EDITORIAL

The future of medicine: A medical student's perspective

As medical students, we spend much of our education busily learning vast amounts of information in order to gain the knowledge we require to become competent clinicians. Much of the first two years of medical school is spent in didactic teaching. In the third and fourth years of our education we rush around the hospital during our clinical clerkship years attempting to apply that knowledge and to learn our craft from our mentors and supervisors. We are immersed in the here and the now and passing the next looming exam!

Even though we are the future leaders in healthcare, we are rarely asked what we think the future of medicine holds. This is a shame, since in my experience as a student at the Schulich School of Medicine and Dentistry I have found that my classmates have many ideas and great vision as to the future of the practice of medicine. We are also in a unique position of still maintaining our sense of idealism as we have not been working on the frontlines for very long. We can see where change can occur since our experiences in the wards and clinics are fresh and new. Having never come across resistance and barriers to change, we can imagine the possibilities that the future can hold. It is for this very reason that in this issue of the UWOMJ we have decided to explore what medical students believe the future holds for medicine. I hope that you enjoy reading these pages and take the opportunity to dream and to envision what you hope will be the future of medicine and embolden yourself to make change happen.

My own personal vision of the future of medicine is biased by my previous experience as a research scientist. I believe that the merging of the fields of molecular biology, biochemistry, materials science, engineering and nanotechnology will occur in the very near future and will lead to medical breakthroughs and treatments that are only now emerging from the realms of our imagination. We are entering an age that is full of promise and will reveal the mechanisms of numerous human diseases. These advances will lead to new treatment options for patients. The age of personalized medicine is just beginning and it is going to change the way we practice medicine.

The sequencing of the human genome and the development of bioinformatics tools to manage and analyze the sequence of our DNA have provided a glimpse into the complexity of our genetic makeup. The concomitant adaptation of mass spectrometry to the analysis of proteins now allows us to identify the protein makeup of a cell. These technological breakthroughs will be joined by the newly emerging field of metabolomics that will allow us to identify a large number of metabolites found in the human body. Armed with this new information detailing cellular processes during times of health and disease, the methods we use to manage patients and develop therapeutic drug targets will change at a rapid pace. Breakthroughs in the fields of materials science, engineering and nanotechnology will allow for the miniaturization of these applications so that they can be deployed for routine clinical use.

Imagine detecting life threatening genetic conditions and long term genetic susceptibilities at birth. A patient will have a lifestyle plan charted out to prevent the development of diseases detected in their genetic profile. Over the course of a person's lifetime the protein and metabolic profiles of their cells will be monitored to determine the onset of pathological changes. This testing will allow physicians to begin treating conditions before they have detectable clinical signs and symptoms, thus altering the course of a disease from the very beginning. A patient's genomic, proteomic and metabolomic information will also be used to select the most ideal, individualized pharmacotherapies.

We are approaching an exciting era full of enormous change. Today's physicians will need to develop public policy and lobby for the best delivery of future technologies. And both today's physician and tomorrow's physician will need to decide which technologies we adapt, always keeping humanity's best interests in mind as we progress towards an exciting tomorrow. Turn the page to see what other medical students at Schulich feel the future holds!

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