bedside, a considerable gap remains in how the resultant large-scale datasets can be interpreted to help patients across all demographics and in an equitable fashion. As bench scientists ourselves, the space in which we conduct our research often feels far removed from both society and the clinic. In order to enhance cardiovascular healthcare outcomes, we propose several areas in which communication between scientists, doctors, and patients can be enriched, such as establishing new communication channels between them, enhancing the public's access to scientific publications and data, and improving public health and scientific literacy for our society at-large. We will discuss ways in which active engagement of scientists and healthcare teams with society have directly led to improvements in human health locally and nationally, which have been informed by our personal engagement with local organizations and community-based dissemination of our own scientific results. We firmly believe that innovations in communication, when coupled with traditional technological advancements, will help us to make tangible strides in cardiovascular health outcomes for decades to come.

**Abstract No.: A02011****Capturing the Lived Experience of Using Digital Health Solutions to Access Help following Domestic Violence and Abuse: Insight from a Questionnaire Development Exercise****Omolade Femi-Ajao***University of Manchester, Manchester, UK*

Domestic violence and abuse (DVA) is a global public health problem disproportionately affecting women. In the UK, evidence shows that two women a week are killed by a previous or current male partner, and ethnic minority and immigrant women experiencing domestic abuse are 2.4 times less likely than white women to get access to the help and support they need. Due to emerging issues linked with lack of access to services, digital interventions have been identified as a possible route to accessing services. However, there are emerging concerns that there are digital health inequalities, and varied experiences with using and accessing digital health solutions. A scoping review was conducted to inform the development of a questionnaire on the type of questions to be included in an instrument for measuring the lived experience of people, when seeking help for domestic abuse. A total of 19 questions were identified, covering four broad categories: Staff/ Professional Response, Demographic Information, The Platform/Mobile App, and Quality of Service. These four broad categories are presented as a guide to be considered when developing data capture instrument to measure the impact and acceptability of digital health intervention designed to improve the health of people experiencing traumatic life events, such as domestic abuse. While the categories will apply irrespective of the race and ethnicity of service users, the expectation is that people identifying as ethnic minorities will find the phrasing of the questions accessible, as capturing their experiences.

**Abstract No.: A02020****District Health Information System Data Utilization Among Health Workers in Sinana and Agarfa Districts of Bale Zone, Oromia Region, Southeast Ethiopia 2019****Mohammed Hamza***Emergency Management, Bale Robe, Oromia, Ethiopia*

**Background:** District health information system is vital for the acquisition of data for health sector planning, monitoring, and evaluation. With the introduction of a decentralized system and District health information system, the Ministry of Health emphasized the use of information at the point of collection. As routine health data/information utilization is under studied in Ethiopia;

this study aimed to assess the magnitude of district health information system data utilization and associated factors among health workers in public health institutions in Sinana and Agarfa districts of Bale zone, Oromia regional state, southeast Ethiopia. **Objective:** The objective of this study was to assess the District Health Information system data utilization status and associated factors among health workers in Sinana and Agarfa districts, Bale zone, Oromia national regional state, South-east Ethiopia, 2019. **Methods:** A facility based cross-sectional study design was employed from August to September 2019 in public health facilities of Sinana and Agarfa districts. The study used single population proportion formula to determine the sample size. All health workers working in public health facilities of the districts (320) were included. The data were collected using structured, pretested, and self-administered questionnaire. The obtained data were checked for completeness, coded, and entered into Epi-data version 3.02, analyzed using statistical package for social science (SPSS) version 20, and descriptive statistics as well as bivariate and multivariate logistic regression analysis were computed to identify the independent predictors of data utilization status among health workers working in public health facilities of Sinana and Agarfa districts. Adjusted Odds ratio with 95% confidence interval was used to measure the strength of association and P-Value <0.05 used to declare statistical significance. **Results:** Three hundred six health workers participated in the study making a response rate of 95.6%. The study revealed that the level of district health information system data utilization among health workers in Sinana and Agarfa districts was 69.6%. Educational level, supportive supervision, performing lot quality assurance sampling, using national classification of diseases and time of registry of services rendered were found significantly associated with data utilization of district health information. **Conclusion and Recommendation:** The overall data utilization status of district health information system was found to be 69.6% among all health workers in the study area. Low level of education, infrequent supportive supervision, not performing Lot Quality Assurance Sampling, using national classification of disease and non-routine time of registering of services rendered were found significant factors. Data has to be used at institutional level for monitoring and evaluation of services not just for the sake of forwarding to the upper level in the form of report.

