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Editorial

Don't Neglect Neglected Diseases -

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If we have learnt anything from recent times, it's that we cannot neglect neglected diseases. This term has categorized the unpopular diseases to which little public attention, and public funds, have been devoted. These are often diseases of zoonotic or tropical origin which only rarely infect humans. However, it is precisely these diseases that can wreak havoc on naïve populations.

In the history of medical research, diseases have been recognized either as eminent public health threats or neglected and of little import. The 1970s saw a popularization of emergent infectious diseases following the discovery of Marburg virus in 1967, Lassa fever virus in 1969, Ebola virus in 1976, and Hantaan virus in 1976, e.g., publication and movie adaptation of *The Andromeda Strain*, and subsequently *The Hot Zone* and *The Coming Plague*. However, this surge in the identification of deadly pathogens from exotic locales was overshadowed by the explosive HIV epidemic in the US in 1983.

While HIV did not cause the severe symptomology as did the aforementioned infections, its mortality was nevertheless just as high. Tremendous attention, research and funding was devoted to understanding, preventing and curing HIV. Therapies of mild success accumulated until the development of highly active antiretroviral therapy (HAART) in 1995. Yet to date, no vaccine or curative treatment has been developed. Throughout this time, a non-infectious disease had also captured the medical researchers' attention, cancer. As the number of cases grew, ever more attention and funding were devoted to curing and preventing cancer. This is reflective in the Nation Cancer Institute Director's challenge to eliminate cancer by 2015. In hindsight, that date has now come and gone and cancer is still a leading cause of disease.

While the public was distracted by cancer and the big three infectious diseases (HIV, malaria, and tuberculosis), little attention was paid to diseases of lesser predominance. However, in 2003 neglected diseases demanded their rightful place as threats to global public health with the start of the avian influenza pandemic. The emergence of the highly virulent H5N1 avian influenza virus in Asia grabbed the public's attention as hordes of poultry were slaughtered in an attempt to contain the zoonosis. Since its inception nearly 650 human cases of H5N1 avian influenza have been reported from 15 countries with a ~60% mortality rate. However, in the years prior to 2003 another 20 cases of avian influenza were documented in China and Hong Kong before public attention was brought to bare. This

outbreak was followed by the emergence of the SARS coronavirus in 2003 which led to 8,098 infections across more than 20 countries worldwide with a ~10% mortality rate. The highly pathogenic pandemic H1N1 influenza virus in 2009 spread to cover 74 countries with millions of infections. However, even in the US, dozens of cases of swine flu infection were reported in the years leading up to the 2009 pandemic. The resurgence of Ebola in 2014 resulted in over 28,000 infections with a ~40% mortality rate. The Zika virus was identified in Rhesus monkeys in 1947 and human cases have been documented since 1952 in Uganda. Sporadic infections of humans were reported throughout the years until a local outbreak of 185 cases on Yap Islands, Micronesia in 2007. Zika virus then receded into relative obscurity until the recent explosion of Zika-associated microcephaly cases with over 270,000 suspected (~40,000 confirmed) in 60 countries. Despite an initially low incidence, neglected diseases have proven to be highly lethal.

In addition to these recent outbreaks, there are numerous zoonotic diseases, e.g., *Francisella tularensis*, animal influenza and hemorrhagic fevers, waiting for the chance to spread uncontrolled amongst the human population. Moreover, the last 20 years have witnessed the discovery of Sin Nombre virus in the four corners region of the US in 1993, Nipah virus in 1998, West Nile virus in 2003, Monkeypox virus in 2003, and MERS in 2012 that bear close watch.

We cannot ignore pathogens that currently have low incidences of disease as these are just the pathogens that history has shown cause the next epidemic. Without constant consideration for the dangers of neglected diseases, the next pandemic could kill millions. As this journal opens, I encourage the medical research community, and their funding agencies, to bear in mind the necessity for studying the immunology of and the development of therapies to treat neglected and tropical diseases. Don't neglect neglected diseases in favor of popular diseases. The next pandemic might just leap out of obscurity and run rampant in the population.

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