



A PATH TO INCLUSIVE PRECISION MEDICINE

Q&A with Dr. Naveed Aziz, Vice-President, Research and Innovation at Genome Canada

Q: How has genomics enabled the standard of care known as precision medicine?

Scientific advances have allowed us to move from studying specific genes linked to health outcomes to examining the entire complement of a person's DNA by sequencing their genome: genomics. This shift enables us to see the complex interactions between other parts of the genome and other genes. Studying an entire genome reveals how genes influence each other, improving our ability to predict disease and treat it early.

In breast cancer screening, for example, genomics can help identify at-risk individuals, who may need earlier testing based on their genetic predispositions, ultimately saving lives and health-care costs. This new standard of health care, known as “precision medicine” or “precision health,” is shifting our approach from reactive to preventative by providing much more information about patients and populations.

Q: Why is it important to consider equity, diversity, and inclusion in precision medicine?

Precision medicine can help us address health disparities across different populations—including systemically marginalized groups—by recognizing how unique genetic and environmental factors impact them. To realize these benefits, it is essential to ensure that the sequencing data collected represent the diversity of our population. Otherwise, predictions made based on genomic data will be biased toward the population most represented in the data. Unfortunately, many genomic datasets globally remain primarily white European and do not reflect the world's diversity.

The good news is that Canada is leading efforts to diversify genomic data. The [Silent Genomes](#) project is a prime example, focusing on bringing the power of precision medicine to Indigenous communities. Meanwhile, Canada's [All for One Precision Health Partnership](#) is investing in regional capacity for sequencing to ensure no part of our country is left behind. I'm proud to say that Genome Canada is currently launching our largest-ever genomics initiative, aimed at generating significantly more genomic data from across the country to power precision health. This initiative prioritizes the representation of Canada's diverse population.



Q: What challenges do we need to overcome to ensure equity, diversity, and inclusion in precision medicine?

Technologically, Canada is well-positioned to implement precision medicine. We have the tools to collect, analyze and infer insights from individualized genomic data.

However, without investment to expand access to genome sequencing and therapies for rural, Indigenous, newcomer, racialized, low-income and other communities that already face significant challenges accessing standard health care, the benefits of this revolutionary science will not be shared equally.

We need more public education on how genomic technologies are used in the future of precision health. We have to make sure people feel comfortable engaging with this new standard of care. We must better understand the structural barriers preventing access to genomic sequencing for health or research purposes (e.g. lack of reimbursements, geography, restrictive work schedules, cultural norms, distrust of health-care institutions). We need to find ways for communities to shape how their data is collected and used. Robust policies and secure data-sharing networks across our federated country are essential to build public trust. These networks, along with coordinated leadership for Canadian genomic data sharing, are necessary to ensure we fulfill our responsibility to use people's sequencing data for the maximum public good. Again, I'm proud to say that Canada is taking important action in this area, and we will see much stronger community engagement and coordination on data sharing, policy, and security from Genome Canada's soon-to-be-announced precision health initiative.