

# The Evolving Landscape of Chronic Diseases

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A chronic disease, defined as one that is without a cure, encompasses a spectrum of conditions from well-managed illnesses to degenerative and debilitating conditions without effective treatments. The most common chronic diseases in Canada include cancer, diabetes, cardiovascular disease, and respiratory diseases such as chronic obstructive pulmonary disease or asthma.<sup>1</sup> Currently, more than one in five Canadians live with one of these common chronic conditions.<sup>1</sup> The burden of chronic disease on the healthcare system is substantial and is projected to become even greater due to the aging population. However, not all chronic diseases are associated with old age. There are many chronic diseases which can be diagnosed in childhood, such as asthma, neurological disorders, mental health conditions, and cystic fibrosis.<sup>2</sup> While advances in prevention and treatment of infectious diseases have decreased infant mortality, this increase in lifespan has led to a rise in childhood chronic diseases. However, the life expectancy for some of these chronic conditions has improved substantially. For example, childhood leukemia, one of the most common childhood malignancies, has had significant improvements in the treatment regimen and now carries a 95% five-year survival rate.<sup>3</sup> Furthermore, the Canadian Cystic Fibrosis Registry reported an increased median survival age from 31.9 years in 1990 to 49.7 years in 2012—an age that is projected to increase.<sup>4,5</sup> The increasing life expectancy associated with certain conditions is redefining the ever-growing pool of diseases that are now understood to be chronic rather than acutely fatal.

Chronic diseases are diverse and affect various body systems and age groups. For instance, chronic rheumatological conditions such as systemic lupus erythematosus and rheumatoid arthritis have a relatively young age of diagnosis that can affect middle-aged adults or even teenagers.<sup>6,7</sup> In our feature articles section, internal medicine resident Dr. Julia Tan and rheumatologist Dr. Natasha Dehghan share some of the challenges and rewards of managing chronic rheumatological diseases and the therapeutics available to patients for management of their conditions.

Chronic infectious diseases, such as HIV and hepatitis B/C, are another category of chronic diseases. Advances in anti-retroviral therapy have resulted in a life expectancy for people living with HIV that is near-comparable to the general population.<sup>8</sup> These diseases affect a small portion of the population but are growing in number. While the prevalence of perinatal HIV transmission between infected mothers and their children has declined due to prenatal testing and prevention strategies,<sup>9</sup> the overall rates for HIV infection in Canada are still rising, with a 17.1% increase in the Canadian national diagnosis rate between 2014 and 2017.<sup>10</sup> A commonality between these chronic diseases is that they tend to be further complicated with other comorbidities, which makes management more complex.

Despite the availability of pharmacological and non-pharmacological treatments, the mortality and morbidity arising from chronic diseases is still quite substantial: in 2016, 89% of deaths in

Canada were due to a chronic disease.<sup>11</sup> For the most common chronic diseases, 80% of Canadians have a modifiable risk factor, including physical inactivity, smoking, unhealthy eating, and harmful use of alcohol.<sup>11</sup> In one of our feature articles, Dr. Kathy Gaul highlights the indispensable role of exercise in chronic disease treatment and prevention. Yet, health disparities in society persist due to barriers to addressing modifiable risk factors such as physical inactivity and decreased access to healthy food, which are correlated with low socioeconomic status.<sup>12</sup>

In addition to prevention and treatment, there is a growing role of palliative medicine in managing chronic diseases. Palliative care is a multi-disciplinary approach that involves the physical, mental, social, and spiritual care of patients, as well as their loved ones.<sup>13</sup> The federal government of Canada has committed \$11 billion over the next ten years towards home, palliative, and mental care, which are important in the care of patients with chronic disease.<sup>14</sup> As we recognize the growing number of chronic diseases, the perception of palliative care as merely “end-of-life care” is changing. The importance of palliative care integration early on in chronic disease management is discussed in a feature written by palliative care physician Dr. Catriona Aparicio.

Ultimately, the landscape of chronic disease is vast. There is a chronic disease in nearly every medical specialty, and the burden of chronic disease management is only increasing. The Canadian Community Health Survey in 2011 and 2012 found that 16.8% of Canadian are living with two or more chronic diseases.<sup>15</sup> Chronic disease and pharmacological treatment also come with increased risks of polypharmacy such as potential drug interactions.<sup>16</sup> The path ahead in chronic diseases will be multi-faceted and challenging, but it is also one that is hopeful of the medical advances on the horizon.

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