



# MEDPULSE

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## CANADA

### Systemic Racism in Canadian Healthcare

Joyce Echaquan was an Atikamekw woman who died on September 28, 2020, and many have attributed her death to negligence and medical racism. Echaquan was given medication despite her history of drug allergies and concerns about being over-medicated. Furthermore, recordings of her interactions with her healthcare team revealed the hospital staff using racial slurs and demeaning her presence in the hospital. Prime Minister Justin Trudeau referred to the incident as "the worst form of racism." More information regarding the details of this incident are to be uncovered in an inquest to be conducted by lawyer and coroner Géhane Kamel, who is in charge of a committee on mortality in Indigenous communities. Overall, Echaquan's death has raised dialogue about the systemic racism inherent in the Canadian healthcare institution, and the need to implement culturally-competent care. Specifically, Canadian scholars of public health are calling for the implementation of legislation and policies to end anti-Indigenous racism.

## UNITED STATES

### A Pocket-Sized Ultrasound

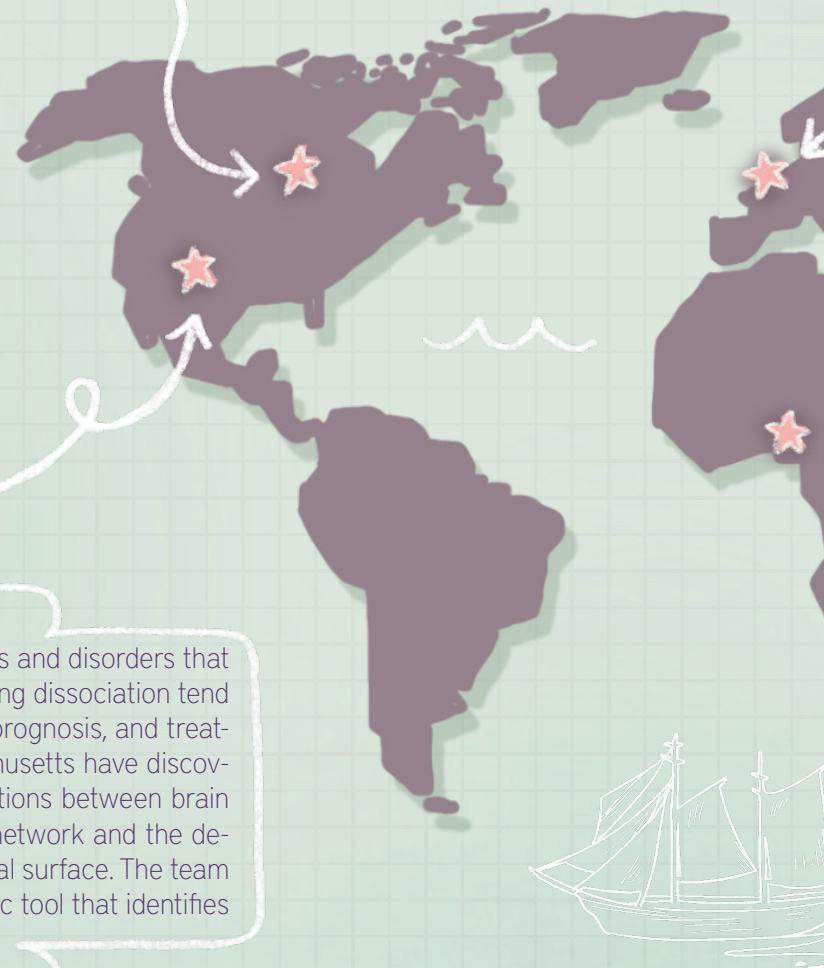
Butterfly iQ is a handheld ultrasound device crafted by Jonathan Rothberg that aims to improve access to healthcare. Although less powerful than an industrial machine, Butterfly iQ poses many benefits: the device is portable, reasonably priced, and encourages medical imaging to become more routine in clinical settings. In fact, the pocket-sized device is being distributed to 53 countries in efforts to help the "4.7 billion people around the world lacking access to medical imaging." Additionally, Butterfly iQ has proven to be highly productive in Western medicine as COVID-19 overwhelms the healthcare system; physicians report that they can efficiently diagnose, triage, and monitor patients despite reduced access to hospital resources.