**Abstract No.: A02006****First Use of Novel Bispecific T-Cell Engager Tebentafusp for Metastatic Uveal Melanoma Outside Clinical Trials****Kaitlyn Spinella, Rafiullah Khan***The Christ Hospital, Cincinnati, OH, USA*

Tebentafusp is part of a novel class of cancer immunotherapy referred to as bispecific T-cell engagers (BiTE).

Tebentafusp is indicated for treatment of metastatic uveal melanoma in HLA-02;01-positive adults. Tebentafusp binds one end to a melanocytic antigen gp100-HLA complex and the other end to CD3-positive cytotoxic T-cells. Metastatic uveal melanoma carries a poor prognosis with a 3-year overall survival rate of 9%. However, patients treated with tebentafusp have had improved survival rates in trials. Adverse effects can be severe, most notably cytokine release syndrome (CRS), occurring in 89% of patients. This case report describes the first use of tebentafusp outside of clinical trials. The patient is a 79-year-old male who presented to the emergency department with progressive abdominal pain, and imaging revealed a 3.7-cm mass in the right lobe of the liver. A biopsy confirmed the diagnosis of metastatic uveal melanoma. Patient also had a left supraclavicular mass concerning for metastasis. He began treatment with tebentafusp infusions shortly after confirmation of diagnosis. Tebentafusp, given in weekly infusions, requires the first three doses to be given inpatient with 16 hours of monitoring, as the most severe form of CRS can require vasopressors and intubation. During the first infusion, patient had CRS demonstrated by a temperature of 38.8°C seven hours after infusion. He was treated with acetaminophen, promethazine, diphenhydramine, and methylprednisolone. Over the next hour, he developed a red itchy rash on his face, torso, and legs. His fever lasted for 5 hours, but he never developed hypotension or hypoxia and was discharged the next day. During the second infusion, he did not develop a fever. However, the patient's rash was more bothersome, and pruritis persisted even after several doses of diphenhydramine, topical steroids, cetirizine, and methylprednisolone. Pretreatment with dexamethasone before his third infusion decreased the severity of pruritis related to his rash. Patient received his subsequent doses in the outpatient setting and experienced no further adverse reactions. He continues to receive weekly infusions. A recent biopsy of his left supraclavicular mass demonstrated necrotic tissue indicating he is responding to the tebentafusp. Although the data from the phase 2 and 3 trials of this drug has been extensive, using a new drug and managing side effects in a clinical setting has important implications for widespread use. As CRS can range from mild to life-threatening, the management of patients treated with this drug outside of a clinical trial setting is important to report.

### **Abstract No.: A02003**

## **How Big Data Can Shape Patient and Public Health**

**Danielle Larison**

*Northern Kentucky University, Highland Heights, KY, USA*

Every time a user opens their phone, data is being recorded and kept within a database. Big Data consists of “extremely large data sets” that is analyzed to find

patterns within the data, according to the Oxford Languages. Large sets of data are collected from patient forms, physician notes, and any testing. Healthcare organizations need to transition from paperwork to using a centralized online format for patient information. By using and transforming this information, patients can receive more personalized care with artificial intelligence. By combining artificial intelligence and health data, this can assist in public health crisis, such as tracking patient testing and how the crisis is spreading. To keep this software working properly, for public health and for healthcare organizations, there must be a software to help clean the data, meaning getting rid of redundant data or information that is not relevant. Security for patients is always a must for a system that hold sensitive information. There are vast amounts of data in healthcare, the issue is whether we use it to help patients or use it to combat preventable diseases. Big data can be used to predict health trends and to predict patient outcomes. It is important that we use this knowledge effectively.

### **Abstract No.: A02002**

## **Improving Health Outcomes in IDD patients: A Training Approach to Reduce Stigma in Healthcare Professionals**

**Casey Harden, Ali Balapour**

*Northern Kentucky University, Union, KY, USA*

Individuals with intellectual or developmental disabilities (IDD) remain the most vulnerable patients in healthcare despite specialty clinics expanding throughout the country. Barriers in our current healthcare system that this population faces lead to poor health outcomes and premature mortality from preventable/treatable diseases. Guidelines, training, and tools have been developed for healthcare professionals to improve disparities in those with IDD; their implementation in emergency departments is critical to promoting better health outcomes in this underserved population. This study will investigate the following Research Question: Can online training decrease disability-related stigma among healthcare professionals working in the Emergency Room to improve healthcare outcomes in patients with IDD? Stigma is a fundamental cause of health inequality, with recent literature citing stigma as a primary impactor on health care. Due to stigma facilitating significant disparities in health care in other populations, there is a need to study stigma in those with IDD. This study aims to explore the following hypotheses, anti-stigma training in Emergency Medicine professionals will increase health outcomes in patients with IDD. Methods include the use of training and evaluations to determine if the magnitude of change in stigma is sufficient. Measures of health outcomes will consist of mortality rates, the safety of care (falls, skin breakdown, hospital-acquired infections), and readmission rates.