### Measuring Dissociation Within the Brain

There is limited research surrounding dissociative symptoms and disorders that stem from childhood trauma. Effectively, patients experiencing dissociation tend to receive insufficient care, including inaccurate diagnosis, prognosis, and treatment. However, researchers at McLean Hospital in Massachusetts have discovered that dissociation is associated with functional connections between brain regions. Notable regions include the frontoparietal control network and the default mode network, both of which are located on the cortical surface. The team hopes to use these findings to devise an objective diagnostic tool that identifies and measures the severity of trauma-related dissociation.

### Nobel Prize for Discovering Hepatitis C

The 2020 Nobel Prize in Physiology or Medicine has been awarded to American researchers Harvey Alter and Charles Rice as well as the UK's Michael Houghton, for their efforts in discovering the Hepatitis C virus. Currently, approximately 70 million individuals are infected with Hepatitis C, resulting in around 400,000 deaths per year. This research endeavor started when Alter noticed that individuals receiving blood transfusions would fall ill with liver inflammation that was not attributable to Hepatitis A or Hepatitis B. Houghton was able to isolate this flavivirus and sequence its genome, and Rice injected genetically engineered Hepatitis C into an in vivo model which was shown to cause hepatitis. Due to this discovery, blood screening for this virus has become common practice, allowing for early detection and treatment.





## UNITED KINGDOM

### Virtual Reality Rehab

Neurorehabilitation lacks engagement, accessibility, and interactivity. These factors can hinder the success of treatment. Isabel Van De Keere has revolutionized neurorehabilitation by developing Immersive Rehab—a customizable virtual reality (VR) approach to rehabilitation. This method increases the range of available exercises, improves data collection of patients' progress, increases accessibility of neurorehabilitation, and enhances patient experience. The company's next steps are to host clinical trials in Canada, the US, and Europe in efforts to certify VR as a legitimate medical solution.

## INDONESIA

### Reducing DNV Spread With Bacteria

Prevalent year-round in Indonesia, cases of Dengue virus (DNV) infection have increased 700-fold over the past 45 years. A research center has recently discovered that the incidence of DNV can be decreased by distributing mosquitoes carrying Wolbachia bacteria. While most insect species are natural carriers for Wolbachia, the species of mosquitoes that carry DNV (*Aedes aegypti*) are not. As such, this strain of bacteria was artificially cultured from fruit flies into *Aedes aegypti* mosquitoes, decreasing DNV replication and transmission. A possible explanation for this effect is the intra-organismal competition between Wolbachia and DNV within the host mosquito, as well as the increased immunity of the host from Wolbachia infection.

## KUWAIT

### Novel Genetic Defects in Middle Eastern Cohorts

Researchers from the Middle East, Finland, and Canada have conducted analyses of genomic data from two Kuwaiti Arab groups in an effort to better understand the prevalence of certain inherited metabolic diseases. Most genomic studies to date have focused on European/Caucasian populations, highlighting the necessity for such endeavors. In response to the complications caused by consanguinity in many Arab populations, interest was sparked in understanding the effects of inbreeding on the genomic level. It was discovered that from the 821 variants of the 251 genes identified, 95% were associated with metabolic disorders. Furthermore, 11 genes found in Arab cohorts were identified as novel risk variants for metabolic problems.

## NIGERIA

### Diversifying Africa's Biobank

The African population contains the most genetically diverse DNA; however, less than 3% of African DNA is involved in human-genome research. Effectively, the potential of health research, drug discoveries, and medical breakthroughs is severely limited. A Nigerian startup founded by Dr. Abasi Ene-Obong, 54gene, is challenging these blindspots in genomic research. The startup aims to collect highly curated genetic information from volunteers across Africa to diversify the continent's biobank—a biorepository that collects, stores, and distributes biological material for use in research.

54gene's mandate also strives to improve Africa's overall health outcomes by partnering with companies dedicated to sharing discoveries with the continent. Additionally, 54gene's recent partnership with Illumina Incorporation, a health technology company specializing in DNA sequencing technologies, will help Africa overcome its barriers in accessing precision-based medicine.