This study takes a conclusive approach to answer the research question, will training and proper data collection within emergency care produce better health outcomes in patients with IDD? This study contributes to the ongoing literature on IDD patient care and could impact policies in training methods for future or current healthcare professionals, as well as explore the causes of stigma toward those with IDD among healthcare professionals. Last but not least, this study offers avenues for reducing disparity in our healthcare system.

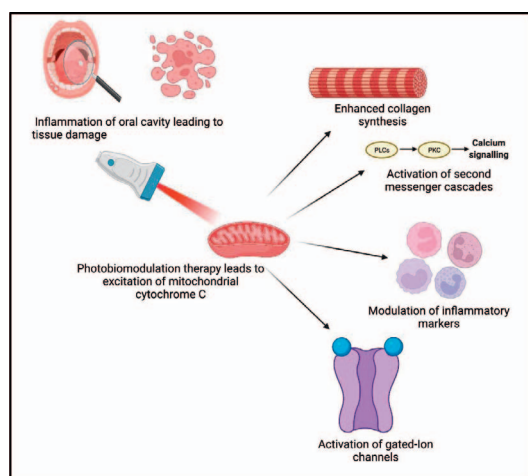
### Abstract No.: A02001

## Laser Oral-Maxillofacial Photobiomodulation Therapy: Molecular Mechanisms, Outcomes, and Considerations

**Brian Fiani, Ryan Jarrah, Karim Nathani**

*Cornell Medical Center/New York Presbyterian Hospital, New York, NY, USA*

**Introduction:** The treatment of malignant cells has often led to substantial damage to targeted tissue, particularly within the oral cavity. This has led to a debilitating patient experience and a financial burden, with costs of treatment of cancer therapy complications reaching over \$70,000. Advancements in low-level laser technologies led to the development of photobiomodulation therapies (PBMT) to address these complications. Today, PBMT is an exciting treatment prospect that can facilitate wound healing and regeneration of various tissues. **Objective:** Herein, we classify the molecular mechanisms, research outcomes, advantages, and limitations of PBMT. Moreover, we seek to characterize the innovation of a PBMT device, OraMax RX (New York, NY), in helping propel laser technology into clinical practice. **Results:** PBMT is largely characterized as a safe therapeutic model that can modulate the activity of inflammatory and immune biomarkers while facilitating



**Abstract A02001 Figure.** Mechanism of action of laser PBMT on damaged tissue.

a metabolic response that can regenerate damaged tissue (Figure). **Conclusion:** PBMT is a promising tissue regeneration prospect that has been accepted as safe in various pre-clinical models. Although a lack of protocol standardization has limited its credibility, the precision and energy distribution of devices like OraMax RX have furthered the prospect of laser therapies in mainstream clinical practice. Further studies of PBMT on human models are warranted to select therapeutic candidates.

### Abstract No.: A02014

## AI Innovation in Healthcare

**Akanksha Dhiman**

*SC Innovation, Roorkee, Uttarakhand, India*

AI-based knowledge is now used to recognize illnesses, for instance, tumors, in their starting stage. With AI-based Technology, we can store a record of a patient and can be access from anywhere. This Innovation helps to track the health report of the patient and their expenditure till now on medicines. With this AI system, we track our patient at home isolation, we provide them a hand/Wrist digital AI band which continually track their vitals. AI can help individuals who are at a greater risk of medical conditions like heart stroke. AI can help clinicians with devising better treatment plans for these patients. Healthcare does not just mean treatment by doctors. It involves a lot of hospital staff, nurses, managers, technicians, and pharmacists to efficiently This web solution will also provide the medical equipment's, Hospital details & doctor availability etc. This AI Based Web/Application will help patient to directly in contact with the doctors. This platform also overcome the problem of Black-marketing & Shortage of Medicines and Medial equipment's etc. On this AI platform we have form available for emergency service, which a person can submit, and the team directly approach them. The widespread use of wearables like iWatch by Apple and other clinical contraptions got together with AI. This helps in overseeing starting period coronary ailment. In general, the earlier the detection of a disease, the better it can be treated. AI into the healthcare ecosystem allows for a multitude of benefits, including automating task and analyzing big patient data sets to deliver better healthcare faster and at lower cost.

### Abstract No.: A02013

## Aarogyapath

**Aashish Kaushal**

*Council of Scientific and Industrial Research, Delhi, India*

Aarogyapath, a web-based solution for the healthcare supply chain that provides real-time availability of critical supplies launched. This public platform will help healthcare users like hospitals, pathology laboratories,



research institutes, medical colleges, and patients. This national healthcare supply chain portal will remove supply chain bottlenecks during the COVID-19 pandemic. The vision of this initiative is to set up an information management and forecasting database platform at national level. It will capture demand and supply scenarios for key healthcare needs items. This public platform can help customers in tackling a number of routinely experienced issues like dependence on limited suppliers, time-consuming processes to identify good quality products, limited access to suppliers etc. It also helps to reduce the Black Marketing of medical equipment & products, Unstandardized Medical product prices. It is the single platform of all medical suppliers & buyers for any announcement/feedback etc. It will also help the manufacturers and suppliers to reach customers efficiently like nearby pathological laboratories, medical stores, hospitals, etc. It will also create opportunities for business expansion due to an expanded slate of buyers and visibility of new requirements for products. It also helps to fill a critical gap in last-mile delivery of patient care within India through improved availability and affordability of healthcare supplies.

#### **Abstract No.: A02015**

### **ECG Monitoring and SCADA-based Defibrillation**

**Sukumar P N**

*Dr. NGP Institute of Technology, Salem, Tamilnadu, India*

Cardiac arrest is the abrupt loss of heart function, breathing and consciousness. This condition usually results from a problem associated with our heart's electrical activity, mainly disrupts the heart's pumping action and stops blood flow to the body. To restore a normal heartbeat, an electric pulse/ shock to be delivered to the heart which is done by defibrillator. ECG of the patient is monitored to know the patient's heart condition and ECG waveform is sent to the cloud continuously. If any abnormalities occur, an electric pulse is delivered to the patient through nerve simulator automatically. Through supervisory control and data acquisition (SCADA)-based methodology, the defibrillation can also be applied remotely, which eliminates the need of healthcare provider at the patient side. In addition, heart rate and temperature are measured and sent to the cloud.

#### **Abstract No.: A02027**

### **Biodiversity Biobanks: An Invaluable Resource for Global Health**

**Samantha Luciano**

*Universite' Cote d'Azur, Nice, France*

Although less well known than their biomedical counterparts, biodiversity biobanks represent an invaluable asset for meeting the challenges of our century in terms of global health and the environment. Whether they are home to animal, plant or micro-organism collections, these infrastructures contribute to research and development in many fields and are notably a resource for biomedical research. The major advantage of biodiversity biobanks certainly lies in the variety of samples and taxa present in these collections: tissues, fluids, complete specimens, cell cultures, DNA or even RNA from most of the vertebrate and invertebrate species on our planet. As humans interact even more directly or indirectly with the rest of the animal kingdom (breeding, agriculture, urbanisation, food, etc.), we are witnessing more and more epidemics of infectious diseases caused by zoonotic pathogens (viruses, bacteria, parasites), even though our knowledge of their origin, biology, phylogenetic coverage and pathogenicity remains limited. The fight against these diseases therefore requires interdisciplinary and intersectoral expertise, such as the One Health (OH) initiative, which promotes an integrated, systemic, and unified approach to public, animal, and environmental health at local, national, and global levels. By accumulating animal, plant or micro-organism resources, these biorepositories allow a wide range of research to be conducted in a controlled, secure, and high-quality manner. As the samples are carefully processed, optimally preserved, and accompanied by a vast amount of data, they allow researchers from all over the world to conduct their work in any field. Thus, access to the resources of biodiversity biobanks could make it possible to progress not only the understanding of these zoonoses but also recurrent themes of biomedical research such as neglected tropical diseases or the fight against cancers, as certain animal species are resistant to them, so they would make it possible to understand the mechanisms of tumour development and thus help in the creation of new therapies for humans. Therefore, biodiversity biobanks are working to make their samples and data more accessible to the biomedical community enabling better collaboration between the two sectors of activity, even though they undeniably lack visibility and recognition.